

APPENDIX 9A

Detailed Scope of Assessment

Appendix 9A DETAILED SCOPE OF ASSESSMENT

9A.1 2015 ToR Subjects of Note Related to the SEIA

'Subjects of note' (SON) identified in the ToR (Section 7.3) are issues of lower priority than the KLOI, but still require sufficient analysis to determine whether the Project is likely to cause significant adverse effects. SONs that relate to changes to the socio-economic environment include the following:

- Culture and Traditional Land Use Including Harvesting (Chapter 11) - potential effects of the Project extension on culture and traditional land uses including:
 - Indigenous languages;
 - Traditional lifestyles, values, and culture; and,
 - Cultural and spiritual sites and activities.
- Land Use – potential effects of the Project on land use, including:
 - Effects and management of increased access;
 - Effects on traditional land use, tourism, outfitting, hunting, fishing, recreation and other non-traditional uses;
 - Effects and changes to industrial land use and changes in access;
 - Patterns of use and changes in these patterns;
 - Effects on protected areas, parks, and environmentally and culturally sensitive areas;
 - Aesthetics; and,
 - Conformity with existing land use plans (e.g., SLUP).

Potential effects to other SONs are addressed in assessment chapters for Air Quality (Chapter 12), Noise (Chapter 13), Water Sediment and Quality (Chapter 16), Vegetation (Chapter 19), Caribou and Moose (Chapter 10), Wildlife (Chapter 19), Birds (Chapter 20) and Heritage Resources (Chapter 22).

9A.2 Regulatory and Policy Setting

The assessment of potential Project-related effects on socio-economic VCs is guided by the ToR (ToR; MVEIRB, 2015) and the following notable legislation, regulations, policies and guidance at the territorial, regional and municipal levels.

9A.2.1 Territorial Regulations and Policies

Table 9A.1 summarizes the regulatory and policy setting at the territorial level for all five socio-economic VCs.

Table 9A.1 Relevant Territorial Regulations and Policies

Socio-economic VC	Description of Relevant Territorial Regulations and Policies
<p>Human Health and Community Wellness</p>	<p>The health and social services system in the Northwest Territories (NWT) is comprised of:</p> <ul style="list-style-type: none"> • NTHSSA which is responsible for the design, planning and delivery of health and social services across NWT and delivers health and social services across the regions, except for: • Hay River Health and Social Services Authority (which provides services to Hay River) • Tłıchǫ Community Services Agency (which provides services to the Tłıchǫ Region) • Department of HSS <p>These three health authorities, along with HSS, provide health and social services support to all 33 communities in the NWT (refer to Figure 9A.1).</p> <p>The NWT health system is mandated to implement and monitor a number of acts, regulations and policies that affect the delivery of health and social services across the territory (GNWT-HSS, n.d.a.) including but not limited to the <i>Mental Health Act</i>, the <i>Children and Family Services Act</i> and the <i>Medical Care Act</i>. There is no regionally specific human health and community wellness legislation or policies that affect, or are affected by, the Project. Within the health system, strategic, action and implementation plans have been created to identify health and social service priorities and to guide the direction of program, service and support provision.</p> <p>The federal government also provides the Non-Insured Health Benefits program for Indigenous peoples.</p> <p>HSS provides support to communities to develop community wellness plans and programs, identify wellness priorities, and implement these programs via a long-standing federal funding agreement with Indigenous Services Canada. This agreement supports community-based health promotion and disease prevention programs and services and allows for HSS to support community capacity for effective wellness planning that occurs in communities and by community members. HSS also publishes annual reports and develops and implements a territorial plan related to the delivery of health services in the territory.</p>
<p>Education, Skills and Training</p>	<p>The education and skills development system in NWT is comprised of:</p> <ul style="list-style-type: none"> • Aurora College and Community Learning Centers (CLC). Aurora College is currently undergoing transformation into a recognized and arms-length polytechnic university to increase access to quality post-secondary education opportunities for Northerners and to foster growth of research that is beneficial to communities and people. The polytechnic university will be about training for jobs that are needed in the NWT to make sure residents are first in line for those jobs and will therefore work in partnership with business and industry to be responsive to the labour market needs.

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Socio-economic VC	Description of Relevant Territorial Regulations and Policies
<p>Education, Skills and Training (cont'd)</p>	<ul style="list-style-type: none"> • Apprenticeship, Trade and Occupation Certification Board (ATOCB). Provides advice and is the link between ECE and industry, facilitating a strong partnership leading to qualified apprentices and a skilled workforce. There are also five Trades Advisory Committees for the carpentry, plumbing, electrical, heavy equipment technician and housing maintainer trades. The Trades Advisory Committees are made up of representatives from industry. The Advisory Committees provide assistance to ECE by ensuring industry standards are met. • ECE invests in and provides for the development of the people of the Northwest Territories, enabling them to reach their full potential, to lead fulfilled lives and to contribute to a strong and prosperous society. <p>These educational bodies are responsible for the delivery and certification of educational and training programs to support all 33 communities in NWT.</p> <p>The ATOCB is appointed by the Minister of Education and serves as an advisory body to the ECE and is the link between the department and industry (GNWT, n.d.a.). There are also five Trade Advisory Committees for carpentry, plumbing, electrical, heavy equipment technician and housing maintainer trades. There are currently 54 designated trades and 25 occupations recognized under the territorial Apprenticeship, Trade and Occupation Certification Program.</p> <p>There is no specific territorial education and training legislation or policies that affect or are affected by the Project. The NWT education system is mandated to implement and monitor several acts, regulations, and policies that affect the delivery of education, training and skills development across the territory (GNWT, n.d.b.). Within the education system, strategic, action and implementation plans have been created to identify education and training priorities and to guide the direction of program, service and delivery.</p>
<p>Employment and Economy</p>	<p>The GNWT's <i>Employment Standards Act</i> (2021) is a statute that sets standards for payment, compensation and working conditions in most workplaces.</p> <p>The GNWT's <i>Financial Administration Act</i> (2015) gives rise to the government's regulation and policy governing procurement and contracting. This policy framework includes requirements related to the hiring of local businesses and labour on government-procured projects. In addition, these policies reflect the GNWT's procurement-related requirements under national and international trade agreements.</p> <p>The GNWT's <i>Payroll Tax Act</i> (2017) establishes a two per cent tax on income earned by employee's working in the NWT. Although it is the employee who pays the tax, employers are required to withhold the tax from their employees' pay and remit the tax directly to the GNWT.</p> <p>The GNWT's <i>Workers' Compensation Act</i> (2019) provides the legal authority and framework for occupational health and safety requirements in most workplaces. The occupational health and safety provisions of the Act address matters such as the rights and responsibilities of workplace parties, joint committees and worker representatives, the right to refuse unsafe work, accident reporting, investigations, enforcement, offences, administrative procedures, and regulation-making authority.</p>

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Socio-economic VC	Description of Relevant Territorial Regulations and Policies
<p>Infrastructure, Services and Institutional Capacity</p>	<p>Public infrastructure within the NWT that is outside of communities is the responsibility of the GNWT. Relevant legislation and regulations include:</p> <ul style="list-style-type: none"> • The <i>Public Projects Act</i> legislates activities such as the construction and maintenance of Projects, control of access to the Projects and adjacent development, and other matters such as the closure of a Project. • The <i>Public Airports Act</i> legislates activities such as the establishment of public airports, the granting of leases, licences and the sale of public airports, and commercial activities on public airport lands. The Act's associated regulations provide details about lease processes and a legal description of each parcel of the territory's commissioner's public airport lands.
<p>Non-Traditional Land Use</p>	<p>The GNWT's <i>Public Land Act</i> (2019) is a statute which has been assented but is not yet in force. It comprehensively governs all public land within the Northwest Territories; it will replace previous pieces of legislation (the <i>Northwest Territories Lands Act</i> [NWTLA] and the <i>Commissioner's Land Act</i>). It applies to public land in the NWT (i.e., all land that is under the administration and control of the Commissioner of the NWT) which is not regulated under another territorial law (such as the <i>Protected Areas Act</i> or the <i>Public Airports Act</i>). The Act does not apply to privately owned land (GNWT, 2021a). The Act provides the general authorities for the administration of various interests in the surface and subsurface of public land.</p> <p>Currently, mineral rights are regulated through the Mining Regulations, Coal Regulations and Dredging Regulations — which are currently in place under the NWTLA. The <i>Mineral Resources Act</i> and regulations under the MRA will replace these when it comes into force. Petroleum and natural gas rights issuance, management and administration of licenses are issued pursuant to the <i>Petroleum Resources Act</i> for the onshore in the NWT.</p> <p>The GNWT's <i>Protected Areas Act</i> (2019) provides a legislative framework for protecting, conserving and maintaining biodiversity, ecological integrity and cultural continuity of the NWT through the creation of a network of permanent protected areas that are representative of the ecosystems and cultural landscapes found in the territory. The Act describes the processes of – and parties responsible for – choosing a candidate protected area, establishing a protected area, and managing protected areas. It was created in collaboration with Indigenous governments and organizations, regulatory boards, stakeholders and the public (GNWT, n.d.).</p> <p>The GNWT's <i>Community Planning and Development Act</i> (2011) provides a legislative framework for the processes of municipal planning, area development plans, zoning bylaws, development permit application processes, and subdivision of land (GNWT, 2011).</p>

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Figure 9A.1 Northwest Territories Health and Social Services Authority Coverage



Source: <https://www.practicenwt.ca/en/map-nwt>

9A.2.2 Regional Policies

The Project spans two regions of the NWT, the Sahtu and the Dehcho, some of which have unique or specific policy or regulatory frameworks that are relevant to consider when assessing potential effects of the Project. Table 9A.2 provides a summary of the regional level policy frameworks for the five socio-economic VCs.

Table 9A.2 Relevant Regional Regulations and Policies

Socio-economic VC	Description of Relevant Regional (Sahtu or Dehcho) Level Policy Frameworks
Human Health and Community Wellness	<p>There are no specific human health and community wellness policies for the Sahtu or Dehcho regions that affect, or are affected by, the Project.</p> <p>There are Regional Wellness Councils (RWCs), each comprised of seven residents, that serve as an advisory body to the NTHSSA. Their role is to provide advice about health and social services, the priorities under the territorial plan, and the promotion of health and wellness. The RWCs may also seek out opinions and information from residents of the respective region about health and social services. They help to ensure that the regional voice within the health system is heard. The RWCs of relevance to the Project are:</p> <ul style="list-style-type: none"> • Dehcho RWC • Sahtu RWC <p>The <i>Déline Final Self Government Agreement</i> is a stand-alone self-government agreement that establishes a community-based, public Indigenous government for the Sahtu Dene and Métis of Déline pursuant to chapter 5 and appendix B of the <i>Sahtu Dene and Métis Comprehensive Land Claim Agreement (SDMCLA)</i> (Indian and Northern Affairs Canada, 1993) (described in Employment and Economy, below). Its signatories are the Déline First Nation Band, Déline Land Corporation, the GNWT and Government of Canada. Its provisions include health, child and family services, marriage, liquor, language, culture and spirituality.</p>
Education, Skills and Training	<p>The <i>Déline Final Self Government Agreement</i> has provisions pertaining to adult education, training, and post-secondary education.</p> <p>Aurora College is responsible for the delivery of adult and post-secondary education programs. The college has CLCs in the Sahtu region that offer Adult Literacy and Basic Education programs, Annual program offerings vary annually.</p> <p>The Dehcho Divisional Education Council (DEC) oversees the operations of nine K-12 schools in its district. The Sahtu Divisional Education Council oversees the operations of five K-12 schools in its district. DECs are jointly responsible for the governance and direction of schools in their regions. DECs establish goals and objectives, develop policy and budgets, and hire their Superintendents. DECs operate within local, territorial and federal laws, and derive their authority from the NWT Education Act.</p>

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Socio-economic VC	Description of Relevant Regional (Sahtu or Dehcho) Level Policy Frameworks
Employment and Economy	<p>The SDMCLA (Indian and Northern Affairs Canada, 1993) with the Government of Canada was created for a number of purposes including: encourage the self-sufficiency of the Sahtu Dene and Metis and to enhance their ability to participate fully in all aspects of the economy; provide the Sahtu Dene and Métis with specific benefits, including financial compensation, land and other economic benefits; and provide the Sahtu Dene and Métis with wildlife harvesting rights and the right to participate in decision making concerning wildlife harvesting and management.</p> <p>The SDMCLA provides direction on matters pertaining to resource royalties, taxation, programs for economic development. It also describes the extent of liability that a proponent has regarding the loss or damage to property or equipment used in wildlife harvesting or to wildlife harvested, present and future loss of income from wildlife harvesting, present and future loss of wildlife harvested for personal use or which is provided by the participants to other participants for their personal use.</p> <p>The <i>Déline Final Self Government Agreement</i> has provisions pertaining to income support, licensing of businesses, business activities, and persons engaged in business, gaming and gambling, taxation, and economic development.</p>
Infrastructure, Services and Institutional Capacity	<p>The <i>Déline Final Self Government Agreement</i> has provisions pertaining to social housing, early childhood education, education from kindergarten to grade 12, adult education, training, post-secondary education, justice, local services including sewers, drainage systems, water distribution and supply, garbage and waste, ambulance services, and recreation, local transportation systems, community roads, and granting of utility franchises.</p>
Non-Traditional Land Use	<p>The SLUP is based on the SDMCLA (Indian and Northern Affairs Canada, 1993) and provides direction to community organizations, governments, regulators and applicants about the conservation, development and use of land, water and resources within the Sahtu Settlement Area (SSA; hereafter referred to as the Sahtu Region). It also outlines a vision and goals for the conservation, development and use of land within the Sahtu Region and provides direction to achieve the vision and goals in the form of Conformity Requirements (zones and conditions). The SLUP provides direction on a variety of land uses and land use issues (with the exception of subsistence use or harvesting activities of the Sahtu Dene and Métis) (SLUPB, 2013).</p> <p>Specific to the areas to which the Sahtu Land Use Plan (SLUP) applies, the Project must meet the 13 general conformity requirements (CR) of the SLUP (SLUPB, 2023).</p> <p>The Dehcho Land Use Plan is currently under development by the Land Use Planning Committee.</p> <p>The <i>Déline Final Self Government Agreement</i> has provisions pertaining to local services including land use planning, zoning and subdivision control, and community lands.</p>

9A.2.3 Municipal Policies

The Project potentially affects seven communities, some of which have unique or specific policy or regulatory frameworks that are relevant to consider when assessing potential effects of the Project. Table 9A.3 provides a summary of the municipal level policy frameworks for the five socio-economic VCs.

Table 9A.3 Relevant Municipal Policy Frameworks

Socio-economic VC	Description of Relevant Municipal Policy or Guidance Frameworks
Human Health and Community Wellness	<p>There are no specific local level human health and community wellness policies or bylaws that affect, or are affected by, the Project. The communities that are local to the Project, Wrigley, Tulita and Norman Wells, each have a Community Wellness Plan, as do communities in the broader region (including Fort Simpson in the Dehcho and Délı̄ne, Colville Lake and Fort Good Hope in the Sahtu Region). Each plan is tailored to specific health and wellness needs of the community, and identified by community members during engagement activities, where engagement took place (GNWT-HSS, n.d.b.). These plans are:</p> <ul style="list-style-type: none"> • Wrigley (Pehdzéh Kì First Nation) Health and Wellness Plan • Tulita (Tulita Dene Band) Health and Wellness Plan • Norman Wells Health and Wellness Plan • Fort Simpson (Łíídlı̄ Kųę First Nation) Health and Wellness Plan • Délı̄ne Community Wellness Plan • Colville Lake (Behdzi Ahda First Nation) Wellness Plan • Fort Good Hope (K'asho Got'ine Charter Community) Community Wellness Plan
Education, Skills and Training	<p>There are no specific local level education and training policies that affect or are affected by the development of the Project. CLCs in each community offer an Adult Literacy and Basic Education program. Annual course offerings at each CLC vary by location. Past courses offered at the Norman Wells CLC have included literacy and essential skills training (including digital literacy), pre-trades math, industrial mechanics, Possession and Acquisition Licence courses (firearms safety training), first aid, driver's licence certification and Class 1-3 driver training, Construction Basics, Heavy Equipment Operation training, and Workplace Hazardous Materials Information System training.</p>
Employment and Economy	<p>There are no specific local level employment and economy policies or guiding documents that affect or are affected by the development of the Project.</p>
Infrastructure, Services and Institutional Capacity	<p>The Norman Wells Community Emergency Plan (2020) and Norman Wells Recreation Master Plan (2021) may be affected by the development of the Project.</p>

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Socio-economic VC	Description of Relevant Municipal Policy or Guidance Frameworks
Non-Traditional Land Use	There are two municipal land planning documents associated with NWT communities under assessment for this Project. The Town of Norman Wells Community Plan (2021 Draft) provides a policy framework for land use and strategic policy development in the community. It was prepared in accordance with the <i>Cities, Towns and Village Act</i> S.N.W.T. 2003, c.22 as amended and the <i>Community Planning and Development Act</i> , S.N.W.T. 2011, c.22 as amended. The Town has also prepared Draft Zoning By-law #21-08 to ensure that development in the Town of Norman Wells is economically, environmentally, and socially responsible, and allows for the implementation of the goals and objectives of the Draft Community Plan. It includes high-level land use patterns and areas that will accommodate future growth and redevelopment in the Town. The Draft Community Plan, Section 5.2 Connected and Accessible, identifies the following policy “a. Encourage and promote the development of an all-season, all-season Project into the Town” and under Section 6.1 Implementation Plan, the following is identified as an action item to encourage, promote and permit: “a year-round, all-season Project into Town” with a timeline of two to five years (Town of Norman Wells, 2021a). In addition, the Town of Norman Wells has a Recreation Master Plan, dated April 29, 2021. This Plan includes plans for expanding and enhancing the community’s trail system (Town of Norman Wells, 2021b).

9A.3 Influence of Engagement

The GNWT obtained information and concerns regarding all socio-economic VCs from more than 200 individuals representing Indigenous Governments, Indigenous communities, and other affected parties throughout the planning of the Project.

Meetings and interviews were carried out with more than 65 Indigenous Governments, Indigenous communities, and other affected parties in LAA and RAA communities, including:

- ?Ehtseo Ayha School
- Ayoni Keh Land Corporation
- Behdzı Ahda ?ehdzo Got’ıne (Renewable Resources Council)
- Cassien Edgi Health Centre
- Chief Albert Wright School
- Colville Lake (Behdzi Ahda’ First Nation)
- Colville Lake Gas Station
- Colville Lake Health Station
- Colville Lake School
- Community of Fort Good Hope
- Community women
- Délıne Got’ine Government Land, Resources and Environment Department
- Dora Gully Health Centre

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- Fort Good Hope businesses
- Fort Good Hope CLC
- Fort Good Hope Community Meeting
- Fort Good Hope Dene Band
- Fort Simpson businesses
- Fort Simpson CLC
- Fort Simpson Health Centre
- Fort Simpson Métis
- Fort Simpson Youth
- Hamlet of Tulita
- Harriet Gladue Health Centre
- Indigenous Women
- Knowledge Keepers Circle
- Łíídlı́ Kúé First Nation
- Łíídlı́ Kúé Regional High School
- Łíídlı́ Kúé Renewable Resources Council
- Mackenzie Mountain School
- Norman Wells and District Chamber of Commerce
- Norman Wells businesses
- Norman Wells CLC
- Norman Wells Mental Health and Addictions
- Sahtu Dene and Métis of Tulita – Tulita Dene Band
- Sahtu Divisional Education Council
- Sahtú Got'iné Regional Health and Social Services Centre
- Sahtu Land and Water Board
- SLUPB
- Sahtu Youth Network
- Sister Celeste Child Development Centre
- Town of Norman Wells
- Tulita CLC
- Tulita District Land Corporation
- Tulita Elders
- Tulita Fire Services
- Tulita Renewable Resources Council

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- Tulita Wellness Centre
- Tulita Youth

Engagement with Indigenous Governments, Indigenous communities, and other affected parties provided views, comments and recommendations related to all five socio-economic VCs. A summary of the key comments and information provided is summarized in Table 9A.4.

Table 9A.4 Summary of Comments from Indigenous Governments, Indigenous Organizations and Other Affected Parties

Socio-Economic VC	Summary of Comments and Information Provided by Indigenous Governments, Indigenous Organizations, and Other Affected Parties
Human Health and Community Wellness	<ul style="list-style-type: none"> • Information provided about health services in Norman Wells, Tulita, Fort Good Hope, Délı̄ne, and Colville Lake, including service gaps and needs • Need for planning and time to prepare for the effects of the Project was highlighted. • Concerns raised related to increased demand for services considering the lack of existing services related to health and wellness, increased drug and alcohol abuse – worsening an already serious problem, risk of accidents, and danger and crime on the road involving vulnerable populations (youth, women). • Potential benefits raised included increased social life and ability to see family, participation of youth in sports, and easier access to health services within the LAA and potentially to larger centres. • Concerns raised about potential increases in disease outbreaks, demand on services due to drugs, alcohol and associated issues like family violence. • Potential benefits raised included ease of access for things like scans or dental work, particularly in the LAA, and increased mental wellness due to the ability to travel between communities to see family/friends and participate in events.
Education, Training and Skills	<ul style="list-style-type: none"> • Information provided on the types of training programs needed in the communities and the types of training anticipated to be needed, including heavy equipment operators, plumbers, electricians, carpenters, and iron workers. • Information provided on potential for increased employment rates in the LAA and specific training requirements in communities. • Concerns raised included lack of capacity to meet increased demand for training programs in the LAA and the need to prepare and have enough time before construction begins. • Potential benefits included increases to the graduation rate and employment opportunities, as well as potential easier access to facilities at Norman Wells. • Community members emphasized the need for additional funding required to deliver apprenticeship training programs locally (via a satellite campus), and the desire among residents to receive on-the-job training in addition to formal training and skills upgrading programs, because the time commitment required for upgrading is considerable and can serve as a deterrent. • Benefits raised included the potential ability to offer more courses due to it being easier to attract instructors and get supplies.

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Socio-Economic VC	Summary of Comments and Information Provided by Indigenous Governments, Indigenous Organizations, and Other Affected Parties
Employment and Economy	<ul style="list-style-type: none"> • Concerns raised about whether or not jobs would actually be available locally or would be filled by people from the south or outside the territory. • Benefits highlighted include potential decreased cost of goods and cost of living in LAA communities, and also to some extent in northern RAA communities associated with using Norman Wells as a staging area or place to stockpile goods. • Municipal staff noted there is a lot of local knowledge in road building as well as equipment for road construction which should be used for the Project and that hiring locally should be top priority. • Comments shared that there may be local contracting business opportunities for the Project and ROW maintenance (and consequent economic benefits) and that hiring locally has many social and economic spin-off benefits, but in some cases local businesses may not be ready or have the capacity to get contracts. • Potential benefits raised indicated that the costs of doing business will decrease due to all-season trucking of goods. Some comments made that airlines may be adversely affected by the Project due to a decrease in business but the volume of medical travel that may still be needed will mitigate that. • Anticipate an increase in tourism in communities along the Project which was identified as a positive for local businesses but also an area of concern due to lack of infrastructure and plans/preparedness to accommodate increased visitors and tourists. • An increase in tourism will have many positive business effects for contracting companies, hotels, restaurants, camps, and gas stations), but concerns were raised about the need to prepare and ensure there is sufficient infrastructure. Additionally, all-season road access may attract and retain more new residents (and potential professional staff) to local communities as a result of the fact these communities will be less remote.
Infrastructure, Services and Institutional Capacity	<ul style="list-style-type: none"> • Concerns were raised about possible additional pressure on water, sewer and solid waste by construction worker camps, increased use of recreation facilities/programs by non-local construction workers and then during operations by neighbouring communities (e.g., intermural hockey), increased demand for fire and emergency services due to the increased number and severity of Project traffic accidents, and increased need for health services due to increased drug and alcohol use by community members (due to all-season access). • Information provided on the need to prepare sufficient infrastructure in isolated communities to appropriately handle the additional traffic volume and visitors that would be present all-season. • Senior staff of Sahtú Got'iné Regional Health and Social Services Centre provided information on the provision of health services to Norman Wells and Tulita, identified the possible increased demand for health services by non-local construction workers, and increased demands for Norman Wells health services from smaller communities all-season. • Concerns raised included the potential need for ambulance services and more trained first responders due to Project accidents, as well as more counselling support for family members of those involved in serious Project traffic accidents.

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Socio-Economic VC	Summary of Comments and Information Provided by Indigenous Governments, Indigenous Organizations, and Other Affected Parties
Non-Traditional Land and Resource Use	<ul style="list-style-type: none">• SLUPB provided information on the scale of potential effects of the Project on land uses, potential need for the Project to be involved in “land swaps” with private landowners, the potential for land and habitat disturbances, Project changes on how the land and water are used by residents (including hunting), as well as aesthetics.• Municipal staff and other affected parties provided information on potential effects of the Project on business activity (including mineral and recreation) and visitor volumes in local communities, community improvement initiatives that may be triggered or funded due to the Project, potential effects of the Project on recreation activities (including fishing), community access to participate materials, as well as aesthetics.

9A.3.1 Regulatory Engagement and Information from the GNWT Departments and Agencies

Meetings and interviews were conducted with senior staff of the GNWT departments and agencies that have mandates related to any of the socio-economic VCs. Department staff also provided information relevant to the existing conditions in communities, which has provided information on potential Project effects in each of the socio-economic VCs. Meetings were also held with several regional and federal regulators. The GNWT departments, agencies, and regulators that were engaged include:

- Sahtu Land and Water Board
- SLUPB
- The GNWT Dept of Environment and Climate Change
- The GNWT (ECE
- The GNWT EIA
- The GNWT HSS
- The GNWT ITI
- The GNWT INF
- The GNWT Justice
- The GNWT MACA
- Housing NWT
- NWT Power Corporation
- Parks Canada
- RCMP

Engagement with the GNWT departments, agencies, and regulators provided views, comments and recommendations in all five socio-economic VCs, as summarized in Table 9A.5.

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Table 9A.5 Summary of Comments from Regulatory Organizations

Socio-Economic VC	Summary of Comments and Information Provided from Regulatory Organizations
Human Health and Community Wellness	<ul style="list-style-type: none"> Engagement with senior staff of the GNWT-HSS and MACA provided information on the provision of health, social and emergency services and recreation services. Engagement to date has provided information on potential effects of the Project on increased demand for services, easier access to services and the ability for addictive substances to move more freely between communities, as well as concerns about increased crime and accident rates.
Education, Training and Skills	<ul style="list-style-type: none"> Senior staff of the GNWT's ECE and adult educators from the Norman Wells and Tulita CLCs provided information on the level of education and training programs available in the communities, including the lack of available trades training programs in the communities. They noted the need for the communities to be informed about the timing of Project construction and be provided with more information on the education and certification requirements needed for the construction jobs.
Employment and Economy	<ul style="list-style-type: none"> Senior staff of the GNWT EIA observed that the Project will have positive effects such as: <ul style="list-style-type: none"> increase in local employment (especially in trades), thereby stimulating a stronger economy; increased capacity building for individuals and businesses; and improved local resident access to services. The GNWT representatives from INF, HSS, MACA and NWT HC stated that more economic activity in towns along Project alignment can be expected – in particular, Wrigley, which was formerly the ‘end of the road’. They also expect the Project to stimulate the economy/tourism which will create micro economies and provide opportunities for local artisans to sell handicrafts; spur development of a waste management and remediation services hub in Norman Wells; and promote the agriculture sector, and hydro-electric development. At the same time, while the Project will provide access to new areas for harvesting and trapping, it could affect some traditional harvesting areas.
Infrastructure, Services and Institutional Capacity	<ul style="list-style-type: none"> Information was provided by MACA, JUS, HSS, EIA, NWT HC and RCMP regarding the possible pressure of non-local construction workers on housing, the possible increased need for community emergency services due to Project traffic accidents, increased pressure on social services by non-local construction workers, and increased pressure on health and social services due to increased local population use of drugs and alcohol. Concerns were voiced about possible increased demand on local safe drinking water supplies and landfills by construction worker camps, and the lack of communication infrastructure along the proposed Project (in case of emergencies).

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Socio-Economic VC	Summary of Comments and Information Provided from Regulatory Organizations
Non-Traditional Land and Resource Use	<ul style="list-style-type: none">• The GNWT-ECC provided information on relevant land use legislation and policies, non-traditional land use planning, potential effects of the Project on non-traditional land use, including changing patterns in land access for recreational use, and potential changes in the volume of tourists.• Information was provided on environmental issues that had been encountered with the CCASAR for consideration in the development of the Project – in particular, permafrost; that prior to Project construction, land use status will need to be changed from “non developed” to “developed”; that proactive planning is essential for infrastructure projects in the NWT; and that holders of permits granted for the Projects be required to carry out ongoing environmental monitoring.

APPENDIX 9B

Detailed Project Interactions with the Socio-Economic Environment

Appendix 9B DETAILED PROJECT INTERACTIONS WITH THE SOCIO-ECONOMIC ENVIRONMENT

Anticipated adverse interactions are identified in the following tables with a check mark (✓) and anticipated positive interactions between Project activities and the VC effects are identified with a “P”. Justification for no effect (indicated by a dash [-]) is provided in the tables. Interactions are discussed in detail in Chapter 9, Sections 9.5 through 9.9, in the context of effects pathways, standard and Project-specific mitigation/enhancement, and residual effects.

9B.1 Project Interactions with Human Health and Community Wellness

See Table 9B.1 for expected interactions between the human health and community wellness VC and the Project’s physical activities.

Table 9B.1 Project Interactions with Human Health and Community Wellness

Physical Activities	Timing	Potential Effects								
		Change in population composition and migration	Change in population health	Change in community/ family and social ties	Change food security	Change in social pressures	Change in nuisance	Change in drinking and recreational water quality	Change in public safety	Change in social determinants of health
Construction Phase										
Mobilization of equipment, materials and fuel, resupply and demobilization	Summer and winter		-	-	-	-	✓	✓	-	-
Establishment and operation of camps	Year-round	P	✓	-	-	✓	✓	✓	✓	P
Site preparation of ROW, access and workspaces	Winter	-	-	-	-	-	✓	✓	-	-

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Physical Activities	Timing	Potential Effects								
		Change in population composition and migration	Change in population health	Change in community/family and social ties	Change food security	Change in social pressures	Change in nuisance	Change in drinking and recreational water quality	Change in public safety	Change in social determinants of health
Pit and quarry development and operations, including blasting, crushing, sorting and stockpiling	Year-round	-	-	-	-	-	✓	✓	-	-
Material haul	Year-round	-	-	-	-	-	✓	✓	-	-
Embankment and quarry access road construction, including road cuts	Winter	-	-	-	-	-	✓	✓	-	-
Culvert installations	Summer	-	-	-	-	-	✓	✓	-	-
Road base, compaction and surfacing	Summer	-	-	-	-	-	✓	✓	-	-
Closure and reclamation of MVWR and temporary borrow sources / quarries, camps and workspaces	Summer	P	✓	-	-	✓	✓	✓	✓	P
Employment and contracted goods and services ¹	Year-round	P	✓	-	-	✓	-	-	✓	P
Operations and Maintenance Phase										
Borrow source and quarry operations, including blasting, crushing, sorting and stockpiling	Summer	-	-	-	-	-	✓	✓	-	-
Material haul and stockpiling	Summer	-	-	-	-	-	✓	✓	-	-
Operation of, and activities at maintenance yards	Year-round	P	✓	✓	-	✓	✓	✓	✓	✓
Water withdrawal for dust control	Summer	-	-	-	-	-	✓	✓	-	-
Employment and contracted goods and services ¹	Year-round	P	✓	-	-	✓	-	-	-	P

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Physical Activities	Timing	Potential Effects								
		Change in population composition and migration	Change in population health	Change in community/family and social ties	Change food security	Change in social pressures	Change in nuisance	Change in drinking and recreational water quality	Change in public safety	Change in social determinants of health
Presence and public use of the Project	Year-round	P	P	P	P	✓	✓	✓	✓	P
Project and access road maintenance including snow clearing, repair, grading, dust control	Year-round	-	-	-	✓	-	✓	✓	-	-
Vegetation control	Summer	-	-	-	✓	-	✓	-	-	-
Bridge and culvert maintenance	As needed	-	-	-	✓	-	✓	✓	-	-

Notes:

✓ = Potential interaction

- = No interaction

P = Anticipated positive interactions between Project activities and the VC effects

¹ Project employment and expenditures are generated by most Project activities and components and are the main drivers of many socio-economic effects. Rather than acknowledging this by placing a check mark against each of these activities, "Employment and contracted goods and services" have been introduced as an additional component under each Project phase.

9B.2 Project Interactions with Education, Training and Skills

See Table 9B.2 for expected interactions between education, training and skills and the Project's physical activities.

Table 9B.2 Project Interactions with Education, Training and Skills

Physical Activities	Timing	Environmental Effects		
		Change in level of education	Change in access	Change in capacity to meet demand
Construction Phase				
Mobilization of equipment, materials and fuel, resupply and demobilization	Summer and winter	-	-	-
Establishment and operation of camps	Year-round	-	-	-
Site preparation of ROW, access and workspaces	Winter	-	-	-
Pit and quarry development and operations, including blasting, crushing, sorting and stockpiling	Year-round	-	-	-
Material haul	Year-round	-	-	-
Embankment and quarry access road construction, including road cuts	Winter	-	-	-
Culvert installations	Summer	-	-	-
Road base, compaction and surfacing	Summer	-	-	-
Closure and reclamation of MVWR and temporary borrow sources / quarries, camps and workspaces	Summer	-	-	-
Employment and contracted goods and services ¹	Year-round	P	P	✓
Operations and Maintenance Phase				
Borrow source and quarry operations, including blasting, crushing, sorting and stockpiling	Summer	-	-	-
Material haul and stockpiling	Summer	-	-	-
Operation of, and activities at maintenance camps	Year-round	-	-	-
Water withdrawal for dust control	Summer	-	-	-

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Physical Activities	Timing	Environmental Effects		
		Change in level of education	Change in access	Change in capacity to meet demand
Employment and contracted goods and services ¹	Year-round	P	P	✓
Presence and use of the Project	Year-round	P	P	✓
Project and access road maintenance including snow clearing, repair, grading, dust control	Year-round	-	-	-
Vegetation control	Summer	-	-	-
Bridge and culvert maintenance	As needed	-	-	-

Notes:

✓ = Potential interaction

- = No interaction

P = Anticipated positive interactions between Project activities and the VC effects

¹ Project employment and expenditures are generated by most Project activities and components and are the main drivers of many socio-economic effects. Rather than acknowledging this by placing a check mark against each of these activities, "Employment and contracted goods and services" have been introduced as an additional component under each Project phase.

9B.3 Project Interactions with Employment and Economy

See Table 9B.3 for expected interactions between employment and economy and the Project's physical activities.

Table 9B.3 Project Interactions with Employment and Economy

Physical Activities	Timing	Project Effects					
		Change in employment and income	Change in GDP and government revenues	Change in ec. dev. opportunities and capacity of local businesses	Change in cost of living / consumer prices	Change in traditional economy	Change in the GNWT operations Employment
Construction Phase							
Mobilization of equipment, materials and fuel, resupply and demobilization	Summer and winter	-	-	-	-	-	-
Establishment and operation of camps	Year-round	-	-	-	-	-	-
Site preparation of ROW, access and workspaces	Winter	-	-	-	-	-	-
Pit and quarry development and operations, including blasting, crushing, sorting and stockpiling	Year-round	-	-	-	-	-	-
Material haul	Year-round	-	-	-	-	-	-
Embankment and quarry access road construction, including road cuts	Winter	-	-	-	-	-	-
Culvert installation	Summer	-	-	-	-	-	-
Road base, compaction and surfacing	Summer	-	-	-	-	-	-
Closure and reclamation of MVWR and temporary borrow sources / quarries, camps and workspaces	Summer	-	-	-	-	✓	-
Employment and contracted goods and services ¹	Year-round	P	P	P	-	✓	P

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Physical Activities	Timing	Project Effects					
		Change in employment and income	Change in GDP and government revenues	Change in ec. dev. opportunities and capacity of local businesses	Change in cost of living / consumer prices	Change in traditional economy	Change in the GNWT operations Employment
Operations and Maintenance Phase							
Borrow source and quarry operations, including blasting, crushing, sorting and stockpiling	Summer	-	-	-	-	-	-
Material haul and stockpiling	Summer	-	-	-	-	-	-
Operation of, and activities at maintenance camps	Year-round	-	-	-	-	-	-
Water withdrawal for dust control	Summer	-	-	-	-	-	-
Employment and contracted goods and services ¹	Year-round	P	P	P	-	✓	P
Presence and public use of the Project	Year-round	P	P	P	P	✓	P
Project and access road maintenance including snow clearing, repair, grading, dust control	Year-round	-	-	-	-	-	-
Vegetation control	Summer	-	-	-	-	-	-
Bridge and culvert maintenance	As needed	-	-	-	-	-	-

Notes:

✓ = Potential interaction

- = No interaction

P = Anticipated positive interactions between Project activities and the VC effects

¹ Project employment and expenditures are generated by most Project activities and components and are the main drivers of many socio-economic effects. Rather than acknowledging this by placing a check mark against each of these activities, "Employment and contracted goods and services" have been introduced as an additional component under each Project phase.

9B.4 Project Interactions with Infrastructure

See Table 9B.4 for expected interactions between infrastructure, services and institutional capacity and the Project's physical activities.

Table 9B.4 Project Interactions with Infrastructure, Services and Institutional Capacity

Physical Activities	Timing	Environmental Effects			
		Change in housing and accommodation	Change in social infrastructure and services	Change in public infrastructure and services	Change in institutional facilities and services
Construction Phase					
Mobilization of equipment, materials and fuel, resupply and demobilization	Summer and winter	-	-	✓	-
Establishment and operation of camps	Year-round	-	-	✓	-
Site preparation of ROW, access and workspaces	Winter	-	-	✓	-
Pit and quarry development and operations, including blasting, crushing, sorting and stockpiling	Year-round	-	-	-	-
Material haul	Year-round	-	-	-	-
Embankment and quarry access road construction, including road cuts	Winter	-	-	-	-
Culvert installations	Summer	-	-	-	-
Road base, compaction and surfacing	Summer	-	-	-	-
Closure and reclamation of MVWR and temporary borrow sources / quarries, camps and workspaces	Summer	-	-	✓	-
Employment and contracted goods and services ¹	Year-round	✓	✓	✓	✓
Operations and Maintenance Phase					
Borrow source and quarry operations, including blasting, crushing, sorting and stockpiling	Summer	-	-	-	-
Material haul and stockpiling	Summer	-	-	-	-

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Physical Activities	Timing	Environmental Effects			
		Change in housing and accommodation	Change in social infrastructure and services	Change in public infrastructure and services	Change in institutional facilities and services
Operation of, and activities at maintenance camps	Year-round	✓	-	✓	-
Water withdrawal for dust control	Summer	-	-	✓	-
Employment and contracted goods and services ¹	Year-round	✓	✓	✓	✓
Presence and public use of the Project	Year-round	✓	✓	✓	✓
Project and access road maintenance including snow clearing, repair, grading, dust control	Year-round	✓	-	✓	-
Vegetation control	Summer	-	-	-	-
Bridge and culvert maintenance	As needed	✓ -	-	✓	-

Notes:

✓ = Potential interaction

- = No interaction

P = Anticipated positive interactions between Project activities and the VC effects

¹ Project employment and expenditures are generated by most Project activities and components and are the main drivers of many socio-economic effects. Rather than acknowledging this by placing a check mark against each of these activities, "Employment and contracted goods and services" have been introduced as an additional component under each Project phase.

9B.5 Project Interactions with Non-Traditional Land and Resources

See Table 9B.5 for expected interactions between non-traditional land and resource use and the Project's physical activities.

Table 9B.5 Project-Environment Interactions with Non-Traditional Land and Resource Use

Physical Activities	Timing	Effects			
		Change in non-traditional land use	Change in access	Change in aesthetics	Change in resource use
Construction Phase					
Mobilization of equipment, materials and fuel, resupply and demobilization	Summer and winter	-	✓	✓	-
Establishment and operation of camps	Year-round	-	✓	✓	✓
Site preparation of ROW, access and workspaces	Winter	-	✓	✓	✓
Pit and quarry development and operations, including blasting, crushing, sorting and stockpiling	Year-round	-	✓	✓	✓
Material haul	Year-round	✓	✓	✓	-
Embankment and quarry access road construction, including road cuts	Winter	✓	✓	✓	✓
Culvert installations	Summer	✓	✓	✓	✓
Road base, compaction and surfacing	Summer	✓	✓	✓	
Closure and reclamation of MVWR and temporary borrow sources / quarries, camps and workspaces	Summer	✓	✓	✓	✓
Employment and contracted goods and services ¹	Year-round	-	-	-	-
Operations and Maintenance Phase					
Borrow source and quarry operations, including blasting, crushing, sorting and stockpiling	Summer	-	✓	✓	✓
Material haul and stockpiling	Summer	-	✓	✓	-
Operation of, and activities at maintenance camps	Year-round	✓	✓	✓	-
Water withdrawal for dust control	Summer	-	✓	✓	-

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Physical Activities	Timing	Effects			
		Change in non-traditional land use	Change in access	Change in aesthetics	Change in resource use
Employment and contracted goods and services ¹	Year-round	✓	-	-	✓
Presence and use of the Project	Year-round	✓	✓	✓	✓
Project and access road maintenance including snow clearing, repair, grading, dust control	Year-round	✓	✓	✓	✓
Vegetation control	Summer	✓	-	✓	-
Bridge and culvert maintenance	As needed	✓	-	✓	-

Notes:

✓ = Potential interaction

- = No interaction

P = Anticipated positive interactions between Project activities and the VC effects

¹ Project employment and expenditures are generated by most Project activities and components and are the main drivers of many socio-economic effects. Rather than acknowledging this by placing a check mark against each of these activities, “Employment and contracted goods and services” have been introduced as an additional component under each Project phase.

APPENDIX 9C

Existing Socio-Economic Conditions Document

Environmental Assessment of the Mackenzie Valley Highway Project: Existing Socio-Economic Conditions

Final

October 2023

PREPARED FOR:
The Government of the Northwest Territories



4916 - 49Street, Northway Building, Yellowknife, NWT X1A 1P3

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List of Acronyms

CAWS	Chief Albert Wright School
CHR	Community Health Representatives
CJYS	Chief Julian Yendo School
CLC	Community Learning Centre
CP	Community Plan
DAR.....	Developer's Assessment Report
DDEC	Dehcho Divisional Education Council
DLUPC	Dehcho Land Use Planning Committee
EA	Environmental assessment
ECE	(GNWT Department of) Education, Culture and Employment
ENR.....	(GNWT Department of) Environment and Natural Resources
FTE	Full-time equivalent
GDP	Gross domestic product
GNWT	Government of the Northwest Territories
HSS.....	(GNWT Department of) Health and Social Services
KLOI	Key Lines of Inquiry
LAA	Local Assessment Area
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVH	Mackenzie Valley Highway
MVRMA.....	<i>Mackenzie Valley Resource Management Act</i>
NWT	Northwest Territories
NWTHSSA	Northwest Territories Health and Social Services Authority
NWTPC	Northwest Territories Power Corporation
NWTHC.....	Northwest Territories Housing Corporation
RAA.....	Regional Assessment Area
SDEC	Sahtu Divisional Education Council
SEIA	Socio-economic impact assessment
SEWG	(NWT) Socio-economic Working Group
SLUP.....	Sahtu Land Use Plan
SON	Subjects of note
SSA.....	Sahtu Settlement Area
TOR.....	Terms of Reference
VSEC	Valued socio-economic component
WHMIS.....	Workplace Hazardous Materials Information System

1. Introduction

1.1 Purpose

The Government of the Northwest Territories (GNWT), Department of Infrastructure (INF), is proposing the Mackenzie Valley Highway Project (the Project), which involves the extension of the Mackenzie Valley Highway from Wrigley to Norman Wells, Northwest Territories (NWT). The Project consists of constructing an approximately 281 kilometre (km) all-season gravel highway that largely follows the route of the existing Mackenzie Valley Winter Road (MVWR) and includes the construction and operation of temporary and permanent borrow and quarry sources. The Project will pass through the Dehcho Region and a portion of the Tulita District of the Sahtu Region within the NWT (**Figure 1**).

The Project is subject to an environmental assessment (EA) and the requirements of Part 5 of the *Mackenzie Valley Resource Management Act* (MVRMA). This Report presents the existing (baseline) conditions of the communities of Wrigley, Tulita, Norman Wells, Fort Simpson, Fort Good Hope, Colville Lake and Délı̄në for the five valued component (VC)s to support the socio-economic impact assessment (SEIA). These are a component of the Developer's Assessment Report (DAR) as required by the Mackenzie Valley Environmental Impact Review Board (MVEIRB)'s Terms of Reference for the Project.

1.2 Preliminary Issues Scoping

Scoping is an essential generic step for EAs under the MVRMA.¹ The preliminary issues scoping used for this Technical Data Report follows the Mackenzie Valley Environmental Impact Review Board (MVEIRB)'s Socio-Economic Impact Assessment Guidelines².

Scoping involves:

- Following the Terms of Reference³ (TOR) (which is the primary determinant of the assessment scope);
- The identification of concerns and issues that will need to be addressed in the Environmental Assessment (EA) process; and,
- Assisting in the establishment of the spatial and temporal scope of the assessment.

Preliminary concerns and issues have been identified that are to be addressed in the SEIA process. This includes the identification of aspects of the socio-economic environment that are considered important, such as the 'Key Lines of Inquiry' (KLOI) per the 2015 TOR and initial VCs⁴ (see **Section 2.2**). To identify preliminary socio-economic considerations and issues, the following sources have been reviewed:

- MVEIRB 2015 TOR;
- MVEIRB *Socio-Economic Impact Assessment Guide's* Considerations for the Scope of Assessment and Level of SEIA Effort (Table 5);

¹ MVEIRB. (2004). *Environmental Impact Assessment Guidelines*.

² MVEIRB. (2007). *Socio-Economic Impact Assessment Guidelines*.

³ MVEIRB. (2015). *Terms of Reference EA 1213-02 Mackenzie Valley Highway Extension Project Wrigley to Norman Wells Government of Northwest Territories*.

⁴ In this document, "Valued Components" and "VCs" are socio-economic valued components.

- MVEIRBs 2020 Perspectives Paper 'Evolving Environmental Impact Assessments in the Mackenzie Valley and Beyond'⁵; and,
- Environmental assessments of other comparable projects (e.g., Tłı̄ch̄o All-Season Road Project, the Inuvik to Tuktoyaktuk Highway).

1.2.1 Key Lines of Inquiry from the 2015 TOR

The 2015 TOR identifies the following as KLOIs (TOR Section 7.2) and notes that the EA should focus on these priority issues:

- Local social and economic considerations; and,
- Caribou, moose and harvesting.

TOR requirements for the KLOI are provided in TOR Section 7.2 and summarized below.

1.2.1.1 Local Social and Economic Considerations

Potential direct and indirect social and economic impacts of an all-season highway were raised in communities along the route during the MVEIRB scoping sessions held in Wrigley, Tulita, Norman Wells, Fort Good Hope, and Inuvik in September 2013. The TOR (Section 7.2.1) notes that during the sessions, community members identified existing social issues that could be worsened, and new issues that could arise, because of the all-season highway extension. These included concerns and potential effects of the development on community life, including human health and community wellness, and the capacity of social infrastructure including services to meet potentially increased demands.

Based on issues and concerns identified during the MVEIRB's scoping sessions, as per the TOR (Section 7.2.1, p. 25), the SEIA should specifically assess existing conditions and potential effects from the Project on the following (at both general and community-specific levels):

- "Availability of drugs and alcohol and related social changes at the community, family and individual levels;
- Human safety including collisions on the all-weather road, collisions with pedestrians in town, drunk driving, and the capacity for emergency response to accidents in communities and remote areas;
- Predicted changes in demands for social infrastructure (including, policing and crime, health services, and social services), and the adequacy of existing social infrastructure to meet those changes (including potential shortfalls); and
- Capacity of public physical infrastructure such as existing roads, water sources, quarries and quarry materials, and waste management facilities."

The TOR notes that during the MVEIRB's scoping sessions, several communities communicated interest in potential economic benefits of the Project and expressed concerns to MVEIRB about their readiness and capacity to take full advantage of these opportunities. As per the TOR (Section 7.2.1., pp. 25-26), the assessment should specifically describe and assess potential effects of the Project on the following (at both the general and community-specific levels):

- "Direct and indirect employment opportunities generated by the development and the potential for uptake of these opportunities locally by Indigenous peoples;
- Employment and income opportunities for every year of construction and operation, with particular reference to wage and salary employment by length of employment, form of employment (full time, part time, seasonal), skills category;
- Measures, plans and commitments for maximizing local and Indigenous employment and businesses;
- Maximizing local and Indigenous participation in contractor and sub-contractor business opportunities;

⁵ MVEIRB. (2020). *Evolving Environmental Impact Assessment in the Mackenzie Valley and Beyond*.

- Effects on capacity of local businesses to service other sectors during the construction phase;
- Cost of living and consumer prices for different types of goods;
- Proposed education and training programs required for highway-related construction and operation employment, including:
 - Local and regional training opportunities;
 - Timing and duration of programs, in relation to the highway development schedule;
 - Skills and experience gained in the highway workforce that could be applied to; other available projects or sectors;
 - The number of people expected to be employable and available;
 - The potential for local development of skills for senior professional positions (e.g., labourer/heavy equipment operator vs. supervisor /manager); and
 - Proposed programs that would be provided by or sponsored by the developer.
- The development's contribution to the Gross Domestic Product, provided separately for direct, indirect, and induced economic activities for the regional and (to the extent possible) territorial and national economies; and,
- Highway-related impacts on harvesting and the traditional economy and their effects on community income and household economies.”

1.2.1.2 Caribou, Moose and Harvesting

Concerns and potential impacts of the highway on caribou and moose with respect to harvesting is of key importance to the EA. The TOR (Section 7.2.2., pp. 26-27) requires an examination of the following, which will be considered in the assessment of the 'Access' component of the 'Non-traditional Land and Resource Use' VC, the 'Traditional Economy' component of the 'Employment and Economy' VC, and the 'Food Security' component of the 'Human Health and Community Wellness' VC:

- “Changes in access, including increased access to the land and surrounding lakes, as well as increased access to an environmentally and culturally sensitive areas;
- Changes in hunting and fishing pressures from people who do not reside in the communities along the route, and how highway-related changes in harvest pressures could impact the resource;
- Disturbance of harvest patterns, or loss or alteration of high-value harvest areas including:
 - Changes to harvest effort as perceived by harvesters;
 - Changes in harvester travel patterns;
 - Changes in harvest levels;
 - Changes in harvesters' costs; and
 - Competition among harvesters within and between communities as a result of increased access and loss or alteration to the land resulting from the project.
- Measures to avoid or minimize changes in the abundance, distribution, or quality of harvested species, or mitigate the consequences of such changes;
- Mechanisms to control project workforce-related hunting, fishing, or disturbance of wildlife; and
- Mechanisms of resource management agencies and other parties to manage hunting, and fishing by:
 - Resident hunters and fishers;
 - Non-resident hunters and fishers; and
 - Aboriginal⁶ harvesters.”

Potential effects to harvested wildlife resources is assessed in other VC assessment chapters, including Caribou and Moose, Wildlife and Birds.

⁶ Throughout this report, the term “Aboriginal” is used only if quoted from a source; otherwise, the term “Indigenous” is used.

1.2.2 2015 TOR Subjects of Note Related to the SEIA

'Subjects of note' (SON) identified in the TOR (Section 7.3, pp. 28-34) are issues of lower priority than the KLOI, but still require sufficient analysis to determine whether the highway extension is likely to cause significant adverse impacts. SONs that relate to changes to the socio-economic environment include the following:

- **Culture and Traditional Land Use** – potential effects of the highway extension on culture and traditional land uses including:
 - Indigenous languages;
 - Traditional lifestyles, values, and culture; and
 - Cultural and spiritual sites and activities.
- **Land Use** – potential impacts of the highway on land use, including:
 - Effects and management of increased access;
 - Effects to traditional land use, tourism, outfitting, hunting, fishing, recreation and other non-traditional uses;
 - Effects and changes to industrial land use and changes in access;
 - Patterns of use and changes in these patterns;
 - Effects to protected areas, parks, and environmentally and culturally sensitive areas;
 - Aesthetics; and,
 - Conformity with existing land use plans (e.g., Sahtu Land Use Plan).

Potential effects to other SONs are addressed in assessment chapters for Air Quality, Noise, Water Quality, Water Quantity, Vegetation, Caribou and Moose, Wildlife, Birds and Heritage Resources.

1.3 Valued Components⁷

Based on the 2015 TOR KLOI and SON, our experience with similar projects, and our professional experience/judgement, as well as discussions with K'alo-Stantec, review of other relevant projects, a preliminary list of anticipated VCs, indicators and the rationale for their inclusion are provided in **Table 1**. Note, only the VCs related to components of the human environment that are within DPRA's assessment scope of work are provided in **Table 1**. 'Heritage Resources' and 'Culture and Traditional Land Use' are reported on in K'alo-Stantec Technical Data Report – Heritage Resources and Technical Data Report – Cultural and Traditional Land Use. The results of the Heritage Resources and Cultural and Traditional Land Use assessments will feed into the Human Health and Community Wellness assessment and linked, where appropriate, to the socio-economic VCs.

⁷ In this document, "Valued Components" and "VCs" are socio-economic valued components.

Table 1: Preliminary Valued Socio-Economic Components and Indicators

Preliminary Valued Socio-economic Components	Preliminary Indicators	Rationale for Inclusion
Non-traditional Land and Resource Use	Conformity with existing land use designations/plans (e.g., Sahtu Land Use Plan) Existing/planned land uses (including seasonal and permanent camp areas, parks/recreation areas, transportation corridors, industrial zones, protected areas, ecologically important areas, navigable waters, etc.) Existing resources (including aggregate and granular resources (e.g., sand and gravel), mineral resources, forest resources, oil and gas, etc.) Access (e.g., to land and surrounding lakes, environmentally and culturally sensitive areas, etc.) Aesthetics	<ul style="list-style-type: none"> Identified in TOR sections 5.2.7, 7.3.4, 7.3.14
Employment and Economy	Employment and income (including local and Indigenous employment/opportunities) Gross domestic product and government revenues (other possible indicators of economic well-being to be explored with Bureau of Statistics) Business development/ economic opportunity (local and regional) Capacity of local businesses (e.g., local Indigenous governments and organizations/IGOs, and regional office of Industry, Tourism and Investment, etc.) Cost of living and consumer prices for goods and services (data sources to be discussed with the Bureau of Statistics) Traditional economy (including harvesting and related community/household income)	<ul style="list-style-type: none"> Identified in TOR sections 5.2.2 and 7.2.1 and as KLOI
Infrastructure, Services, and Institutional Capacity	Housing and accommodation including demand and supply (e.g., adequacy, affordability, and suitability; privately owned, rented and Northwest Territories Housing Corporation (NWT HC) housing stock; length of NWT HC waiting list.) Demand for and capacity/adequacy of social infrastructure (e.g., work with Municipal and Community Affairs and Community Government Services to understand emergency services, law enforcement, health facilities and services, social services, etc.) Capacity of public infrastructure (e.g., existing roads, water sources, quarries and quarry materials, waste management facilities, other utilities, etc.) Demand for and capacity/adequacy of Institutional facilities and services (e.g., schools, education facilities, early childhood education/care, etc.) Government of Northwest Territories operations	<ul style="list-style-type: none"> Identified in TOR sections 5.2.4, 7.2.1 Demand for social infrastructure and capacity of public infrastructure are identified as KLOI in the TOR Note: Government of Northwest Territories operations included per the RFP

Preliminary Valued Socio-economic Components	Preliminary Indicators	Rationale for Inclusion
Education, Training and Skills	Level of education and availability/capacity of education and certification/training programs	<ul style="list-style-type: none"> Identified in TOR sections 5.2.3, 7.2.1 Education and training programs are identified as KLOI in the TOR
	Education and skills development programs	
Human Health and Community Wellness	Population composition, migration (in/out)	<ul style="list-style-type: none"> Identified in TOR sections 5.2.1, 5.2.5, 7.21, 7.3.3, 7.3.4 Availability of drugs and alcohol, related social changes and human safety are identified as KLOI in the TOR Note: the findings from other disciplines led by K'alo-Stantec (e.g., 'Culture and Traditional Land Use' (including harvesting/traditional economy/country foods), and the 'caribou moose and harvesting' KLOI are directly related to Human Health and Community Wellness
	Population health (e.g., communicable and chronic disease; self-perceived health; mental health and addictions; preventative services and screening, etc.)	
	Social determinants of health (e.g., income and social assistance, etc.)	
	Community/family and social ties (e.g., connecting families, alleviating isolation)	
	Social pressures (e.g., availability and use of drugs and alcohol, crime, teen pregnancies, etc.)	
	Food security	
	Nuisance (e.g., air quality, noise, vibrations)	
	Drinking and recreational water quality	
Public safety (including road safety, perceived safety and security and capacity for emergency response)		

2. Study Area Boundaries

2.1 Spatial Boundaries

The Project will pass through portions of the Dehcho Region and the Tulita District of the Sahtu Region; the baseline conditions/assessment of potential impacts will include communities along the Project alignment including the communities of Wrigley, Tulita and Norman Wells (in the 'LAA', see below). Other communities, including Délı̄ne, Colville Lake, Fort Good Hope and Fort Simpson, will generally be considered as secondary communities, as part of the 'RAA' (see below). These communities in the RAA are considered secondary as socio-economic effects are anticipated to be lower in magnitude and largely indirect.

As per the 2015 TOR (Section 3.3., p. 11), the spatial scope is to *"include all areas that may be affected by activities within the scope of development. For all biophysical or socio-economic valued components (e.g., community wellness, wildlife), the developer will specify the study area boundaries used for the assessment for each component. The geographic scope for each valued component must be appropriate for the characteristics of that component. The developer will provide justification and rationale for all study area boundaries chosen."* The assessment spatial boundaries are therefore specific to each preliminary VC and may vary by indicator. The following preliminary study areas have been used to approximately define the geographic extent within which to assess potential direct and indirect effects of the Project and are shown in **Figure 1**.

Project Development Area: established to identify areas of direct impact/disturbance (i.e., the physical area required for construction and operation of the Project). The project development area is the highway extension alignment (existing Mackenzie Valley Winter Road and new right-of-way width (up to 100 m)) and temporary or permanent areas needed to support the Project that include laydown/staging and maintenance areas, borrow sources and quarries and associated access roads and worker camps.

Local Assessment Area (LAA): established to assess the potential direct and indirect effects of the Project on the socio-economic environment. The boundaries of the LAA for each VC will extend from/around the project development area boundary to capture the direct and nearby indirect effects on a VC and/or related indicators. The LAA includes communities as well as an area adjacent to the Project Development Area. Note that some components of the socio-economic environment (e.g., natural resources) may be physically within the Regional Assessment Area as per the map shown in **Figure 1**; however, if they are utilized by or associated with an LAA community, they are discussed in the description of the LAA community. The LAA includes the communities of Wrigley, Tulita and Norman Wells.

Regional Assessment Area (RAA): established to assess the potential direct, indirect and cumulative effects of the Project in the broader, regional context. The RAA extends beyond the LAA to include the maximum geographical extent to which socio-economic impacts from the Project may be expected. The RAA includes the communities of Fort Simpson, Fort Good Hope, Délı̄ne and Colville Lake.

The preliminary spatial boundaries will be confirmed via discussions with the GNWT Department of Health and Social Services (HSS), the NWT Socio-economic Working Group (SEWG), K'alo-Stantec, and through engagement activities. The preliminary LAA and RAA boundaries for the Project are provided in **Figure 1**; however, the LAA and RAA for each VC will not necessarily correspond identically to these boundaries and may be refined once potential effects are further understood through the work of other disciplines and community engagement.



Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Figure 1: Preliminary Socio-economic Local and Regional Assessment Areas

3. Approach Methodology

3.1 Data Collection

Baseline data collection requires gathering information from multiple sources, and some areas, existing data (“secondary data”) are supplemented by information and expertise gathered from potentially affected groups (“primary data”). The focus for this report was on maximizing the use of secondary data and relying on primary data where necessary to fill in gaps.

3.1.1 Secondary Data Collection

The report incorporates a considerable amount of data from other sources to describe the existing socio-economic conditions for the communities in the local and RAAs. Extensive use has been made of statistical and census data collected and published by both Statistics Canada and the GNWT Bureau of Statistics.

In addition, the report draws from a number of documents prepared by community, regional and Territorial sources (for example on land-use and community planning, community infrastructure). Additional sources of information included community websites, information provided by school boards, and SEIA reports from previous projects. A complete list of references is provided in **Section 6**.

3.1.2 Primary Data Collection

Information was collected from interviews with community and GNWT representatives and field observations during visits to Norman Wells and Tulita in August of 2021, telephone interviews with community groups in organizations in Norman Wells and Tulita in December 2021 and April 2022. These primary data collection activities:

- Identified sources of data and information that may be relevant to the assessment, and
- Provided guidance on working with this data and information.

Further data collection activities included visits to Norman Wells, Tulita, Fort Good Hope, Colville Lake, Délı̄ne and Fort Good Hope in October 2022 through February 2023. Draft community-specific existing conditions reports were shared with community organizations for review and feedback. These primary data collection activities:

- Provided additional community-level information to fill information gaps, and
- Corrected outdated information in the draft existing conditions reports, and
- Provided additional contextual information to support the data collected.

3.2 Analysis and Projections

Analysis of the ‘existing conditions’ data are primarily quantitative and relates to the statistical data, to support more descriptive use of the numerical information and to describe key trends. Where appropriate, the report disaggregates data by sex, age, ethnicity and other identity factors to help identify groups within a community that may be more much affected by the impacts and opportunities created by the project.

Any projections included in this report (e.g., population projections) are incorporated from work completed by Statistics Canada or the NWT Bureau of Statistics. Information obtained from interviews or engagement sessions was summarized and incorporated where appropriate.

4. Engagement

4.1 Overview of the Engagement Process

GNWT obtained information and concerns regarding all socio-economic VCs from more than 200 individuals representing regulators, Indigenous communities, and stakeholders throughout the planning of the Project. Among the groups and individuals engaged, territorial government regulators as well as community-level governments and service providers provided much information on existing conditions within the LAA and RAA. Additional information on existing conditions were provided by community business owners, Elders and women who were interviewed.

4.2 Regulatory Engagement

Meetings and interviews were conducted with senior staff of GNWT departments and agencies that have mandates related to any of the socio-economic VCs. Department staff provided information relevant to the existing conditions in communities. Meetings were also held with several regional and federal regulators. Regulators that were engaged include:

- Sahtu Land and Water Board
- Sahtu Land Use Planning Board
- GNWT Dept of Environment and Natural Resources
- GNWT Education, Culture and Employment (ECE)
- GNWT Executive and Indigenous Affairs (EIA)
- GNWT Health and Social Services
- GNWT Industry, Tourism & Investment (ITI)
- GNWT Infrastructure
- GNWT Justice
- GNWT Lands
- GNWT Municipal and Cultural Affairs (MACA)
- Housing NWT
- NWT Power Corporation
- Parks Canada
- Royal Canadian Mounted Police (RCMP)

Interviews with regulatory organizations information on existing conditions are in briefly summarized below.

Human Health and Community Wellness:

- Interviews with senior staff of the GNWT Department of Health and Social Services (HSS) and the Department of Municipal and Community Affairs (MACA) provided information on the provision of health, social and emergency services and recreation services.
- RCMP officers provided information on community safety.

Education, Training and Skills:

- Senior staff of the GNWT's Department of ECE and adult educators from the Norman Wells and Tulita CLCs provided information on the level of education and training programs available in the communities.

Infrastructure, Services and Institutional Capacity:

- Information was provided by HSS staff on health and social services provided in the communities.
- RCMP officers provided information on the protection services provided in the communities.

Non-Traditional Land and Resource Use

- GNWT Department of Lands provided information on relevant land use legislation and policies, non-traditional land use planning, potential Project effects on non-traditional land use, including changing patterns in land access for recreational use, and potential changes in the volume of tourists.
- Boards provided information on land uses and protected areas.

4.3 Indigenous and Community Engagement

Meetings and interviews were carried out with more than 65 Indigenous and community groups in LAA and RAA communities, including:

- ʔEhtseo Ayha School
- Ayoni Keh Land Corporation
- Behdʒı Ahda ʔehdzo Gotʼıne (Renewable Resources Council)
- Cassien Edgi Health Centre
- Chief Albert Wright School
- Colville Lake (Behdʒı Ahdaʼ First Nation)
- Colville Lake Gas Station
- Colville Lake Health Station
- Colville Lake School
- Community of Fort Good Hope (Kʼasho Gotʼıne)
- Community women
- Délıne Gotʼıne Government Land, Resources and Environment Department
- Dora Gully Health Centre
- Fort Good Hope businesses
- Fort Good Hope Community Learning Centre
- Fort Good Hope Community Meeting
- Fort Good Hope Dene Band
- Fort Simpson businesses
- Fort Simpson Community Learning Centre
- Fort Simpson Health Centre
- Fort Simpson Métis
- Fort Simpson Youth
- Hamlet of Tulita
- Harriet Gladue Health Centre
- Indigenous Women
- Knowledge Keepers Circle
- Łı́ıdlı́ Kúé First Nation
- Łı́ıdlı́ Kúé Regional High School
- Łı́ıdlı́ Kúé Renewable Resources Council
- Mackenzie Mountain School
- Norman Wells and District Chamber of Commerce
- Norman Wells businesses
- Norman Wells Community Learning Centre

- Norman Wells Mental Health and Addictions
- Sahtu Dene and Métis of Tulita - Tulita Dene Band
- Sahtu Divisional Education Council
- Sahtú Got'iné Regional Health and Social Services Centre
- Sahtu Land and Water Board
- Sahtu Land Use Planning Board
- Sahtu Youth Network
- Sister Celeste Child Development Centre
- Town of Norman Wells
- Tulita Community Learning Centre
- Tulita District Land Corporation
- Tulita Elders
- Tulita Fire Services
- Tulita Renewable Resources Council
- Tulita Wellness Centre
- Tulita Youth
- Village of Fort Simpson

Interviews with various groups and individuals provided information relevant to the existing conditions in communities, summarized below.

Human Health and Community Wellness:

- Community Health Centre staff provided information about existing health services in Norman Wells, Tulita, Fort Good Hope, Délı̄ne, and Colville Lake.

Education, Training and Skills:

- School principals and adult education providers gave information on the existing educational services provided in the community, including adult education and training via Community Learning Centres (CLCs).

Employment and Economy:

- Municipal staff and business owners in the community provided information on the employment situation and the types of businesses that exist in the communities.

Infrastructure, Services and Institutional Capacity:

- Municipal staff provided information on the public infrastructure that are provided in the communities.
- Senior staff of health centres provided information on the health infrastructure that is present in the communities.
- Fire Chiefs provided information on the fire and emergency services provided in the communities.

Non-Traditional Land and Resource Use:

- Municipal staff and other stakeholders provided information on business activity (including mineral and recreation) in the communities as well as recreation activities (including non-traditional fishing and hunting).
- Community members provided information on local aesthetics.

5. Existing Conditions

5.1 Non-Traditional Land and Resource Use

The non-traditional land and resource use characteristics of the LAA are influenced by the Mackenzie River valley that defines the landscape and is dominated by coniferous forest habitats interspersed with wetlands and watercourses. Lands and resources within the LAA are used by the communities of Norman Wells, Tulita and Wrigley. The Mackenzie River is designated as a navigable waterway under the *Canadian Navigable Waters Act*⁸. The Mackenzie River is a major barge route for freight during the summer months, and during the winter the Mackenzie Valley Winter Road (which connects Tulita to Délı̄nę, Wrigley and Norman Wells) provides a connection to the NWT's all-season highway network⁹.

The northern two-thirds of the LAA and RAA lie within the Sahtu Region and are therefore covered by the Sahtu Land Use Plan (SLUP), which provides overarching direction on how land is to be used, developed, and conserved within the Sahtu Region. The SLUP applies throughout the Sahtu Region with the exception of "lands in a settlement area that comprise a park to which the Canada Nation Parks Act applies, that have been acquired pursuant to the *Historic Sites and Monuments Act* or that are situated within the boundaries of a local government"¹⁰. Two of the three LAA communities (Norman Wells and Tulita) and three of the four RAA communities (Colville Lake, Délı̄nę and Fort Good Hope) are situated within the Sahtu Region. The Hamlet of Tulita and the Communities of Norman Wells, Délı̄nę Fort Good Hope and Colville Lake (official name: Behdzi Ahda First Nation) are within a 'Community Boundary' area shown on the SLUP's map and are therefore not subject to the requirements of the SLUP. Community boundaries have been established by the GNWT to outline the geographic area that is within a community government's jurisdiction. However, the lands directly surrounding the identified Community Boundary Area up to the Sahtu Region boundary are Block Land Transfer lands set aside by the GNWT for future community expansion and use: these lands are subject to the provisions of the SLUP¹¹.

The southern one-third of the LAA and RAA lies within the Dehcho Region and will be covered by the Dehcho Land Use Plan (DLUP) when it is finalized; the DLUP is currently under development. A Draft Interim Land Use Plan was completed by the Dehcho Land Use Planning Committee (DLUPC) in 2016¹². One of the three LAA communities (Wrigley) and one of the four RAA communities (Fort Simpson) are situated within the Dehcho Region.

There are various land designations within the Project's LAA and RAA. A general overview is provided below, with emphasis on lands along the PDA and within the LAA, as these are the lands which may be directly affected by the Project.

Figure 2 shows that along the LAA, nearly all the land along the Mackenzie Valley is administered by the GNWT (coloured purple). The land along the Mackenzie Valley in the Sahtu Region (including the communities of Tulita and Norman Wells) is a mix of privately owned land and land administered by the GNWT (coloured orange). Land administered by the government of Canada (coloured green) is not part of the LAA.

⁸ Government of Canada. (2019). *Canadian Navigable Waters Act, R.S.C. 1985, c. N-22*

⁹ Town of Norman Wells. (2021b). *Discover Norman Wells: Community*.

¹⁰ Sahtu Land Use Planning Board. (2013). *Sahtu Land Use Plan*.

¹¹ Sahtu Land Use Planning Board. (2013). *Sahtu Land Use Plan*.

¹² Government of Northwest Territories. (2021c). *Land Use Planning in the NWT*

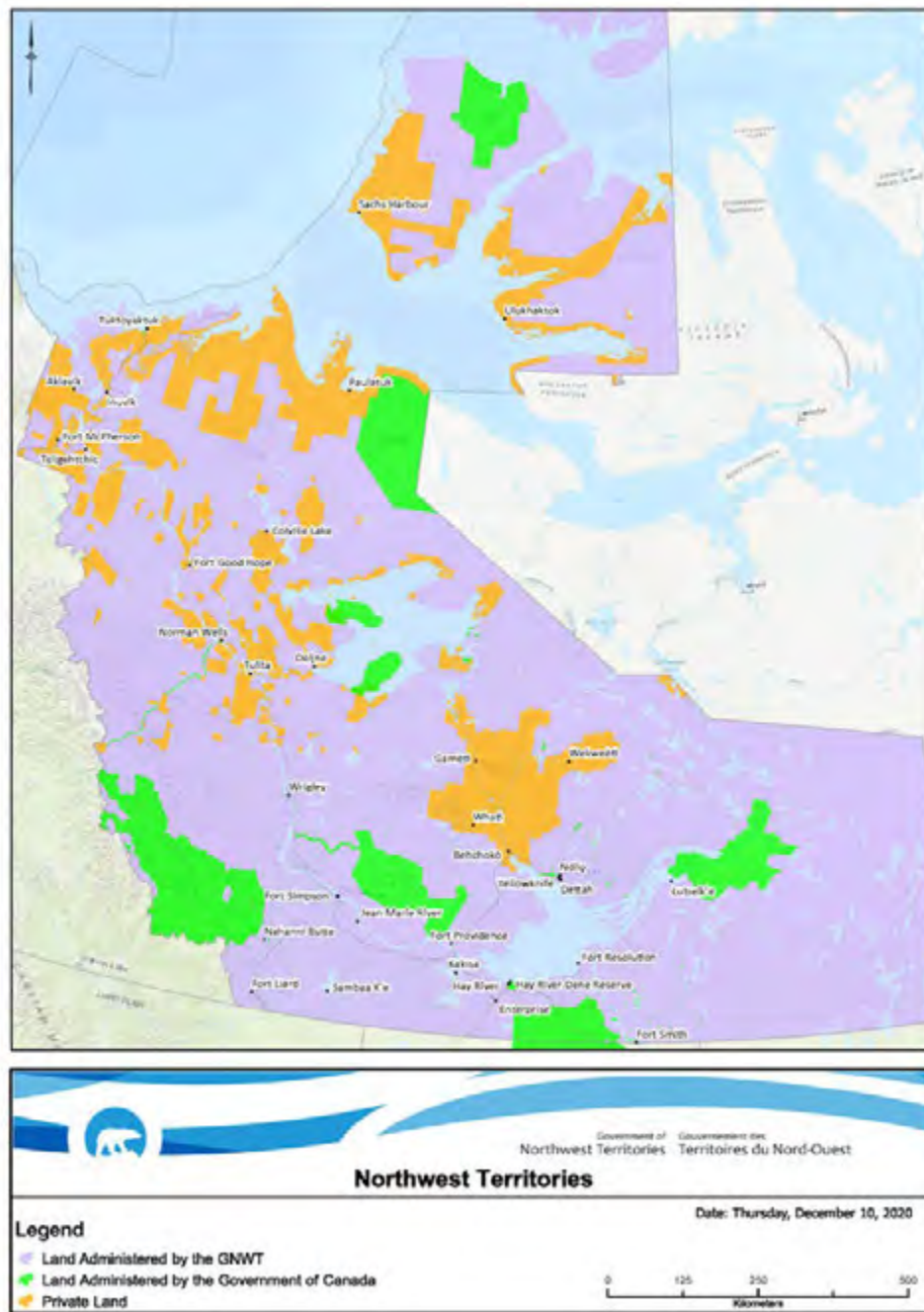


Figure 2: Land Authority

Source: Government of the Northwest Territories. (2020a).

The segment of the Mackenzie River which is in Sahtu Region has the designation of Special Management Zone, which allows all types of land use other than bulk water removal, under the Sahtu Land Use Plan¹³. The zone contains important wildlife habitat including for moose, migratory birds, waterfowl, boreal woodland caribou, furbearers and fish. There are areas with high winter moose density. The zone includes Important Wildlife Areas for furbearers, moose, and muskox, and important areas for migratory birds and waterfowl. There are also important breeding duck sites and Canadian Wildlife Service Territorial Migratory Bird Habitat Sites in the zone. One of the two Canadian Wildlife Service Important Bird Areas in the zone – the Middle Mackenzie River Islands Important Bird Area – is located within the LAA and includes the islands beside Norman Wells.

5.1.1 Local Assessment Area

5.1.1.1 Wrigley

5.1.1.1.1 Wrigley Planning Documents

No publicly available community plan or similar planning documents have been traced for the community of Wrigley/Pehdzeh Ki First Nation.

5.1.1.1.2 Resources – Granular

Four sources of granular resources (also called borrow sites) may be available for future community and general use near Wrigley:

- Granular source and bedrock quarry near Mount Gaudet, 16 km north of Wrigley;
- Granular source near Ochre River, 31 km north of Wrigley;
- Bedrock quarry near Blackwater River, 22 km south of boundary between the Dehcho Region and the Sahtu Settlement Area; and,
- Bedrock quarry near Blackwater River, 12 km south of boundary between the Dehcho Region and the Sahtu Settlement Area¹⁴.

5.1.1.1.3 Resources – Mineral

Devonian Metals Inc. and Mackenzie Mountain Metals Inc. have rights over the “Wrigley Project”: a lead and zinc deposit located 10 km southwest of Wrigley¹⁵. Devonian Metals has engaged in discussions with Pehdzeh Ki First Nation regarding the resumption of access to their mineral leases. In October 2022, the company submitted a Land Use Permit application for mineral exploration on the property to the Mackenzie Valley Land and Water Board. In January 2023, this application was withdrawn by the Board due to being considered incomplete¹⁶.

5.1.1.1.4 Other Land Uses

Wrigley is the end point of the “Heritage Route” portion of the current Mackenzie Highway (NWT Highway No. 1), which starts from a point south of Fort Simpson. The route includes forested hills, mountains, lakes, and rivers, with opportunities for camping, fishing, hiking, canoeing, rafting and nature viewing¹⁷.

¹³ Sahtu Land Use Planning Board. (2013). *Sahtu Land Use Plan*.

¹⁴ DESSAU. (2012). *Mackenzie Valley Highway Extension Pehdzeh Ki Ndeh – Dehcho Region*.

¹⁵ Government of Northwest Territories. (2016). *A Guide to Mineral Deposits*.

¹⁶ Information provided by GNWT staff.

¹⁷ Government of Northwest Territories. (2021d). *Parks: Heritage Route*.

The community of Wrigley has a new Visitor Information Center and a Tourism Business License that can create business spin off for the community. There are some other small businesses there. The GNWT has funded tourism programs that benefited the Wrigley Visitor Information Center, trail systems, signage, etc.¹⁸.

5.1.1.2 Tulita

The Hamlet of Tulita is situated at the confluence of the Mackenzie River and the Great Bear River. “Tulita” in Dene language means “where the rivers or waters meet”¹⁹. The Mackenzie River is designated as a navigable waterway²⁰ under the *Canadian Navigable Waters Act*²¹. The Mackenzie River is a major barge route for freight during the summer months, and during the winter the Mackenzie Valley Winter Road (which connects Tulita to Délı̄në, Wrigley and Norman Wells) provides a connection to the NWT’s all-season highway network²².

5.1.1.2.1 Tulita Planning Documents

Tulita has a Community Strategic Plan, which is reviewed annually²³.

5.1.1.2.2 Special Land Categories

The land in and around the community of Tulita consists of a combination of municipal land, tenured Commissioner’s Land, tenured territorial land and federal land. There are several special categories of land in around the community of Tulita, described below.

Petı̄nı̄h (Bear Rock) is a conservation zone under the SLUP (33 km²) within approximately 1km to the northwest of Tulita. The site includes important habitat including for breeding ducks, migratory birds (a key site in the NWT designated by the Canadian Wildlife Service), and furbearers. It is also an important area for moose, boreal woodland caribou and bears. This site is also within the Tulita community’s drinking water source catchment. It is point number 32 in **Figure 3**.

Sahtu Deh (Great Bear River) is a special management zone under the SLUP (908 km²) within ~1km to the northeast of Tulita. This special management zone continues to within ~1km of Délı̄në. This site is an important habitat for bluenose-east barren-ground caribou, boreal woodland caribou, breeding ducks, waterfowl and migratory birds (including as a key site for migratory birds identified by the Canadian Wildlife Service), furbearers, muskox and moose. The Bracket Lake (Canadian Wildlife Service) Important Bird Area is important for ducks and the Canadian White-fronted Goose population. Waterfowl, birds, barren-ground caribou, furbearers, fish, moose, plants and berries are harvested from this site. It is point number 33 in **Figure 3**.

K’ááı̄q Tué (Willow Lake Wetlands) is a special management zone (1,348 km²) within approximately 15km to the north of Tulita. The zone provides key breeding, nesting, and staging areas for waterfowl of international significance and is identified by the Canadian Wildlife Service as a Terrestrial Habitat Site for migratory birds. The lake is also important for a range of other wildlife. The zone contains an International Biological Program site as well as wetlands, karst features, and berry harvest sites. It is point number 62 in **Figure 5**.

¹⁸ Interview with GNWT staff.

¹⁹ Hamlet of Tulita. (2021b). About.

²⁰ Per the *Canadian Navigable Waters Act* R.S., 1985, c. N-22, s. 1; 2012, c. 31, s. 316; 2019, c. 28, s. 46, a *navigable water* means a body of water, including a canal or any other body of water created or altered as a result of the construction of any work, that is used or where there is a reasonable likelihood that it will be used by vessels, in full or in part, for any part of the year as a means of transport or travel for commercial or recreational purposes, or as a means of transport or travel for Indigenous peoples of Canada exercising rights recognized and affirmed by section 35 of the *Constitution Act, 1982*, and (a) there is public access, by land or by water; (b) there is no such public access but there are two or more riparian owners; or (c) Her Majesty in right of Canada or a province is the only riparian owner.

²¹ Government of Canada. (2019). *Canadian Navigable Waters Act, R.S.C. 1985, c. N-22*.

²² Town of Norman Wells. (2021b). *Discover Normal Wells: Community*.

²³ interview with GNWT staff

Mio Lake is a conservation zone under the Sahtu Land Use Plan that lies within the LAA about 75 km upstream of Tulita. Conservation Zones are significant traditional, cultural, heritage and ecological areas in which specified land uses are prohibited. It is point number 36 in **Figure 3**.

Land use zones in and around Tulita are provided in **Figure 3**.

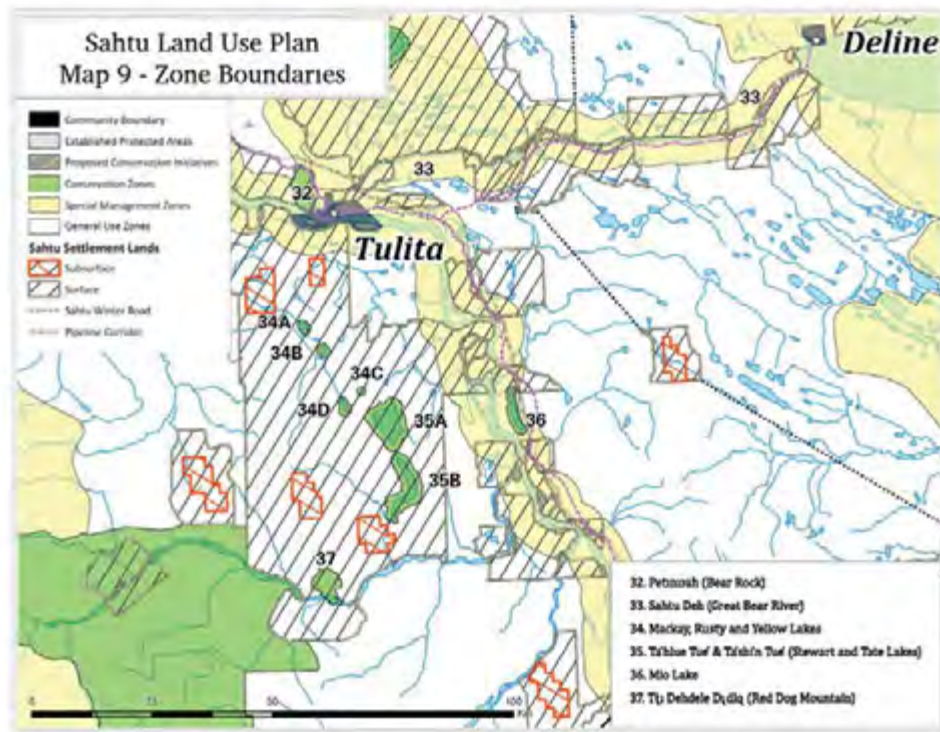


Figure 3: Tulita Land Zones

Source: Sahtu Land Use Planning Board, 2013

5.1.1.2.3 Other Land Uses

Commercial Forestry

There are no commercial forestry activities near Tulita²⁴.

Recreational Fishing

Recreational fishing occurs along the shores of the Mackenzie River and the Great Bear River within an 8-km radius of Tulita. No commercial fishing is allowed within 25 km of Tulita²⁵.

²⁴ Interview with community members.

²⁵ Interview with community members.

Recreational Hunting

Recreational hunting takes place within an 8-km radius of Tulita as well as outside the municipal boundary. Commercial hunting is staged in Norman Wells but not in Tulita²⁶.

Other Recreational Activities

Boating activities take place within municipal boundaries at 4 Mile Creek and 12 Mile Creek. There are 2.9 km of walking trails within municipal limits, as well as trails that can be used by ATVs and snowmobiles in town and reaches out to 4 km outside of the community²⁷.

The Mackenzie River campground is located along a sandy beach in Tulita along the Mackenzie River. It includes ten campsites for tent camping, cooking fire pits, supplied wood, beach and dock access, washroom facilities, security and a beach volleyball court²⁸. Bear River Campground is located within the Tulita community boundary, on the banks of the Great Bear River. It includes ten campsites (eight occupant supplied tent sites, one McPherson Tent and one Tipi), fire pits, supplied wood, a bandstand and a gazebo, washroom facilities and 8 kilometres of Trans Canada Trail nature trails²⁹. The Two Rivers Trail (Trans Canada Trail) is a new greenway that connects the centre of the Hamlet of Tulita with the Bear River Campground³⁰.

Bear Rock stands 400 metres above Tulita and is sacred to many. It is “said to be where Yamoria, the great law-giver of Dene lore, confronted a gang of giant beavers that had been drowning hunters. Yamoria killed three of the beavers and draped their vast pelts on Bear Rock – forming three dark circles that distinguish the mountain to this day”³¹. There is a trail to the summit of the rock that is used by hikers to arrive at a scenic lookout point.

There are minimal tourism-oriented activities in the vicinity of Tulita and no currently operating tourism business operators in the community. One non-local canoe outfitter uses the local campgrounds on Bear River, Mackenzie River³².

5.1.1.2.4 Resources – Oil and Gas

According to the Central Mackenzie Valley Oil and Gas Rights, Pipeline Infrastructure and Hydrocarbon Potential Map 2021³³, there is Moderate/Low hydrocarbon potential directly surrounding the Hamlet of Tulita.

5.1.1.2.5 Resources – Minerals

Over the last 30 years, mineral exploration and extraction has been low in the Sahtu Region. The greater region includes four geological provinces (Arctic Platform, Bear, Cordillera and Interior Platform) with lead, zinc, iron, copper, silver, uranium, lithium, cobalt, diamonds, tungsten and emerald potential³⁴. The Hamlet of Tulita is found within the Interior Platform geological province.

²⁶ Interview with community members.

²⁷ Interview with community members.

²⁸ Hamlet of Tulita. (2021c). Mackenzie River Campground.

²⁹ Hamlet of Tulita. (2021d). Bear River Campground.

³⁰ Hamlet of Tulita. (2021a). Trans Canada Trail.

³¹ Hamlet of Tulita. (2021e). Bear Rock.

³² Interview with community members.

³³ Government of Northwest Territories. (2021a). Central Mackenzie Valley Oil and Gas Rights.

³⁴ Sahtu Renewable Resources Board. (2021). Geology.

5.1.1.2.6 Aesthetics

The Hamlet of Tulita and surrounding area is within the Boreal Forest and is located well south of the treeline. The Franklin Mountain Range is found parallel to the east side of the Mackenzie River northwest of Tulita, and the community faces the Mackenzie Mountains to the west. Tulita also sits across the Bear River from Bear Rock, the southern prominence of the Franklin Mountains³⁵.

Other Features of Interest

Unique features in and around the community of Tulita include Willow Lake, The Smokes, Anglican Church, and Trout Lake³⁶.

5.1.1.3 Norman Wells

5.1.1.3.1 Town of Norman Wells Community Plan

The Town of Norman Wells has completed the Community Plan and Zoning By-law Renewal Project 2020-2021. The updated Draft Community Plan (CP) was released in June 2021³⁷; it has now been finalized and adopted by the Town of Norman Wells and is a revised Zoning Bylaw³⁸. The CP is discussed in this document due to the fact that it is publicly available. The CP provides a policy framework for land use and strategic policy development in the community. It was prepared in accordance with the Cities, Towns and Village Act S.N.W.T. 2003, c.22 as amended and the Community Planning and Development Act, S.N.W.T. 2011, c.22 as amended. The Town has also prepared Draft Zoning By-law #21-08³⁹ to ensure that development in the Town of Norman Wells is economically, environmentally, and socially responsible, and allows for the implementation of the goals and objectives of the Draft CP.

The CP Conceptual Land Use Map (**Figure 4**) shows the high-level land use patterns and areas that will accommodate future growth and redevelopment in the Town.

³⁵ Hamlet of Tulita. (2021b). About.

³⁶ Interview with community members.

³⁷ Town of Norman Wells. (2021a). Norman Wells Community Plan.

³⁸ Conversation with Town of Norman Wells staff.

³⁹ Town of Norman Wells. (2021c). Zoning By-law #21-08.



Figure 4: Town of Norman Wells Community Plan – Conceptual Land Use Map

The CP under Section 5.2 Connected and Accessible, identifies the following policy “a. Encourage and promote the development of a year-round, all-weather highway into the Town” and under Section 6.1 Implementation Plan, the following is identified as an action item to encourage, promote and permit: “a year-round, all-weather highway into Town” with a timeline of 2-5 years⁴⁰.

5.1.1.3.2 Norman Wells Recreation Master Plan

The Norman Wells Recreation Master Plan⁴¹ provides strategic direction for recreation in the community with the aim of providing high quality recreation, parks and culture services and facilities in the community. It provides an assessment of the current state of recreation, parks, and culture infrastructure and service delivery and recommends priorities to meet existing and future needs along with an implementation plan. For information on existing and planned recreation infrastructure, services and facilities, including recreation areas not included in the Recreation Master Plan, see **Section 5.3.1.1.2** of this report.

5.1.1.3.3 Special Land Categories

The land in and around the community of Norman Wells consists of a combination of municipal land, private land, tenured Commissioner’s Land, tenured territorial land and federal land. There are several special categories of land around the community of Norman Wells, described below.

Norman Range (point number 50 in **Figure 5**) is a large special management zone (6,095 km²) located adjacent to Norman Wells. This conservation zone encompasses other conservation zones within the LAA including Lugedegil Tué & Tuyehíla Tué (Kelly and Lennie Lake) (see point number 56 in **Figure 5**). The zone provides habitat for waterfowl, migratory birds, muskox, moose, furbearers, bears, boreal and woodland caribou, the Bluenose West Barren-ground caribou herd, and contains fish-bearing lakes. The zone also includes Important Wildlife Areas for muskox, furbearers, moose, as well as important breeding duck habitat, and a Canadian Wildlife Service key migratory bird terrestrial habitat site. The zone contains the Bracket Lake Important Bird Area. Furbearers, moose, fish, barren-ground caribou, bears, berries and plants are harvested in this zone. The area is part of Tulita’s

⁴⁰ Town of Norman Wells. (2021a). Norman Wells Community Plan.

⁴¹ Expedition Management Consulting. (2021). Norman Wells Recreation Master Plan.

drinking water source catchment. The zone contains recreation sites, cabins, tent frames, camps, outpost sites, log timber harvest, and trails; it falls within the Fort Good Hope/Colville Like Group Trapping area.

The MacKinnon Territorial Park is located in Norman Wells. The park is located on the Mackenzie River and has eight non-powered campsites.

Land use zones in and around Norman Wells are provided in **Figure 5**.

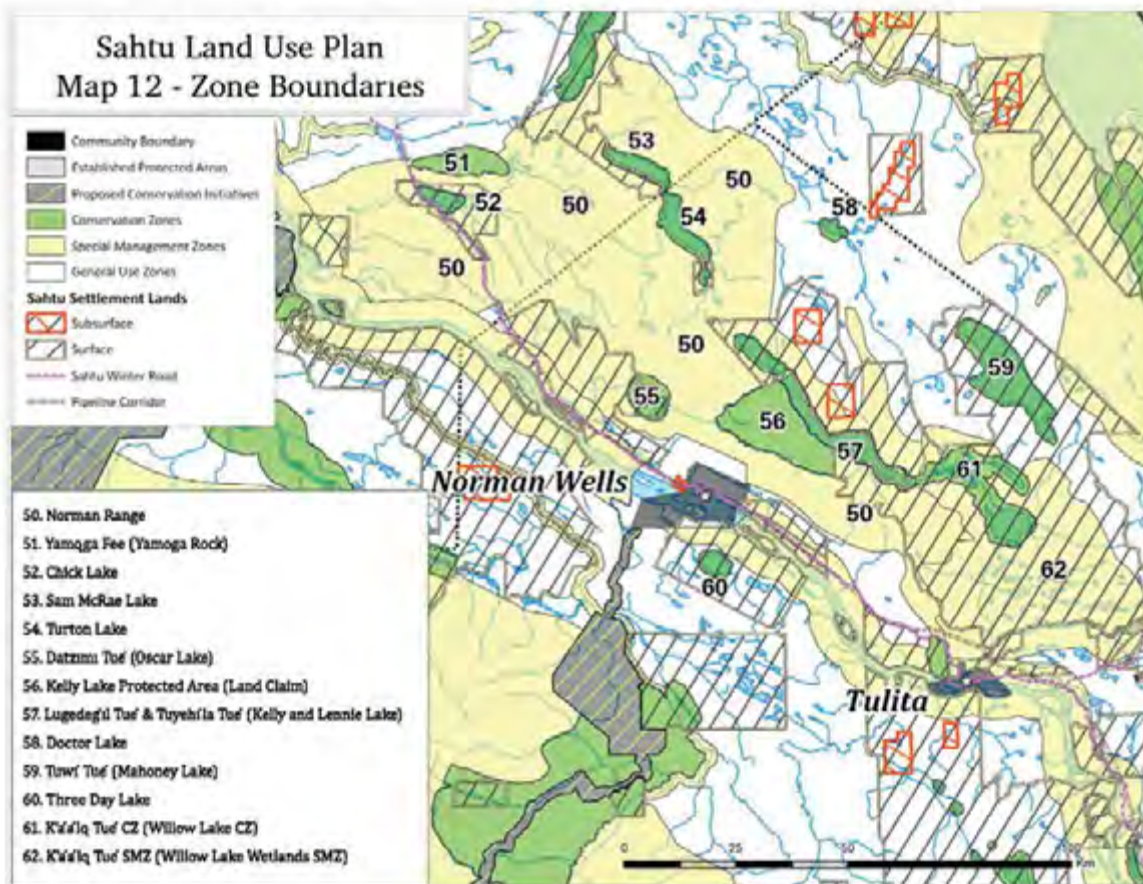


Figure 5: Norman Wells Land Zones

Source: Sahtu Land Use Planning Board, 2013

5.1.1.3.4 Other Land Use

MacKinnon Territorial Park is located on the banks of the Mackenzie River in Norman Wells. It includes eight non-powered campsites and a playground and picnic area⁴².

⁴² Northwest Territories Tourism. (2021a). Mackinnon Territorial Park.

The Town of Norman Wells is located along the banks of the Mackenzie River which is designated as a navigable waterway⁴³ under the *Canadian Navigable Waters Act*⁴⁴. The Mackenzie River is a major barge route for freight during the summer months, and during the winter the Mackenzie Winter Road (which connects Tulita, Délı̄ne, Wrigley and Norman Wells) provides a connection to the NWT's all-season highway network⁴⁵.

Tourism-oriented activities are focused outside the community of Norman Wells, such as outfitting (hunting in the Mackenzie Mountains) and canoeing (along the Mackenzie River). Tourists arrive to and depart Norman Wells via air⁴⁶.

Fishing

There are several recreational fishing areas nearby, but no commercial fishing⁴⁷.

5.1.1.3.5 Resources – Oil and Gas

The Town of Norman Wells was the first community in the NWT that was established as the result of non-renewable resource development. Norman Wells has a long history of oil extraction and production. The traditional name for the area is "Le Gohlini", which in Dene means "Where the oil is". In 1918 Imperial Oil acquired the oil claims. In 1919 a discovery well was drilled and in the early 1920's a small refinery was built which supplied downriver communities for almost 50 years⁴⁸. The Canol project was initiated during World War II which saw the construction of a 2,512-kilometre pipeline with 60 new wells and an associated road from Norman Wells to Whitehorse. The pipeline was only in operation for 11 months before being closed. The road for the pipeline is now known as the Canol Trail. In the 1980s, the Norman Wells oil field was the fourth largest oil deposit in Canada and Imperial Oil expanded operations and constructed six more artificial islands on the Mackenzie River and additional wells. During this time Interprovincial Oil (now Enbridge) started construction of an 868-kilometre pipeline from Norman Wells to Zama, Alberta which increased production to 30,000 barrels per day. Today, Imperial Oil still produces in Norman Wells, their facilities include producing wells from natural and artificial islands and a central processing facility which also generates electricity for the Town⁴⁹.

Per the 2019 NWT Oil and Gas Annual Report⁵⁰, the total aggregate oil production between January 1 and December 31, 2019, from the Norman Wells field was 2,737,952 barrels or 435,299 m³. During the same period, 70.67 million m³ of gas was produced. **Table 2** shows production levels in Norman Wells from 2014-2019.

⁴³ Per the *Canadian Navigable Waters Act* R.S., 1985, c. N-22, s. 1; 2012, c. 31, s. 316; 2019, c. 28, s. 46, a *navigable water* means a body of water, including a canal or any other body of water created or altered as a result of the construction of any work, that is used or where there is a reasonable likelihood that it will be used by vessels, in full or in part, for any part of the year as a means of transport or travel for commercial or recreational purposes, or as a means of transport or travel for Indigenous peoples of Canada exercising rights recognized and affirmed by section 35 of the *Constitution Act, 1982*, and (a) there is public access, by land or by water; (b) there is no such public access but there are two or more riparian owners; or (c) Her Majesty in right of Canada or a province is the only riparian owner.

⁴⁴ Government of Canada. (2019). *Canadian Navigable Waters Act, R.S.C. 1985, c. N-22*.

⁴⁵ Town of Norman Wells. (2021b). *Discover Normal Wells: Community*.

⁴⁶ Interview with community members.

⁴⁷ Interview with community members.

⁴⁸ Town of Norman Wells. (2021b). *Discover Normal Wells: Community*.

⁴⁹ Imperial Oil. (2021). *A century of production; Imperial marks 100 years in Normal Wells*.

⁵⁰ Government of Northwest Territories. (2019a). *Government of Northwest Territories Oil and Gas Annual Report, 2019*.

Table 2: Oil and Gas Production Levels – Norman Wells 2014-2019

Year	Oil Cubic Metres (thousands) (barrels) (thousands)	Gas Production Cubic Metres (millions) (cubic feet) (millions)
2014	630.73 (3,967.18)	83.85 (2,961.04)
2015	576.29 (3,623.75)	83.83 (2,961.04)
2016	521.99 (3,283.23)	78.55 (2,773.89)
2017	16.62 (104.54)	4.11 (144.97)
2018	98.42 (619.01)	11.13 (393.04)
2019	435.30 (2,737.95)	70.67 (2,495)

Source: Government of Northwest Territories. (2019a). Data was provided by the Canadian Energy Regulator (formerly the National Energy Board).

According to the Central Mackenzie Valley Oil and Gas Rights, Pipeline Infrastructure and Hydrocarbon Potential Map 2021⁵¹ there is High to Moderate/Low hydrocarbon potential in and around the Town of Norman Wells.

5.1.1.3.6 Resources – Granular

A quarry development and blasting operations management plan was developed in January 2016 in connection with the construction of the Norman Wells to Canyon Creek All Season Access Road⁵². The quarry site is situated about 15 km due west of Norman Wells and is owned by the GNWT⁵³. There is also an operational quarry located within the municipal boundaries of Norman Wells and is owned by the community⁵⁴.

5.1.1.3.7 Resources – Mineral

Over the last 30 years, mineral exploration and extraction has been low in the Sahtu Region. The greater region includes four geological provinces (Arctic Platform, Bear, Cordillera and Interior Platform) with lead, zinc, iron, copper, silver, uranium, lithium, cobalt, diamonds, tungsten and emerald potential⁵⁵. There are no mineral deposits near Norman Wells although the area has potential for lead and zinc⁵⁶.

5.1.1.3.8 Aesthetics

The Town of Norman Wells is situated on the north banks of the Mackenzie River, with a view down the Mackenzie Valley. The Town is bounded on the west by the northern extent of the Rocky Mountains (Franklin Mountains) and on the east by treeless barren lands surrounding the Mackenzie River. According to community members, there are many natural beauty areas around Norman Wells, but they would not be affected by the proposed highway.

⁵¹ Government of Northwest Territories. (2021a). Central Mackenzie Valley Oil and Gas Rights.

⁵² Tetra Tech EBA. (2016). Quarry Development and Blasting Operations Management Plan - Construction of the Norman Wells to Canyon Creek Access Road.

⁵³ Google maps. (2021). Edie Lake.

⁵⁴ Interview with community members.

⁵⁵ Sahtu Renewable Resources Board. (2021). Geology.

⁵⁶ Information from GNWT staff.

5.1.2 Regional Assessment Area

The non-traditional land and resource use characteristics of the RAA are generally similar to those of the LAA (described in Section 5.1.1 above), because it includes portions of the Mackenzie River to the north of Norman Wells (to Fort Good Hope) and south of Wrigley (to Fort Simpson), although it extends several kilometres (km) west of the Mackenzie River and includes the lands in and surrounding the RAA communities. Lands and resources within the RAA are used by the communities of Colville Lake, Délı̄ne, Fort Good Hope and Fort Simpson. Due to the fact that the MVH Project will not be going near these regional communities, project impacts on non-traditional land and resource use in the RAA is not expected: therefore, details about land uses in the RAA communities are not provided in this document.

5.1.2.1 Dehcho Region/Fort Simpson

5.1.2.1.1 Dehcho Land Use Plan

The Dehcho Land Use Plan is currently under development and is therefore not in effect. A Draft Interim Land Use Plan was completed by the Dehcho Land Use Planning Committee (DLUPC) in 2016⁵⁷. The draft which is available to the public is dated 2006. GNWT's 'Finding Common Ground: A renewed commitment to regional land use planning in the NWT' document notes that per the Dehcho Interim Measures Agreement, the Dehcho First Nations, GNWT and Government of Canada are working to reach a consensus on final revisions to the Draft Interim Land Use Plan⁵⁸. Other documents on DLUPC website are quite dated (2006 and earlier) and last annual report is from 2014. The communities of Wrigley (in the Local Assessment Area) and Fort Simpson (within the Regional Assessment Area) lie within the Dehcho Region.

5.1.2.2 Sahtu Region/Délı̄ne, Colville Lake, Fort Good Hope

5.1.2.2.1 Sahtu Land Use Plan

The Sahtu Land Use Plan (SLUP)⁵⁹ provides overarching direction on how land is to be used, developed, and conserved within the Sahtu Region. The SLUP applies throughout the Sahtu Settlement Area (see the Sahtu Settlement Area in **Figure 6**), with the exception of "lands in a settlement area that comprise a park to which the *Canada Nation Parks Act* applies, that have been acquired pursuant to the *Historic Sites and Monuments Act* or that are situated within the boundaries of a local government⁶⁰.

The communities of Tulita, Norman Wells, Délı̄ne Fort Good Hope and Colville Lake are within a 'Community Boundary Area' shown on the map and are therefore not subject to the requirements of the SLUP. Community boundaries have been established by the GNWT to outline the geographic area that is within a community government's jurisdiction. However, the lands directly surrounding the identified Community Boundary Area up to the Sahtu Region boundary are Block Land Transfer lands set aside by the GWNT for future community expansion and use; these lands are subject to the provisions of the SLUP.

⁵⁷ Government of Northwest Territories. (2021c). *Land Use Planning in the NWT*.

⁵⁸ Government of Northwest Territories. (2019b). *Finding common ground: A renewed commitment to regional land use planning in the Northwest Territories*.

⁵⁹ Sahtu Land Use Planning Board. (2013). *Sahtu Land Use Plan*.

⁶⁰ Sahtu Land Use Planning Board. (2013). *Sahtu Land Use Plan*.



Figure 6: MVH Project Route - Including Settlement Area

Source: K'alo Stantec. (2023).

5.2 Employment and Economy

5.2.1 School diploma

5.2.2 Local Assessment Area

5.2.2.1 Wrigley

5.2.2.1.1 Employment and Income

Tables 3 and 4 provide the 2021 community labour force statistics compared to those of Dehcho Region and the NWT. According to the latest data from Statistics Canada (2022), the population 15+ within the community of Wrigley makes up approximately 4.0% of the total population aged 15+ within Dehcho Region. Correspondingly, Wrigley's labour force is 3% of Dehcho Region's. Wrigley's participation rate and employment rate are lower than the Dehcho Region and NWT rates and its unemployment rate is higher than the Dehcho Region and NWT rates. Of all the communities within Dehcho Region, Wrigley had the second lowest employment rate and second highest unemployment rate in 2021⁶¹.

Table 3: Labour Force Activity in Wrigley, Dehcho Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Wrigley	95	45	40	10	47.4	22.2	42.1
Dehcho	2,385	1,375	1,150	225	57.7	16.4	48.2
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Source: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

The labour force participation rate in Wrigley increased between 2011 and 2014 (from 50.0% to 65.9%), stabilized between 2014 and 2019, and then decreased (from 64.5% to 47.4%) between 2019 and 2021. Wrigley's participation rate was 15 percentage points less than Dehcho Region in 2011 but had reduced to 10 percentage points less than the region in 2021. The employment rate for the community remained relatively constant over that time period (43.8% in 2011 and 42.1% in 2021), which is consistent with the trend in the region. The unemployment rate in Wrigley reduced by 14 percentage points from about 36% in 2014 to about 22% in 2021, whereas the unemployment rate for the region during the same period decreased by about 4 percentage points (from 20.2% to 16.4%).

⁶¹ The communities within the Dehcho Region are Fort Liard, Fort Simpson, Jean Marie River, Nahanni Butte, Sambaa K'e, Wrigley

Table 4: Labour Force Participation, Employment and Unemployment Rates in Wrigley, Dehcho and NWT, 2011-2021

	Participation			Employment			Unemployment		
	NWT	Dehcho	Wrigley	NWT	Dehcho	Wrigley	NWT	Dehcho	Wrigley
2011	75.4	65.3	50.0	66.8	50.3	43.8	11.4	23.0	-
2014	73.4	64.5	65.9	65.6	51.5	42.2	10.6	20.2	36.1
2016	74.1	65.2	61.1	66.2	49.5	38.9	10.6	23.8	36.4
2019	73.6	67.8	64.5	65.7	49.0	40.9	10.7	27.7	36.6
2021	70.7	57.7	47.4	64.6	48.2	42.1	8.6	16.4	22.2

Sources: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 5 shows that in 2019, Wrigley had considerably more males are employed than females, which is different than the employment rates for males and females in both the region and the NWT as a whole. However, in 2021, Wrigley had more employed females than males⁶², while the employment rate at both the regional and territorial levels for 2021 was slightly higher for males than females.

Also, as shown in **Table 5**, the majority of employed people in the community in 2019 (62.5%) were working full time, which is less than the regional level (76.8%) and territorial level (83.3%). The community's part-time employment rate in Wrigley (37.5%) was higher than that found in the Dehcho region (23.2%) and the Territory (16.7%).

Table 5: Employment Rates in Wrigley, Dehcho Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Wrigley	2019	48.6	29.3	38.3	100	62.5	37.5
	2021	40.0	50.0	-*	-	-	-
Dehcho Region	2019	47.7	50.4	41.1	83.2	76.8	23.2
	2021	49.8	47.1	-*	-	-	-
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	-*	-	-	-

Source: NWT Bureau of Statistics. (2020d)., Statistics Canada. (2022a).

* Data not available

⁶² It is important to note that due to its small population, big changes in employment status may reflect a change in the employment status of relatively few males or females.

In 2019, the available labour supply in Wrigley was identified by the NWT Bureau of Statistics as being comprised of 33 individuals, the majority of whom were female (55.5%), Indigenous (100%) and had more than a high school diploma (59.3%) (see **Table 6**). The proportion of the available labour supply in Wrigley that is willing to do rotational work (70.7%) is slightly lower than the regional figure (73.4%), and the proportions of Indigenous people and individuals with more than a high school diploma are higher than the regional and Territorial figures.

Table 6: Potential Labour Supply in Wrigley, Dehcho Region and NWT, 2019

	Available Labour Supply	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Wrigley	33	70.7	44.5	100.0	40.7
Dehcho	793	73.4	59.7	95.8	67.2
NWT	5,545	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020d).

In addition to potentially participating in the labour force, Wrigley residents may participate in Traditional Activities and the volunteer community. In 2018, the proportion of Wrigley residents who participated in some volunteer activities was significantly lower (19.1%) than the territorial average, and 16.9% lower than the regional average (see **Table 7**).

Table 7: Volunteering, Wrigley, Dehcho Region and NWT, 2018

	% of Individuals who Volunteered 2018
Wrigley	19.6
Dehcho	36.5
NWT	38.7

Source: NWT Bureau of Statistics. (2020d).

In 2014, the top occupation in Wrigley was in the area of trade, transport and equipment operators (11 people), which is also the largest occupation group in the Dehcho region (see **Table 8**). Combined with employment related to business finance and administration; sales and service; and natural resources/agriculture, these occupations accounted for the majority of workers in the community. Although there were a relatively large number of jobs in the region in occupations related to education, law, social community & government services and management, very few of these positions were located in Wrigley. Indigenous workers made up the majority of all occupations in the region in 2014, with the exceptions being natural and applied sciences (where non-Indigenous workers comprised 51% of the total).

In 2019, trade, transport and equipment operator occupations continued to be the largest employment category in Wrigley, while employment in other occupations was reduced compared to 2014 (see **Table 9**). Three of the largest occupational groups in the region (business, finance and administration; education, law, social community & government services; and sales and service) make up the majority of employment for women, although there was very little employment in these occupations in Wrigley. In 2019 non-indigenous workers continued to be the majority (57%) of those working in occupations related to natural and applied sciences and became the majority (57%) in management occupations as well.

Table 8: Employment by Occupation in Wrigley and the Dehcho Region, 2014

Occupation	Wrigley					Dehcho				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Management	x	x	0	x	x	181	123	58	109	72
Business, finance & admin	8	x	6	7	x	189	53	137	150	39
Natural & applied sciences	x	x	x	x	x	35	32	x	17	18
Health	x	0	x	x	x	47	x	40	17	30
Education, law, social community & government services	x	x	x	x	x	250	60	190	129	121
Art, culture, recreation & sport	0	0	0	0	0	25	x	22	20	x
Sales and service	7	x	5	7	0	233	101	133	205	28
Trades, transport and equipment operators	11	11	0	11	0	276	270	x	226	50
Natural resources, agriculture	7	7	0	7	0	48	44	x	46	x
Manufacturing, utilities	0	0	0	0	0	x	x	x	x	x
Not stated or classified	6	x	0	x	0	156	91	66	132	24

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Table 9: Employment by Occupation in Wrigley and the Dehcho Region, 2019

Occupation	Wrigley					Dehcho				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Management	x	x	0	x	0	155	106	50	68	88
Business, finance & admin	x	x	x	x	0	191	29	162	144	47
Natural & applied sciences	x	x	0	0	x	63	43	20	27	36
Health	0	0	0	0	0	37	11	26	x	32
Education, law, social community & government services	x	0	x	x	0	277	84	193	161	117
Art, culture, recreation & sport	0	0	0	0	0	23	x	17	23	0
Sales and service	x	x	x	x	0	212	95	117	189	24
Trades, transport and equipment operators	12	12	0	10	x	257	246	11	200	58
Natural resources, agriculture	0	0	0	0	0	20	19	x	20	0
Manufacturing, utilities	x	x	0	x	0	18	18	0	16	x
Not stated or classified	x	x	0	x	0	81	51	30	59	22

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Tables 10 and 11 show the employment by industry in Wrigley and the Dehcho region in 2014 and 2019. The industry with the highest levels of employment in Wrigley and the region in 2014 was public administration, which accounted for 29% of employment in the region. The majority of the region's workers in public administration were male (58%) and Indigenous (77%). Other large industries in the region included education (11%), construction (12%), and health care and social services (10%).

In 2019, public administration continued to be the largest employment industry in the region and the community of Wrigley, providing 35% of all jobs in the region. Between 2014 and 2019, employment in the region increased marginally in the utilities and retail trade industries and increased more substantially in transportation and warehousing, and finance and insurance. Major reductions in employment occurred in construction; real estate/rental/leasing; management of companies/enterprises; education and health care and social services.

Indigenous workers made up the majority of workers in all industries in 2014 and 2019 except transportation & warehousing and educational services. In 2014 and 2019, women made up the majority of workers in the industries of education, health and social services, arts/entertainment/recreation, and accommodation/food services. In 2019, women also became the majority of workers in the retail trade industry.

Table 10: Employment by Industry in Wrigley and the Dehcho Region, 2014

Occupation	Wrigley					Dehcho				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Agriculture, forestry, fishing and hunting	x	x	0	x	0	20	17	x	20	0
Mining, quarrying, and oil and gas extraction	x	x	x	x	x	41	29	11	41	0
Utilities	x	x	0	x	0	22	20	x	19	X
Construction	x	x	0	x	0	176	152	24	151	25
Manufacturing	0	0	0	0	0	12	x	x	12	0
Wholesale Trade	x	x	0	x	0	x	x	x	x	0
Retail trade	0	0	0	0	0	87	45	42	65	22
Transportation and warehousing	x	x	0	0	X	47	45	x	22	25
Information and cultural industries	0	0	0	0	0	x	0	x	0	x
Finance and insurance	0	0	0	0	0	x	0	x	0	x
Real estate and rental and leasing	0	0	0	0	0	39	27	12	27	X
Professional, scientific and technical services	x	0	x	0	x	11	x	x	10	x
Management of companies and enterprises	0	0	0	0	0	12	x	x	x	x
Administrative and support, waste management and remediation services	0	0	0	0	0	17	9	9	14	x
Educational Services	x	x	x	x	X	162	52	110	77	85
Health care and social services	x	0	5	x	0	153	18	135	95	58
Arts, entertainment and recreation	0	0	0	0	0	14	x	11	12	x
Accommodation and food services	0	0	0	0	0	62	21	41	46	16
Other services (except public administration)	0	0	0	0	0	44	22	22	30	14
Public administration)	23	16	8	21	x	419	245	174	324	95
Not stated or classified	x	x	x	x	X	89	62	27	78	x

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Table 11: Employment by Industry in Wrigley and the Dehcho Region, 2019

Occupation	Wrigley					Dehcho				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Agriculture, forestry, fishing and hunting	0	0	0	0	0	x	x	0	x	0
Mining, quarrying, and oil and gas extraction	0	0	0	0	0	32	26	x	31	x
Utilities	x	x	0	x	0	33	33	0	21	x
Construction	x	x	0	x	0	96	87	10	84	x
Manufacturing	0	0	0	0	0	x	x	x	x	0
Wholesale Trade	x	x	0	x	0	x	x	x	x	0
Retail trade	0	0	0	0	0	93	44	50	59	34
Transportation and warehousing	x	x	0	0	x	85	60	25	30	55
Information and cultural industries	0	0	0	0	0	x	x	0	0	x
Finance and insurance	0	0	0	0	0	23	x	16	16	x
Real estate and rental and leasing	0	0	0	0	0	21	10	11	16	x
Professional, scientific and technical services	0	0	0	0	0	16	16	0	x	x
Management of companies and enterprises	0	0	0	0	0	0	0	0	0	0
Administrative and support, waste management and remediation services	x	0	x	x	0	x	x	x	x	x
Educational Services	x	0	x	x	0	120	36	84	56	64
Health care and social services	x	0	x	x	0	131	33	98	96	35
Arts, entertainment and recreation	0	0	0	0	0	21	x	15	21	0
Accommodation and food services	0	0	0	0	0	59	22	37	42	x
Other services (except public administration)	0	0	0	0	0	26	17	9	11	x
Public administration)	19	16	x	16	x	458	247	211	321	137

Occupation	Wrigley					Dehcho				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Not stated or classified	x	x	0	x	0	99	49	47	83	18

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

The average personal and family incomes in the Dehcho Region in 2020 were both lower than the territorial averages (data for the community is not available) (see **Table 12**). The region also had a smaller proportion of families than the territorial average that are earning greater than \$75,000 and year, and a larger proportion of families earning less than \$30,000.

Table 12: Individual and Family Income, Community of Wrigley, Dehcho Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Wrigley*	--	--	--	--
Dehcho	53,896	114,893	57.1	8.6
NWT	69,802	149,197	73.2	5.7

*Data not available

Source: Statistics Canada. (2022a).

The average personal income in Dehcho Region increased by 36.7% between 2011 and 2020 (data for the community is not available) (see **Table 13**), which is smaller than the increase that occurred at the Territorial level (24.6%) over the same period.

Table 13: Average Personal Income (\$), Community of Wrigley, Dehcho Region and NWT 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Wrigley*	--	--	--	--	--	--	--	--	--	--
Dehcho	53,896	46,440	44,980	44,825	44,750	44,706	42,780	42,948	41,764	40,917
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

*Data not available

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

The average family income is also considerably lower in the Dehcho region than the Territory (data for the community is not available) (see **Table 14**). Between the years 2010 and 2020, the average family income in the region ranged from 23% to 32% lower than the territorial average.

Table 14: Average Family Income (\$), Community of Wrigley, Dehcho Region and NWT, 2010-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Wrigley*	--	--	--	--	--	--	--	--	--	--	--
Dehcho	114,893	99,901	95,049	91,351	92,678	96,120	89,240	90,404	90,421	85,733	83,927
NWT	149,197	140,408	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089	113,934

*Data not available

Sources: NWT Bureau of Statistics. (2021e)., Statistics Canada. (2022a).

Tables 15 and 16 show that a Wrigley has a smaller proportion of individuals and families with lower incomes and receiving income assistance than across the region and the Territory and that the trend of income assistance in the community is opposite to that of the region and Territory. In 2022, 1.9% of the population of the community were income assistance beneficiaries, which is much less than 8.9% for the region and 5.8% for the Territory (see **Table 15**).

Table 15: Income Assistance, Community of Wrigley, Dehcho Region and NWT, 2022

	Beneficiaries (monthly average) #	Beneficiaries as a % of population
Wrigley	2	1.9
Dehcho	294	8.9
NWT	2,632	5.8

Source: Government of the Northwest Territories Department of Education Culture & Employment. (2023).

Table 16 indicates that the number of income assistance beneficiaries has reduced in the community between the years of 2014-2022, whereas the number of people receiving benefits increased over that period in the region (by 40%) and Territory (by 14%).

Table 16: Number of Income Assistance Beneficiaries (Monthly Average) Over Time, Community of Wrigley and Dehcho Region, 2014-2022

	2022	2021	2020	2019	2018	2017	2016	2015	2014
Wrigley	2	4	6	6	8	7	9	10	7
Dehcho	294	229	359	355	362	320	314	257	210
NWT	2,632	2,193	3,350	3,215	3,192	2,951	2,607	2,486	2,312

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

In 2020, the region had 15.7% of individuals and 14.3% of families defined as “low income”, both of which are more than 30% higher than the territorial averages (see **Table 17**).

Table 17: Low Income Individuals and Families, Community of Wrigley, Dehcho Region, 2020

	# People Low Income	% People Low Income	# Families Low Income	% Families Low Income
Wrigley*	--	--	--	--
Dehcho	400	15.7	100	14.3
NWT	5,010	11.9	1,180	10.4

*Data not available

Source: Statistics Canada. (2022a).

5.2.2.1.2 Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 18**) indicates that food prices were 74% higher in Wrigley than in Yellowknife in 2015 and have been between 50-74% higher than Yellowknife since 2001. Similarly, **Table 19** shows that the overall cost of living in the community was 50-55% higher than Edmonton, in 2013, and 25-35% higher than in Yellowknife.

Table 18: Community Food Price Index, Wrigley and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Wrigley	--	174	150	155	175	174
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020i).

Table 19: Living Cost Differentials, Wrigley, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Wrigley	--	150-155	150-155	150-155	145-150
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

5.2.2.1.3 Traditional Economy

Table 20 provides information about the proportion of the population of Wrigley, the Dehcho region and the NWT that participated in traditional activities in 2018. Over 65% of the population in Wrigley participated in hunting and fishing, which was a higher participation rate than that for the NWT as a whole (36.3%) and the region (51.7%). Although a smaller proportion of residents of Wrigley participated in trapping and gathering berries, the level of participation in these activities is larger than the regional and territorial averages. Similarly, for over 69% of Wrigley residents, half or more of the meat/fish (country food) which they consumed was obtained through hunting/fishing, which is larger than the regional (51.55%) and Territorial (22.5%) averages.

Table 20: Community of Wrigley, Dehcho Region and NWT Traditional Activities, 2018

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Wrigley	65.8	35.5	48.1	14.6	69.2
Dehcho	51.7	12.0	37.9	28.1	51.5
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2019g).

The data in **Table 21**, which identifies the number of people over the age of 15 participating in hunting or fishing between 1998 and 2018, indicates that participation in hunting and fishing in Wrigley has increased substantially, and since 2013 has been much higher than the regional and territorial rates. More households in Wrigley obtained the majority of their meat/fish through hunting or fishing between 1998 and 2018 than was the case for the region and in the NWT as a whole (see **Table 22**).

Table 21: Persons Over 15 Who Hunted or Fished in the Year in Wrigley, Dehcho Region and NWT, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Wrigley	65.8	77.2	42.9	47.0	34.4
Dehcho	51.7	57.6	46.7	46.8	41.5
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

Table 22: Households Where 75% or More of Meat Consumed During the Year was Obtained by Hunting or Fishing, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Wrigley	50	38.4	44.1	40.9	27.7
Dehcho	34	25.3	29.6	32.9	26.9
NWT	12.6	13.8	15.4	17.5	21.5

Source: NWT Bureau of Statistics. (2020j).

5.2.2.2 Tulita

5.2.2.2.1 Employment and Income

Table 23 and 24 provide 2021 community labour force information compared to those of Sahtu Region and the NWT.

According to Statistics Canada (2022), the population 15+ within the community of Tulita makes up approximately 19% of the total population aged 15 years+ within Sahtu Region. Correspondingly, Tulita's labour force is slightly lower than 20% of Sahtu Region's. Tulita's participation rate and employment rate are lower than the Sahtu Region and NWT rates and its unemployment rate is higher than the Sahtu Region and NWT rates. Of all the communities within Sahtu Region, Tulita had the lowest employment rate (tied with Colville Lake) and second highest unemployment rate in 2021.

Table 23: Labour Force Activity in Tulita, Sahtu Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Tulita	340	200	160	40	58.8	20	47.1
Sahtu	1,785	1,145	975	165	64.1	14.4	54.6
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Sources: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Table 24 provides information about changes in the labour force over time. The labour force participation rate in the community increased (from 60.6% to 67.9%) between 2011 and 2019 but reduced to 58.8% in 2021: Tulita's participation rate was consistently lower than the participation rate for the Sahtu Region in each of the years shown. The 2019 employment rate in Tulita increased by 7.7 percentage points compared to 2011, but had returned to 2011 levels in 2021. The community's unemployment rate decreased 3.3 percentage points over the 10-year period. The unemployment rate for the region during the same period decreased by about 5.5 percentage points (from 19.9% to 14.4%) and the employment rate for the region decreased by about 0.9 percentage points (from 55.5% to 54.6%).

Table 24: Labour Force Participation, Employment and Unemployment Rates in Tulita, Sahtu and NWT, 2011-2021

	Participation			Employment			Unemployment		
	NWT	Sahtu	Tulita	NWT	Sahtu	Tulita	NWT	Sahtu	Tulita
2011	75.4	68.9	60.6	66.8	55.5	47.0	11.4	19.9	23.3
2014	73.4	69.8	60.1	65.6	57.7	51.6	10.6	17.4	14.1
2016	74.1	70.6	64.5	66.2	59.3	53.9	10.6	16.0	14.3
2019	73.6	72.5	67.9	65.7	60.1	54.7	10.7	17.0	19.4
2021	70.7	64.1	58.8	64.6	54.6	47.1	8.6	14.4	20

Source: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 25 shows that in 2019, Tulita had a slightly lower employment rate for males than females (53.4% vs. 56.5%): this was similar for the Sahtu Region, while the NWT as a whole had a slightly higher employment rate for males than females. However, in 2021, Tulita had a higher employment rate for males compared to females (48.6% vs. 46.7%), while the pattern of fewer males than females at the regional level and more males than females at the territorial level was maintained.

Also, as shown in **Table 25**, the majority of employed people in the community in 2019 (78.0%) were working full time, which is less than the regional level (81.3%) and territorial level (83.3%). The community's part-time employment rate in Tulita (22.0%) was higher than that found in the Sahtu Region (18.7%) and the Territory (16.7%).

Table 25: Employment Rates in Tulita, Sahtu Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Tulita	2019	53.4	56.5	49.1	92.7	78.0	22.0
	2021	48.6	46.7	--*	--	--	--
Sahtu Region	2019	57.0	63.9	49.7	85.8	81.3	18.7
	2021	53.6	56.4	--*	--	--	--
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	--	--	--	--

Source: NWT Bureau of Statistics. (2020c)., Statistics Canada. (2022a).

* Data not available

In 2019, the available labour supply in Tulita was identified by the NWT Bureau of Statistics as being comprised of 106 individuals, the majority of whom were male (56.8%), Indigenous (96.3%) and had less than a high school diploma (70.9%) (see **Table 26**). The proportion of the available labour supply in Tulita that is willing to do rotational work (60.2%) is slightly lower than the regional figure (63.4%), while the proportions of Indigenous people and individuals with less than a high school diploma are higher than the regional and Territorial figures.

Table 26: Potential Labour Supply in Tulita, Sahtu Region and NWT, 2019

	Available Labour Supply (#)	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Tulita	106	60.2	56.8	96.3	70.9
Sahtu	444	63.4	63.5	94.1	61.6
NWT	5,545	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020c).

In addition to potentially participating in the labour force, Tulita residents may participate in Traditional Activities (see section 1.3.5) and the volunteer community. In 2018, the proportion of Tulita residents who participated in some volunteer activities was slightly lower (0.5%) than the territorial average, and 5.4% lower than the regional average (see **Table 27**).

Table 27: Volunteering, Tulita, Sahtu Region and NWT, 2018

	% of Individuals who Volunteered 2018
Tulita	38.2
Sahtu	43.6
NWT	38.7

Source: NWT Bureau of Statistics. (2020c).

In 2014, the top occupations in Tulita were in the areas of management (38 people); education, law, social community and government services (38 people); business, finance and administration (37 people); sales and service (37 people); and trades, transport and equipment operators (37 people) (see **Table 28**). Combined, these occupations made up 80% of the community workforce. By 2019, the number of workers in education, law, social community & government services had increased by 21% and the number of workers in occupations related to sales and service had increased by 35%, while representation had decreased in management (-47%); and business, finance and administration (-30%) (see **Table 29**).

In 2014 and 2019, women made up the largest proportion of workers with occupations in business, finance and administration; education, law, social community & government services; and sales and services. By 2019, the number of workers with occupations in management had reduced from 38 to 20, but the number of women working in the occupation had increased from 8 to 11.

In 2014, there were more Indigenous than non-Indigenous workers in all occupations except those related to education, law, social community & government services (where Indigenous workers comprise 47% of the total). By 2019, the number of workers in the education, law, social community & government services occupations had increased from 38 to 46, and the proportion of Indigenous workers grew to 59%.

Table 28: Employment by Occupation in Tulita and the Sahtu Region, 2014

Occupation	Tulita					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Management	38	30	8	22	16	162	120	42	71	91
Business, finance & admin	37	7	30	34	x	215	49	167	141	74
Natural & applied sciences	17	12	x	12	X	75	57	18	21	54
Health	x	0	x	x	x	21	x	19	6	15
Education, law, social community & government services	38	15	23	18	19	189	63	127	95	94
Art, culture, recreation & sport	x	0	x	x	0	13	7	6	10	x
Sales and service	37	15	22	33	x	161	56	105	125	36
Trades, transport and equipment operators	37	37	0	32	x	186	180	7	134	52
Natural resources, agriculture	11	11	0	6	x	48	46	x	26	22
Manufacturing, utilities	0	0	0	0	0	20	18	x	6	14
Not stated or classified	19	11	8	19	0	92	49	43	66	26

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021 a).

Table 29: Employment by Occupation in Tulita and the Sahtu Region, 2019

Occupation	Tulita					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Management	20	9	11	14	6	164	97	67	67	97
Business, finance & admin	26	x	21	20	6	161	28	133	113	48
Natural & applied sciences	7	x	x	x	x	74	58	15	17	57
Health	0	0	0	0	0	21	6	15	7	14
Education, law, social community &	46	14	32	27	19	239	82	157	127	112

Occupation	Tulita					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
government services										
Art, culture, recreation & sport	9	x	x	9	0	30	15	15	23	7
Sales and service	50	24	26	43	7	252	101	151	171	81
Trades, transport and equipment operators	45	45	0	35	10	193	185	8	124	70
Natural resources, agriculture	x	0	x	0	x	17	14	x	10	7
Manufacturing, utilities	0	0	0	0	0	21	21	0	14	7
Not stated or classified	24	13	11	24	0	44	22	22	41	x

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021 a).

Tables 30 and 31 show the employment by industry in Tulita and the Sahtu Region in 2014 and 2019. The industries with the highest levels of employment in Tulita in 2014 were 1) public administration, 2) educational services, and 3) mining, quarrying, and oil and gas extraction. By 2019, employment in public administration had contracted (by 45%) but was still the highest sector of employment in the community. Between 2014 and 2019, employment had contracted in the mining, quarrying, and oil and gas extraction industries (by 70%) and health care & social services (52%), while employment increased in construction (+94%), accommodation and food services (29%) and professional, scientific and technical services.

Indigenous workers made up the majority of workers in all industries in 2014 except educational services. By 2019, Indigenous workers comprised 69% of all workers.

In both 2014 and 2019, women made up the majority of workers in the health & social assistance, educational services, and in 2019 were the majority of professional, scientific and technical services industry as well.

Table 30: Employment by Industry in Tulita and the Sahtu Region, 2014

Occupation	Tulita					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Agriculture, forestry, fishing and hunting	0	0	0	0	0	7	5	x	7	0
Mining, quarrying, and oil and gas extraction	20	16	x	14	6	141	105	36	56	85
Utilities	0	0	0	0	0	11	11	0	7	x
Construction	17	16	x	17	0	95	80	15	65	29
Manufacturing	0	0	0	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail trade	19	12	7	12	8	91	52	39	54	36
Transportation and warehousing	12	6	6	10	x	96	58	38	38	58
Information and cultural industries	x	x	0	x	0	5	5	0	x	x
Finance and insurance	0	0	0	0	0	7	x	5	0	7
Real estate and rental and leasing	7	x	x	7	0	40	24	17	31	9
Professional, scientific and technical services	x	x	0	x	x	10	x	6	6	0
Management of companies and enterprises	x	0	x	x	0	6	0	6	6	0
Administrative and support, waste management and remediation services	0	0	0	0	0	x	x	x	x	x
Educational Services	27	9	18	12	15	121	43	78	45	76
Health care and social services	17	x	15	14	x	84	13	72	51	33
Arts, entertainment and recreation	x	0	x	x	0	x	x	x	x	x
Accommodation and food services	14	9	6	14	x	17	19	27	9	
Other services (except public administration)	x	x	0	0	x	24	14	10	12	12
Public administration	75	48	27	56	19	347	184	162	253	94
Not stated or classified	16	8	8	13	x	48	24	24	33	14

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Table 31: Employment by Industry in Tulita and the Sahtu Region, 2019

Occupation	Tulita					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Agriculture, forestry, fishing and hunting	0	0	0	0	0	x	x	0	x	0
Mining, quarrying, and oil and gas extraction	6	x	x	x	x	57	49	8	25	32
Utilities	0	0	0	0	0	6	6	0	x	x
Construction	33	30	x	24	9	75	65	10	44	31
Manufacturing	0	0	0	0	0	x	x	x	x	x
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail trade	19	15	x	12	7	106	58	48	61	45
Transportation and warehousing	6	x	5	16	0	119	79	41	22	98
Information and cultural industries	0	0	0	0	0	x	x	x	x	x
Finance and insurance	x	x	0	x	0	14	x	11	9	x
Real estate and rental and leasing	x	x	x	x	x	48	31	17	34	14
Professional, scientific and technical services	16	7	9	13	x	43	14	28	26	16
Management of companies and enterprises	0	0	0	0	0	7	x	x	7	0
Administrative and support, waste management and remediation services	9	x	7	9	0	27	13	14	19	7
Educational Services	26	x	21	18	9	143	50	93	62	81
Health care and social services	8	0	8	7	x	89	25	64	49	40
Arts, entertainment and recreation	x	x	x	x	0	19	x	15	18	x
Accommodation and food services	18	9	9	17	x	72	28	45	46	26
Other services (except public administration)	9	x	7	x	x	31	14	17	16	15
Public administration)	41	24	18	31	10	308	158	150	226	82
Not stated or classified	27	13	11	26	0	42	22	19	40	x

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

In 2020, the average personal and family incomes for residents of Tulita were lower than both the regional and territorial averages (see **Table 32**). A greater percentage of families also earned less than \$30,000 a year, and fewer earned more than \$75,000, than was the case in the region and the Territory.

Table 32: Individual and Family Income, Community of Tulita, Sahtu Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Tulita	47,800	96,708	33.3	16.7
Sahtu	63,857	131,589	58.9	7.1
NWT	69,802	149,197	73.2	5.7

Source: Statistics Canada. (2022a).

Between 2009 and 2018, an average of 36.1% of persons in Tulita had an income of less than \$15,000, compared to 29.4% of the Sahtu Region⁶³.

The average personal income in Tulita increased by 51% between 2011 and 2020 (see **Table 33**), which is greater than the increase that occurred at the regional level (34%) or Territorial level (25%) over the same period.

Table 33: Average Personal Income (\$), Community of Tulita, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Tulita	47,800	40,435	39,433	36,141	38,679	35,597	37,310	35,633	34,017	28,207
Sahtu	63,857	54,465	53,575	52,815	54,268	56,391	56,038	55,757	49,931	46,620
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

The average family income is also much lower in Tulita than in the region and the Territory (see **Table 34**).

Between the years 2010 and 2020, the average family income in the community ranged from 23% (2017) to 33% (2010) lower than the regional average, and 32% (2013) to 44% (2010) lower than the territorial average.

Table 34: Average Family Income (\$), Community of Tulita, Sahtu Region and NWT, 2010-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Tulita	96,708	93,923	90,346	91,000	84,654	90,769	84,231	84,500	76,464	66,462	63,250
Sahtu	131,589	119,242	122,879	117,629	114,600	125,066	121,048	122,442	106,774	97,467	95,060
NWT	149,197	140,408	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089	113,934

Sources: NWT Bureau of Statistics. (2021e)., Statistics Canada. (2022a).

⁶³ NWT Bureau of Statistics. (2020m). Family Income Distribution 2001-2019

Tables 35, 36 and 37 show that a Tulita has a larger proportion of individuals and families with lower incomes and receiving income assistance than across the region and the Territory. In 2022, 7.2% of the population of the community were income assistance beneficiaries, which is greater than 5.4% for the region and 5.8% for the Territory (see **Table 15**).

Table 35: Income Assistance, Community of Tulita, Sahtu Region and NWT, 2022

	Beneficiaries (monthly average)	Beneficiaries as a % of Population
Tulita	39	7.2
Sahtu	145	5.4
NWT	2,632	5.8

Source: Government of the Northwest Territories Department of Education Culture & Employment. (2023).

Table 36 indicates that the number of income assistance beneficiaries has increased in the community (by 22%) between the years of 2014-2022. This is proportionally greater than the trend in the number of people receiving benefits increased over that period in the region (increased by 19%) and Territory (increased by 14%).

Table 36: Number of Income Assistance Beneficiaries (Monthly Average)
Over Time, Community of Tulita and Sahtu Region, 2014-2022

	2022	2021	2020	2019	2018	2017	2016	2015	2014
Tulita	39	28	55	40	45	39	37	39	32
Sahtu	145	105	207	161	174	144	147	142	122
NWT	2,632	2,193	3,350	3,215	3,192	2,951	2,607	2,486	2,312

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

In 2020, Tulita had 15.6% of individuals and 16.7% of families defined as “low income”. This is higher than the proportion of low income individuals and families in both the region and the Territory (see **Table 37**).

Table 37: Low Income Individuals and Families, Community of Tulita, Sahtu Region and NWT, 2020

	# People Low Income	% People Low Income	# Families Low Income	% Families Low Income
Tulita	70	15.6	20	16.7
Sahtu	310	14.3	80	14.0
NWT	5,010	11.9	1,180	10.4

Source: Statistics Canada. (2022a).

5.2.2.2.2 Business Development/ Economic Opportunity

Businesses in Tulita include:

- MYB Construction (road work, heavy machinery, vehicle rental)
- Willow Lake Environmental (brush clearing)
- Cornerstone Oilfield Services (truck pilot, construction)
- The Wright Store Enterprises (convenience store, water tank and air duct cleaning)
- BJ's Services (dining, transportation, construction, heating, plumbing)

- McKay Range (tourism)
- Northern Store (retail merchandise and groceries)
- Blue Ridge (gas station)
- Two Rivers Hotel (accommodation)⁶⁴

5.2.2.2.3 Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 38**) indicates that food prices were 74% higher in Tulita than in Yellowknife in 2019 and have been between 66-90% higher than Yellowknife since 2001. Similarly, **Table 39** shows that the overall cost of living in the community was 70-75% higher than Edmonton, in 2018, and 40-55% higher than in Yellowknife.

Table 38: Community Food Price Index, Tulita and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Tulita	174	166	184	178	190	172
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020i).

Table 39: Living Cost Differentials, Tulita, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Tulita	170-175	175-180	160-165	155-60	155-60
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

5.2.2.2.4 Traditional Economy

Table 40 provides information about the proportion of the population of Tulita, the Sahtu Region and the NWT that participated in traditional activities in 2018. Over 43% of the Tulita population participated in hunting and fishing, which was a higher participation rate than that for the NWT as a whole (36.3%) but marginally less than the participation rate in hunting and fishing for the region (45.6%). A slightly smaller proportion of residents of Tulita participated in trapping, gathering berries and producing arts and crafts when compared to the regional population, but had a significantly higher proportion of households consuming half or more of their meat/fish (country food) from hunting and fishing (70.3% in Tulita compared to 56.6% for the region).

Table 40: Community of Tulita, Sahtu Region and NWT Traditional Activities, 2018

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Tulita	43.6	5.0	30.7	23.8	70.3
Sahtu	45.6	8.9	33.6	27.0	56.6
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2019g). & NWT Bureau of Statistics. (2020c). Tulita – Statistical Profile

⁶⁴ Interview with community members.

The data in **Table 41**, which identifies the percentage of people over the age of 15 who participated in hunting or fishing between 1998 and 2018, indicates that participation in hunting and fishing in Tulita has been similar to the regional participation rate since 1998. In most years, more households Tulita obtained the majority of their meat/fish (country food) through hunting or fishing between 1998 and 2018 than was the case for the region and in the NWT as a whole (see **Table 42**).

Table 41: Persons over 15 Who Hunted or Fished in the Year, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Tulita	46.3	57.1	41.7	52.1	45.3
Sahtu	45.6	49.9	44.7	47.1	45.1
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

Table 42: Households Where 75% or More of Meat Consumed During the Year was Obtained by Hunting or Fishing, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Tulita	44.9	28.0	42.0	56.2	50.9
Sahtu	35.2	39.2	41.2	32.0	44.5
NWT	12.6	13.8	15.4	17.5	21.5

Source: NWT Bureau of Statistics. (2020j).

5.2.2.3 Norman Wells

5.2.2.3.1 Employment and Income

Tables 43 and 44 provide the community labour force statistics compared to those of Sahtu Region and the NWT.

According to Statistics Canada (2022), the population 15+ within the community of Norman Wells makes up approximately 30% of the total population aged 15 years+ within Sahtu Region and its labour force is 36% of Sahtu Region's. Norman Wells' participation rate and employment rate are higher than the Sahtu Region and NWT rates and its unemployment rate is lower than the Sahtu Region and NWT rates. Of all the communities within Sahtu Region, Norman Wells had the highest employment rate and the lowest unemployment rate in 2021.

Table 43: Labour Force Activity in Norman Wells, Sahtu Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Norman Wells	530	415	395	20	78.3	4.8	74.5
Sahtu	1,785	1,145	975	165	64.1	14.4	54.6
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Source: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Table 44 provides information about changes in the labour force over time. The labour force participation rate in the community increased (from 81.6% to 85.8%) between 2011 and 2019 but reduced to 78.3% in 2021: Norman Wells' participation rate was consistently higher than the participation rate for the Sahtu Region in each of the years shown. The 2019 employment rate in Tulita increased by 7.8% points compared to 2011, but had reduced to below 2011 levels in 2021 (total decrease of 0.9% points). The community's unemployment rate decreased 2.7 percentage points over the 10-year period. The unemployment rate for the region during the same period decreased by about 5.5 percentage points (from 19.9% to 14.4%) and the employment rate for the region decreased by about 0.9 percentage points (from 55.5% to 54.6%).

Table 44: Labour Force Participation, Employment and Unemployment Rates in Norman Wells, Sahtu Region and NWT, 2011-2021

	Participation Rate (%)			Employment Rate (%)			Unemployment Rate (%)		
	NWT	Sahtu	Norman Wells	NWT	Sahtu	Norman Wells	NWT	Sahtu	Norman Wells
2011	75.4	68.9	81.6	66.8	55.5	75.4	11.4	19.9	7.5
2014	73.4	69.8	84.7	65.6	57.7	78.5	10.6	17.4	7.4
2016	74.1	70.6	82.2	66.2	59.3	78.0	10.6	16.0	5.2
2019	73.6	72.5	85.8	65.7	60.1	82.2	10.7	17.0	4.2
2021	70.7	64.1	78.3	64.6	54.6	74.5	8.6	14.4	4.8

Source: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 45 shows that in 2019, Norman Wells had a slightly higher employment rate for males than females (83.0% vs. 81.5%): this was similar for the NWT as a whole, while Sahtu Region had a lower employment rate for males than females. The same patterns of employment rates for males vs. females persisted in 2021 for Norman Wells, the region and the territory.

Also, as shown in **Table 45**, the majority of employed people in the community in 2019 (86.7%) were working full time, which was greater than the regional level (81.3%) and territorial level (83.3%). The community's part-time employment rate in Norman Wells (13.3%) was lower than that found in the Sahtu Region (18.7%) and the Territory (16.7%).

Table 45: Employment Rates in Norman Wells, Sahtu Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Norman Wells	2019	83.0	81.5	73.2	86.5	86.7	13.3
	2021	48.6	46.7	--*	--	--	--
Sahtu Region	2019	57.0	63.9	49.7	85.8	81.3	18.7
	2021	53.6	56.4	--*	--	--	--
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	--	--	--	--

Source: NWT Bureau of Statistics. (2020b)., Statistics Canada. (2022a).

* Data not available

Norman Wells has a small pool of available labour relative to the region and the Territory, which is consistent with the high employment rate for the community (see **Table 46**). According to the NWT Bureau of Statistics, in 2019 there were 46 people in the community available to take on work, just over half of whom were male (51.5%). Just over half of the available workers had less than a high school diploma, which is a smaller percentage than occurs in the available workforce in the region (61.6%) and the Territory (53.6%). The proportion of available workers who were Indigenous was smaller in Norman Wells (62.1%) than was the case in the region (94.1%) and the Territory (81.5%).

Table 46: Potential Labour Supply in Norman Wells, Sahtu Region and NWT, 2019

	Available Labour Supply (#)	Available Labour as a % of Labour Force	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Norman Wells	46	8.2	45.6	51.5	62.1	52.4
Sahtu	444	30.3	63.4	63.5	94.1	61.6
NWT	5,545	21.5	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020b).

In addition to potentially participating in the labour force, Norman Wells residents may participate in Traditional Activities and the volunteer community. In 2018, the proportion of Norman Wells residents who participated in some volunteer activities was slightly higher (1.4%) than the territorial average, and 6.3% higher than the regional average (see **Table 47**).

Table 47: Volunteering, Norman Wells, Sahtu Region and NWT, 2018

	% of Individuals who Volunteered
Norman Wells	45.0
Sahtu	43.6
NWT	38.7

Source: NWT Bureau of Statistics. (2020b).

Tables 48 and 49 provide information about the occupations held by workers in Norman Wells and the Sahtu Region in 2014 and 2019. In 2014, the top three occupations in Norman Wells were in the areas of 1) business, finance and administration, 2) management, and 3) trades, transport and equipment operators. Combined, these three occupational areas accounted for approximately 51% of all employment in the community. By 2019, workers with sales and service occupations had become the largest employment group in the community. While most occupations had greater numbers of workers in 2019 than they did in 2014, two areas saw reductions: business, finance and administration (-28%) and natural resources and agriculture (-63%). The largest increases occurred in health (+185%), sales and service (+96%) and education, law, social community & government services (+50%).

In 2014, Norman Wells provided the majority of the region's employment in the areas of manufacturing and utilities (78%), natural and applied sciences (69%), and natural resources and agriculture (65%). In 2019, the community continued to provide most of the region's employment in those areas, as well as in occupations related to management (54%) and health (95%).

In 2014, women made up a greater percentage of people in management occupations in Norman Wells (31%) than was the case for the Sahtu Region (26%). By 2019, the proportion of women in management occupations had increased to 40% for both the community and the region. In 2014 Norman Wells had the only women employed in the region in occupations related to health, trades, transportation, and equipment operators. By 2019, in other parts of the region all occupations other than health had women employed.

In both Norman Wells and the Sahtu Region in 2014 and 2019, women represented the majority of workers in the occupations of business, finance and administration; health; education, law, community and government services; and sales & service and were not represented in manufacturing and utilities.

Occupations employing the highest numbers of Indigenous people in Norman Wells are related to business, finance and administration; and sales and service. Indigenous workers in Norman Wells make up a smaller proportion of most occupations than is the case across the region, reflecting the higher proportion of non-Indigenous workers in the community population. The proportion of Indigenous people employed in Norman Wells is significantly lower in occupations related to trades, transport and equipment operation (28% of all workers) compared to the Sahtu Region (74% of all workers).

Table 48: Employment by Occupation in Norman Wells and the Sahtu Region, 2014

Occupation	Norman Wells					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Management	74	51	23	18	56	162	120	42	71	91
Business, finance & admin	113	26	87	45	68	215	49	167	141	74
Natural & applied sciences	52	41	11	7	45	75	57	18	21	54
Health	7	0	7	x	5	21	x	19	6	15
Education, law, social community & government services	50	14	36	14	36	189	63	127	95	94
Art, culture, recreation & sport	x	x	0	0	x	13	7	6	10	x
Sales and service	50	16	33	19	30	161	56	105	125	36
Trades, transport and equipment operators	64	58	7	18	46	186	180	7	134	52
Natural resources, agriculture	30	30	0	12	18	48	46	x	26	22
Manufacturing, utilities	14	12	x	0	14	20	18	x	6	14
Not stated or classified	34	20	14	10	23	92	49	43	66	26

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Table 49: Employment by Occupation in Norman Wells and the Sahtu Region, 2019

Occupation	Norman Wells					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Management	88	53	35	14	74	164	97	67	67	97
Business, finance & admin	81	16	65	40	42	161	28	133	113	48
Natural & applied sciences	60	50	9	9	51	74	58	15	17	57
Health	20	x	15	6	14	21	6	15	7	14
Education, law, social community & government services	75	27	48	26	49	239	82	157	127	112
Art, culture, recreation & sport	9	6	4	x	7	30	15	15	23	7
Sales and service	98	38	60	29	69	252	101	151	171	81
Trades, transport and equipment operators	74	73	x	16	58	193	185	8	124	70
Natural resources, agriculture	11	8	x	4	7	17	14	x	10	7
Manufacturing, utilities	15	15	0	8	7	21	21	0	14	7
Not stated or classified	x	x	x	x	x	44	22	22	41	x

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Tables 50 and 51 show the employment by industry in Norman Wells and the Sahtu Region in 2014 and 2019. The industries with the highest levels of employment in Norman Wells in 2014 were 1) mining, quarrying, and oil and gas extraction; 2) public administration and 3) transportation and warehousing. By 2019, employment in the mining, quarrying, and oil and gas extraction industry had contracted in the community (by 58%), and employment in the health sector grew (by 93%). The construction sector also contracted between 2014 and 2019 (by 38%), while there was growth in the education (55%) and accommodation/food services industries (322%).

The Norman Wells Community Plan identifies three major industries as key contributors to employment (natural resources (oil exploration), construction/demolition and aeronautic) and notes that some medium-large scale businesses pertaining to these industries employ from 20 to 50 and more workers⁶⁵.

⁶⁵ Town of Norman Wells. (2021a). Norman Wells Community Plan.

The industries with the highest proportions of Indigenous workers in both 2014 and 2019 included public administration, and health and social assistance. Over that period, there was an increase in the proportion of Indigenous people in following industries: mining quarrying, and oil and gas extraction (+9%); health and social services (+9%); and accommodation and food services (+24%). Industries that experienced a decrease in the proportion of Indigenous workers between 2014 and 2019 included construction (-8%); and transportation and warehousing (-15%).

In both 2014 and 2019, women made up most workers in the health & social assistance, educational services and finance & insurance industries.

Table 50: Employment by Industry in Norman Wells and the Sahtu Region, 2014

Occupation	Norman Wells					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Agriculture, fishing forestry, & hunting	x	x	0	x	0	7	5	x	7	0
Mining, quarrying, and oil and gas extraction	105	76	29	28	78	141	105	36	56	85
Utilities	x	4	0	0	x	11	11	0	7	x
Construction	47	34	12	17	29	95	80	15	65	29
Manufacturing	0	0	0	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail trade	29	21	8	8	21	91	52	39	54	36
Transportation and warehousing	74	44	30	19	55	96	58	38	38	58
Information and cultural industries	x	x	0	0	x	5	5	0	x	x
Finance and insurance	7	x	5	0	7	7	x	5	0	7
Real estate and rental and leasing	14	8	6	5	9	40	24	17	31	9
Professional, scientific and technical services	5	0	5	x	x	10	x	6	6	0
Management of companies and enterprises	x	0	x	x	0	6	0	6	6	0
Administrative and support, waste management and remediation services	x	x	x	x	x	x	x	x	x	x
Educational Services	31	9	22	x	27	121	43	78	45	76
Health care and social services	32	x	29	10	22	84	13	72	51	33
Arts, entertainment and recreation	x	x	0	0	x	x	x	x	x	x
Accommodation and food services	9	x	6	x	8	17	19	27	9	

Occupation	Norman Wells					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Other services (except public administration)	11	7	x	6	5	24	14	10	12	12
Public administration)	98	49	49	41	57	347	184	162	253	94
Not stated or classified	14	5	9	4	10	48	24	24	33	14

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Table 51: Employment by Industry in Norman Wells and the Sahtu Region, 2019

Occupation	Norman Wells					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Agriculture, forestry, fishing and hunting	0	0	0	0	0	x	x	0	x	0
Mining, quarrying, and oil and gas extraction	44	38	6	16	28	57	49	8	25	32
Utilities	x	x	0	0	x	6	6	0	x	x
Construction	29	23	6	8	21	75	65	10	44	31
Manufacturing	x	x	0	0	x	x	x	x	x	x
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail trade	35	18	17	10	25	106	58	48	61	45
Transportation and warehousing	109	76	34	12	98	119	79	41	22	98
Information and cultural industries	x	x	0	x	x	x	x	x	x	x
Finance and insurance	11	x	10	6	x	14	x	11	9	x
Real estate and rental and leasing	16	10	6	x	13	48	31	17	34	14
Professional, scientific and technical services	7	x	x	0	7	43	14	28	26	16
Management of companies and enterprises	0	0	0	0	0	7	x	x	7	0
Administrative and support, waste management and remediation services	5	x	x	0	x	27	13	14	19	7
Educational Services	48	16	32	6	42	143	50	93	62	81
Health care and social assistance	62	22	40	25	36	89	25	64	49	40

Occupation	Norman Wells					Sahtu				
	Total	Males	Females	Indigenous	Non-Indigenous	Total	Males	Females	Indigenous	Non-Indigenous
Arts, entertainment and recreation	x	x	x	x	x	19	x	15	18	x
Accommodation and food services	38	17	21	13	25	72	28	45	46	26
Other services (except public administration)	8	x	5	x	7	31	14	17	16	15
Public administration)	106	53	57	51	59	308	158	150	226	82
Not stated or classified	x	x	x	x	x	42	22	19	40	x

Note: 'x' means data suppressed by NWT Bureau of Statistics for data quality

Source: NWT Bureau of Statistics. (2021a).

Tables 52, 53 and 54 show that the average individual and family incomes in Norman Wells have consistently been much higher than the averages for both the region and the Territory. Similarly, a considerably greater proportion of families in the community have annual incomes above \$75,000 than is the case in the region and the Territory, and there are fewer families in Norman Wells with incomes below \$30,000.

Table 52: Individual and Family Income, Community of Norman Wells, Sahtu Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Norman Wells	93,441	187,167	83.3	5.6
Sahtu	63,857	131,589	58.9	7.1
NWT	69,802	149,197	73.2	5.7

Source: Statistics Canada. (2022a).

Table 53 shows that the average personal income of workers in Norman Wells has consistently been higher than that of workers in the region and the Territory since 2011. The average personal income in the community was highest in 2013 and 2014, and during those years was 79% and 77% higher than the average personal income in the region. In the years 2016-2018, average personal income in Norman Wells was approximately 60% higher than across the region. Personal incomes in the region range between 4% and 15% lower than that for the Territory.

Table 53: Average Personal Income (\$), Community of Norman Wells, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Norman Wells	93,441	87,133	85,946	84,500	88,033	95,969	100,734	99,585	85,865	80,457
Sahtu	63,857	54,465	53,575	52,815	54,268	56,391	56,038	55,757	49,931	46,620
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

The average family income is also much higher in Norman Wells than in the region and the Territory (see **Table 54**). Between the years 2010 and 2020, the average family income in the community ranged from 42% (2020) to 69% (2014) higher than the regional average, and 25% (2020) to 65% (2013) higher than the territorial average.

Table 54: Average Family Income (\$), Community of Norman Wells, Sahtu Region and NWT, 2010-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Norman Wells	187,167	182,472	189,853	171,889	175,694	192,700	204,684	205,132	175,684	158,028	150,389
Sahtu	131,589	119,242	122,879	117,629	114,600	125,066	121,048	122,442	106,774	97,467	95,060
NWT	149,197	140,408	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089	113,934

Source: NWT Bureau of Statistics. (2021e)., Statistics Canada. (2022a).

Tables 55, 56 and 57 show that a Norman Wells has a smaller proportion of individuals and families with lower incomes and receiving income assistance than across the region and the Territory. In 2022, 2.1% of the population of the community were income assistance beneficiaries, which is much less than 5.4% for the region and 5.8% for the Territory (see **Table 55**).

Table 55: Income Assistance, Community of Norman Wells, Sahtu Region and NWT, 2022

	Beneficiaries (monthly average)	Beneficiaries as a % of Population
Norman Wells	15	2.1
Sahtu	145	5.4
NWT	2,632	5.8

Source: Government of the Northwest Territories Department of Education Culture & Employment. (2023).

Table 56 indicates that the number of income assistance beneficiaries has increased in the community between the years of 2014-2022. This mirrors the trend of increased number of income assistance beneficiaries over that period in both the region and Territory.

Table 56: Number of Income Assistance Beneficiaries Over Time,
Community of Norman Wells and Sahtu Region, 2014-2022

	2022	2021	2020	2019	2018	2017	2016	2015	2014
Norman Wells	15	7	20	16	18	12	8	8	4
Sahtu	145	105	207	161	174	144	147	142	122
NWT	2,632	2,193	3,350	3,215	3,192	2,951	2,607	2,486	2,312

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

In 2020, Norman Wells had 10.0% of individuals and 11.1% of families defined as “low income”. This is lower than the proportion of low income individuals and families in both the region and the Territory (see **Table 57**).

Table 57: Low Income Individuals and Families, Community of Norman Wells, Sahtu Region and NWT, 2020

	# People Low Income	% People Low Income	# Families Low Income	% Families Low Income
Norman Wells	70	10.0	20	11.1
Sahtu	310	14.3	80	14.0
NWT	5,010	11.9	1,180	10.4

Source: Statistics Canada. (2022a).

5.2.2.3.2 Business Development and Economic Opportunity

The 2021 Norman Wells CP notes that self-sufficiency strategies such as encouraging diversity, home occupation development and support and allotment gardens reduce dependency on and reaction to external factors. The CP suggests that eco-tourism opportunities in the region can contribute to the diversification and development of the local economy, and that Norman Wells is uniquely positioned to stimulate the local economy using the Mackenzie River and surrounding landscape as its core⁶⁶.

The CP also notes that it is imperative that the Town leverage available funding sources to undertake the required improvements that are valued by residents to promote economic development goals related to⁶⁷:

- Promotion and support of local small-scale, commercial opportunities;
- The potential in natural resources for exploration and tourism; and,
- Remaining as a connector to the other communities in the area and benefitting from an exclusive daily jet service.

The community's strategic plan contains the following goal and strategic objectives related to economic opportunities⁶⁸:

Goal 1: Support and promote a strong, dynamic and innovative local economy

- Identify local economic strengths and leverage opportunities through working with our stakeholders;
- Advocate the Sahtu Regional Hub for sustainable transport of goods to and from our community;
- Establish and lead initiatives to position the Town of Norman Wells as a community of choice among populations that tend to leave the community to access required services and opportunities;
- Develop and lead capital infrastructure initiatives that address community needs, reflect sustainable planning practices and future demand considerations, with a commitment to fiscal responsibility; and,
- Support the creation and retention of diverse opportunities by becoming a destination of choice for entrepreneurship, including helping existing businesses thrive and grow.

⁶⁶ Town of Norman Wells. (2021a). Norman Wells Community Plan.

⁶⁷ Town of Norman Wells. (2021a). Norman Wells Community Plan.

⁶⁸ Town of Norman Wells. (2021a). Norman Wells Community Plan.

Norman Wells has 65 licenced businesses as per Figure 7:

COMPANY NAME	LICENSE NO.	DESCRIPTION
2B TAXI	2022-10	Taxi Service and Delivery
A.T. PHOTOGRAPHY	2022 - 52	Photography / Family & Landscape
AKIE'S TAXI	2022-36	Taxi Services
ARCTIC BOUND SERVICES	2022 - 59	HOUSE CLEANING AND BACK COUNTRY TRAIL WORK
BLUE HILLS LTD	2022-33	Heavy Equipment Construction, Equipment Rentals, Camp Services, Water & Sewer Services
CANADIAN HELICOPTERS LIMITED	2022-11	Helicopter Transportation Services
CANADIAN IMPERIAL BANK OF COMMERCE	2022 - 58	Financial Institution
CANOE NORTH ADVENTURES	2022 - 67	CANOE OUTFITTER
CANOL CLEANING SERVICES	2022-07	Janitorial Services
CANOL OILFIELD SERVICES INC	2022-26	Provide Transportation Services to the Oilfield & Gas Industry
CATHY'S KITCHEN	2022 - 60	BAKING AND CATERING
FAITHFUL FINANCIAL	2022 - 66	FINANCIAL EDUCATION
GLOBAL TECHNICAL SYSTEMS LTD	2022-21	HVAC, Electrical, Carpentry, Plumbing and Mechanical Service Company
GREEN ENERGY NWT	2022-24	Supply & Sale of Wood Pellets and Bolders
GREEN ENTERPRISE NT	2022-34	Waste Collection, Hauling and Disposal
HABANERO NORTH	2022-06	Freight Forwarding
HCI LEASING INC	2022-25	General Contracting, Road Construction, Maintenance and Trucking
HEC CLEANING	2022 - 54	Cleaning Offices / Private homes
HRN CONTRACTING LTD.	2022-12	Heavy Equipment, Construction, Earthworks, Winter Road and Gravel Crushing
HRN LABOUR SERVICES	2022-13	Site Labour Services
IMPERIAL OIL RESOURCES NWT LIMITED	2022-42	Oil & Gas
J&D DITCHERS	2022-40	Brush Cutting, Landscaping, Firewood and Janitorial Services
JENNIE VANDERMEER CONSULTING	2022-01	Professional Consulting
JONATHAN GILLINGHAM PHOTOGRAPHY	2022-02	Photography & Videography Wildlife, Nature & Landscapes, Personal, Headshot, Family and Passport Photos
LOLITA'S MASSAGE WELLNESS	2022-28	Full Body Massage
MATCO TRANSPORTATION SYSTEM	2022 - 53	Transportation, Moving and Storage, Airport Ground Handling and Vending Sales
NORMAN WELLS CLAIMANT CORPORATION LTD	2022-31	Real Estate and General Contracting Labour
NORMAN WELLS FINANCIAL CORPORATION	2022-30	To Administer Programs Under the Sahtu Dene and Metis Comprehensive Land Claims Agreement
NORMAN WELLS HISTORICAL SOCIETY	2022-20	Museum and Gift Shop
NORMAN WELLS LAND CORPORATION	2022-32	Administer Land Claims Agreement
NORMAN WELLS RENEWABLE RESOURCES COUNCIL	2022-17	Promote Local Involvement in Conservation, Harvesting Studies, Research, and Wildlife Management, Conduct Environment & Wildlife Monitoring
NORMAN WELLS TRANSPORTATION	2022 - 63	SERVICES STATION & VEHICLE RENTALS
NORTENO MEDIA	2022 - 57	Photography/Videography and Media Production
NORTHERN CARTROLS LTD	2022-45	Real Estate Office, Apartment Operations, Electrical Engineering and Consulting Services
NORTHRIDGE CONTRACTING LTD	2022-18	Heavy Equipment Construction, Equipment Rentals, Camp Services, Water & Sewer Services
NORTH-WRIGHT AIRWAYS	2022-04	Aviation Services, Scheduled and Chartered Flights, Cargo Shipments and Freight Forwarding
NWT TRAINING & BUILDING MAINTENANCE	2022-35	Training on Building Maintenance
PETE ROSE'S WELDING LTD	2022-27	Welding Construction
PRECISION WELL SERVICING	2022-51	Well Servicing
REDSTONE RESOURCE DEVELOPMENT	2022 - 56	Business/Tourism and Management Consulting
REG'S WATER SERVICES LTD	2022-19	Equipment and Property/Building Rentals
ROYAL CANADIAN LEGION	2022-05	Legion
RUSCH HOME DESIGN & INTERIORS	2022 - 62	DESIGN, INTERIOR DESIGN, LOGISTICS, DRAFTING, DESIGN EXECUTION, REFURBISHING, HOME DÉCOR & HOME GOODS
S.R.P. NORTH VENTURES LTD	2022-39	Propane
S.R.P. PETROLEUM LTD, A DIVISION OF SRP NORTH VENTURES	2022-38	Bulk Fuel, Packaged Oils and Lubricants, Aviation Refueller
SAHTU ADVENTURES INC	2022 - 65	TOURISM, BOAT CHARTERS, WILDLIFE MONITOR, LOG BUILDING & BRUSH CUTTING
SAHTU BUILDING SUPPLIES	2022-15	Building Materials/Retail Sales
SAHTU COMPUTER SERVICES	2022 - 55	Computer Sales & Services/IT Consultant/Electronics
SAHTU GARDENS	2022-48	Garden Center and Farming
SAHTU HELICOPTERS	2022-22	Helicopter Charters
SPARKLIN' CLEANERS	2022-37	Commercial and Household Clenaing Services
STANTEC ARCHITECTURE LTD	2022-43	Architecture, Engineering, Design, and Consulting
STOW-BROS	2022-41	Indoor and Outdoor Storage
SWEET TREATS!	2022-50	Catering, Concession and Janitorial
TAIGA SERVICES	2022-09	Fur Sales
TAYLOR'S PHOTOGRAPHY	2022-49	Pasport & Visas Photos, Photo Printing & Laminating
THE NORTHWEST COMPANY LP	2022-08	Food and General Merchandise
TLEGOHLI RECLAMATION SERVICES INC	2022-29	Aboriginal Project Management, Contracting and Environmental Services
TREELINE	2022 - 64	SOLID WASTE COLLECTION
TRIPLE - J CARPENTRY	2022-47	Carpentry
TRIPLE E HOLDINGS LTD	2022-16	School Bus Operator
TRUMPETER CAMP COMPANY PARTNERSHIP	2022 - 23	Camp Rental
VINZELE CLEANING SERVICES	2022-03	All Around Cleaning Services
WHIPONIC NORTHERN CARTROLS INC. o/a HERITAGE HOTEL	2022 - 44	Hotel and Offices
WHIPONIC WELLPUTER LTD	2022 - 14	General Contracting
WILLOW CRESCENT QUILTING AND SALES	2022 - 46	Custom Quilting and Sales

Figure 7: Licenced Businesses in Norman Wells

Source: Norman Wells municipal staff

5.2.2.3.3 Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 58**) indicates that food prices were 70% higher in Norman Wells than in Yellowknife in 2019 and have been between 60-87% higher than Yellowknife since 2001. Similarly, **Table 59** shows that the overall cost of living in the community was 60-65% higher than Edmonton, in 2018, and 40-45% higher than in Yellowknife.

Table 58: Community Food Price Index, Norman Wells and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Norman Wells	170	171	185	180	187	160
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020i).

Table 59: Living Cost Differentials, Norman Wells, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Norman Wells	160-165	160-165	150-155	150-155	150-155
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

5.2.2.3.4 Traditional Economy

Table 60 provides information about the proportion of the population of Norman Wells, the Sahtu Region and the NWT that participated in traditional activities in 2018. Over one-third of Norman Wells population participated in hunting and fishing (37.2%), which was a marginally higher participation rate than that for the NWT as a whole (36.3%) but less than the participation rate in hunting and fishing for the region (45.6%). Other than for trapping, in which Norman Wells citizens engaged in at a much lower rate (1.4%) than both the Territorial (4.7%) and regional (8.9%) averages, the pattern of participation, in which community members of Norman Wells participate at about the same rate or slightly greater than the territorial average, but less than the regional average, continues for other traditional activities (i.e., gathering berries, producing arts and crafts, and having half or more of meat/fish (country food) consumed derived from hunting and fishing).

Table 60: Community of Norman Wells Sahtu Region and NWT Traditional Activities, 2018

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Norman Wells	37.2	1.4	26.0	24.9	32.2
Sahtu	45.6	8.9	33.6	27.0	56.6
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2019g).

The data in **Table 61**, which identifies the percentage of people over the age of 15 who participated in hunting or fishing between 1998 and 2018, indicates that participation in hunting and fishing in Norman Wells is consistently lower than the participation rate for the region. Significantly fewer households in Norman Wells obtained the majority of their meat/fish (country food) through hunting or fishing between 1998 and 2018 than was the case for the region and, in some years, in the NWT as a whole (see **Table 62**).

Table 61: Persons over 15 Who Hunted or Fished in the Year, 1999-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Norman Wells	37.2	39.4	42.5	45.6	43.6
Sahtu	45.6	49.9	44.7	47.1	45.1
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

Table 62: Households Where 75% or More of Meat Consumed During the Year was Obtained by Hunting or Fishing, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Norman Wells	15.9	13.8	18.2	11.8	15.8
Sahtu	35.2	39.2	41.2	32.0	44.5
NWT	12.6	13.8	15.4	17.5	21.5

Source: NWT Bureau of Statistics. (2020j).

5.2.3 Regional Assessment Area

5.2.3.1 Dehcho Region/Fort Simpson

5.2.3.1.1 Fort Simpson

Employment and Income

Tables 63 and 64 provide 2021 community labour force information compared to those of Dehcho Region and the NWT.

According to Statistics Canada (2022), the population 15+ within the community of Fort Simpson makes up approximately 39% of the total population aged 15 years+ within Dehcho Region. Correspondingly, Fort Simpson's labour force is slightly lower than 44% of Dehcho Region's. Fort Simpson's participation rate and employment rate are higher than the Dehcho Region and lower than NWT rates and its unemployment rate is lower than the Dehcho Region and higher than the NWT rates. Of all the communities within Dehcho Region, Fort Simpson had the highest employment rate and the second lowest unemployment rate in 2021.

Table 63: Labour Force Activity in Fort Simpson, Dehcho Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Fort Simpson	920	605	535	65	65.8	10.7	58.2
Dehcho	2,385	1,375	1,150	225	57.7	16.4	48.2
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Source: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Table 64 provides information about changes in the labour force over time. The labour force participation rate in the community increased (from 68.9% to 77.2%) between 2011 and 2019 but reduced to 65.8% in 2021: Fort Simpson's participation rate was consistently higher than the participation rate for the Dehcho Region in each of the years shown. The 2019 employment rate in Fort Simpson decreased by 1.1 percentage points compared to 2011 and had further decreased in 2021 to 5.2 percentage points below the 2011 level. The community's unemployment rate decreased 2.2 percentage points over the 10-year period. The unemployment rate for the region during the same period decreased by about 6.6 percentage points (from 23.0% to 16.4%) and the employment rate for the region decreased by about 2.1 percentage points (from 50.3% to 48.2%).

Table 64: Labour Force Participation, Employment & Unemployment Rates
Fort Simpson, Dehcho & NWT, 2011-2021

	Participation			Employment			Unemployment		
	NWT	Dehcho	Fort Simpson	NWT	Dehcho	Fort Simpson	NWT	Dehcho	Fort Simpson
2011	75.4	65.3	72.8	66.8	50.3	63.4	11.4	23.0	12.9
2014	73.4	64.5	68.9	65.6	51.5	60.5	10.6	20.2	12.2
2016	74.1	65.2	72.0	66.2	49.5	61.7	10.6	23.8	14.4
2019	73.6	67.8	77.2	65.7	49.0	62.3	10.7	27.7	19.4
2021	70.7	57.7	65.8	64.6	48.2	58.2	8.6	16.4	10.7

Source: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 65 shows that in 2019, Fort Simpson had a higher employment rate for males than females (64.1% vs. 60.0%): this was similar for the NWT as a whole, while Dehcho Region had a lower employment rate for males than females. The same patterns of employment rates for males vs. females persisted in 2021 for Fort Simpson, the region and the territory.

Also, as shown in **Table 65**, the majority of employed people in the community in 2019 (83.4%) were working full time, which was higher than the regional level (76.8%) and virtually the same as the territorial level (83.3%). The community's part-time employment rate in Fort Simpson (16.6%) was lower than that found in the Dehcho Region (23.2%) but virtually the same as the Territory (16.7%).

Table 65: Employment Rates in Fort Simpson, Dehcho Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Fort Simpson	2019	64.1	60.0	49.9	88.0	83.4	16.6
	2021	60.4	55.1	--*	--	--	--
Dehcho Region	2019	47.7	50.4	41.1	83.2	76.8	23.2
	2021	49.8	47.1	-*	-	-	-
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	-*	-	-	-

Source: NWT Bureau of Statistics. (2020a)., Statistics Canada. (2022a).

* Data not available

In 2019, the available labour supply in Fort Simpson was identified by the NWT Bureau of Statistics as being comprised of 253 individuals, the majority of whom were male (68.5%), Indigenous (93%) and had less than a high school diploma (58.2%) (see **Table 66**). The proportion of the available labour supply in Fort Simpson that are willing to do rotational work (82.4%) and have more than a high school diploma (41.8%) is higher than the regional and Territorial figures.

Table 66: Potential Labour Supply in Fort Simpson, Dehcho Region and NWT, 2019

	Available Labour Supply	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Fort Simpson	253	82.4	68.5	93.0	58.2
Dehcho	793	73.4	59.7	95.8	67.2
NWT	5,545	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020a).

The average personal and family incomes in Fort Simpson are higher than the regional averages, but lower than the territorial averages (see **Table 67**). When compared to the regional averages, the community also has a larger proportion of families that are earning greater than \$75,000 and year, and the same proportion of families earning less than \$30,000.

Table 67: Individual and Family Income, Community of Fort Simpson Dehcho Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Fort Simpson	63,235	136,929	68.6	8.6
Dehcho Region	53,896	114,893	57.1	8.6
NWT	69,802	149,197	73.2	5.7

Source: Statistics Canada. (2022a).

The average personal income in the community increased by 32.4% between 2011 and 2020 (see **Table 68**), which is less than the increase that occurred at the regional level (36.6%) and similar to the increase that occurred at the Territorial level (24.6%) over the same period.

Table 68: Average Personal Income (\$), Community of Fort Simpson, Dehcho Region and NWT 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Fort Simpson	63,235	55,043	52,699	51,687	52,823	52,878	50,369	50,170	49,096	47,712
Dehcho	53,896	46,440	44,980	44,825	44,750	44,706	42,780	42,948	41,764	40,917
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

The average family income is higher in Fort Simpson than in the region but less than in the Territory as a whole (see **Table 69**). Between the years 2011 and 2020, the average family income in the community ranged from 19% (2014) to 30% (2019) higher than the regional average, and between 8% (2020) to 15% (2017) less than the territorial average.

Table 69: Average Family Income (\$), Fort Simpson, Dehcho Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Fort Simpson	136,929	124,000	118,486	111,149	114,806	113,403	107,542	108,694	105,143	102,333
Dehcho	114,893	95,049	91,351	92,678	96,120	89,240	90,404	90,421	85,733	83,927
NWT	149,197	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089	113,934

Sources: NWT Bureau of Statistics. (2021e)., Statistics Canada. (2022a).

Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 70**) indicates that food prices were 48% higher in Fort Simpson than in Yellowknife in 2019 and have been between 25-48% higher than Yellowknife since 2001. Similarly, **Table 71** shows that the overall cost of living in the community was 35-45% higher than Edmonton, in 2013, and 10-25% higher than in Yellowknife.

Table 70: Community Food Price Index, Fort Simpson and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Fort Simpson	148	129	139	125	142	128
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020j).

Table 71: Living Cost Differentials, Fort Simpson, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Fort Simpson	140-145	135-140	135-140	135-140	135-140
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

Traditional Economy

Table 72 provides information about the proportion of the population of Fort Simpson, the Dehcho region and the NWT that participated in traditional activities in 2018. Over 42% of the population in Fort Simpson participated in hunting and fishing, which was a higher participation rate than that for the NWT as a whole (36.3%) but lower than the regional average (51.7%). A smaller proportion of residents of Fort Simpson participated in trapping and gathering berries, and both of these participation levels are also below the regional averages, but larger than the territorial participation rates. Similarly, almost 35% of Fort Simpson residents consumed half or more of their meat/fish (country food) from hunting and fishing, which is a smaller proportion than the regional (51.2%) rate, but larger than the territorial (22.5%) average.

Table 72: Community of Fort Simpson, Dehcho Region and NWT Traditional Activities, 2019

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Fort Simpson	42.1	7.0	31.3	30.8	34.9
Dehcho	51.7	12.0	37.9	28.1	51.5
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2020a).

The data in **Table 73**, which identifies the number of people over the age of 15 who participating in hunting or fishing between 1998 and 2018, indicates that participation in hunting and fishing in Fort Simpson has fluctuated over the years, and is generally 5-9% lower than the regional participation rates, and slightly higher than the territorial averages. has been considerably higher than the regional and territorial rates.

Table 73: Persons Over 15 Who Hunted or Fished in the Year in Fort Simpson, Dehcho Region and NWT, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Fort Simpson	42.1	52.1	41.5	39.1	36.8
Dehcho	51.7	57.6	46.7	46.8	41.5
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

5.2.3.2 Sahtu Region/Déłı̄ne, Colville Lake, Fort Good Hope

5.2.3.2.1 Déłı̄neEmployment and Income

Tables 74 and 75 provide 2021 community labour force information compared to those of Sahtu Region and the NWT.

According to Statistics Canada (2022), the population 15+ within the community of Déłı̄ne makes up approximately 24% of the total population aged 15 years+ within Sahtu Region. Correspondingly, Déłı̄ne's labour force is approximately 22% of Sahtu Region's. Déłı̄ne's participation rate and employment rate are lower than the Sahtu Region and NWT rates and its unemployment rate is higher than the Sahtu Region and NWT rates. Of all the

communities within Sahtu Region, Délı̄ne had the lowest employment rate and the highest unemployment rate in 2021.

Table 74: Labour Force Activity in Délı̄ne, Sahtu Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Délı̄ne	435	250	190	60	57.5	24	43.7
Sahtu	1,785	1,145	975	165	64.1	14.4	54.6
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Source: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Table 75 provides information about changes in the labour force over time. The labour force participation rate in the community increased slightly (from 63.2% to 63.9%) between 2011 and 2019 but reduced to 57.5% in 2021: Délı̄ne's participation rate was consistently lower than the participation rate for the Sahtu Region in each of the years shown. The 2019 employment rate in Délı̄ne increased by 1.7 percentage points compared to 2011 but had returned to only 0.3 percentage points above 2011 levels in 2021. The community's unemployment rate decreased 9.3 percentage points over the 10-year period. The unemployment rate for the region during the same period decreased by about 5.5 percentage points (from 19.9% to 14.4%) and the employment rate for the region decreased by about 0.9 percentage points (from 55.5% to 54.6%).

Table 75: Labour Force Participation, Employment and Unemployment Rates in Délı̄ne, Sahtu and NWT, 2011-2021

	Participation			Employment			Unemployment		
	NWT	Sahtu	Délı̄ne	NWT	Sahtu	Délı̄ne	NWT	Sahtu	Délı̄ne
2011	75.4	68.9	63.2	66.8	55.5	43.4	11.4	19.9	33.3
2014	73.4	69.8	59.9	65.6	57.7	43.4	10.6	17.4	27.5
2016	74.1	70.6	67.9	66.2	59.3	47.6	10.6	16.0	29.8
2019	73.6	72.5	63.9	65.7	60.1	45.1	10.7	17.0	29.4
2021	70.7	64.1	57.5	64.6	54.6	43.7	8.6	14.4	24.0

Source: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 76 shows that in 2019, Délı̄ne had a lower employment rate for males than females (38.7% vs. 53.4%): this was similar for the Sahtu Region, while the NWT as a whole had a slightly higher employment rate for males than females. The same patterns of employment rates for males vs. females persisted in 2021 for Délı̄ne, the region and the territory.

Also, as shown in **Table 76**, the majority of employed people in the community in 2019 (76.0%) were working full time, which is less than the regional level (81.3%) and territorial level (83.3%). The community's part-time employment rate in Délı̄ne (24.0%) was higher than that found in the Sahtu Region (18.7%) and the Territory (16.7%).

Table 76: Employment Rates in Délı̄ne, Sahtu Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Délı̄ne	2019	38.7	53.4	43.0	71.7	76.0	24.0
	2021	38.0	51.4	--*	--	--	--
Sahtu Region	2019	57.0	63.9	49.7	85.8	81.3	18.7
	2021	53.6	56.4	--*	--	--	--
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	--*	--	--	--

Source: NWT Bureau of Statistics. (2020g)., Statistics Canada. (2022a).

* Data not available

In 2019, the available labour supply in Délı̄ne was identified by the NWT Bureau of Statistics as being comprised of 152 individuals, the majority of whom were male (69.3%), Indigenous (98.7%) and had greater than a high school diploma (50.7%) (see **Table 77**). The proportion of the available labour supply in Délı̄ne that are willing to do rotational work (70.9%) is higher than the regional and territorial figures.

Table 77: Potential Labour Supply in Délı̄ne, Sahtu Region and NWT, 2019

	Available Labour Supply (#)	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Délı̄ne	152	70.9	69.3	98.7	49.3
Sahtu	444	63.4	63.5	94.1	61.6
NWT	5,545	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020g).

Tables 78, 79 and 80 show that the average individual and family incomes in Délı̄ne have consistently been lower than the averages for both the region and the Territory. Similarly, a lower proportion of families in the community have annual incomes above \$75,000 than is the case in the region and the Territory; there is no community information on the proportion of families with and income below \$30,000.

Table 78: Individual and Family Income, Community of Délı̄ne, Sahtu Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Délı̄ne	52,197	112,643	57.1	--
Sahtu	63,857	131,589	58.9	7.1
NWT	69,802	149,197	73.2	5.7

Source: Statistics Canada. (2022a).

Table 79 shows that the average personal income of workers in Délı̄ne has been lower than that of workers in the region and the Territory since 2011. The average personal income in the community was highest in 2020, but it was 18% less than the regional average and 25% less than the average personal income in the Territory. In 2011, the average personal income in Délı̄ne was 37% less than the region and 46% less than the Territory.

Table 79: Average Personal Income (\$), Community of Délı̄ne, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Délı̄ne	52,197	36,581	39,705	41,848	37,257	35,214	34,405	33,457	31,371	33,000
Sahtu	63,857	54,465	53,575	52,815	54,268	56,391	56,038	55,757	49,931	46,620
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

The average family income is also lower in Délı̄ne than in the region and the Territory (see **Table 80**). Between the years 2011 and 2020, the average family income in the community ranged from 14% (2020) to 29% (2013) less than the regional average, and 25% (2020) to 36% (2012) less than the territorial average.

Table 80: Average Family Income (\$), Community of Délı̄ne, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Délı̄ne	112,643	90,633	102,100	96,536	92,357	93,179	91,533	86,857	77,833	81,833
Sahtu	131,589	119,242	122,879	117,629	114,600	125,066	121,048	122,442	106,774	97,467
NWT	149,197	140,408	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089

Sources: NWT Bureau of Statistics. (2021e)., Statistics Canada. (2022a).

Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 81**) indicates that food prices were 71% higher in Délı̄ne than in Yellowknife in 2019 and have been between 64-91% higher than Yellowknife since 2001. Similarly, **Table 82** shows that the overall cost of living in the community was 75-80% higher than Edmonton in 2018, and 50-60% higher than in Yellowknife.

Table 81: Community Food Price Index, Délı̄ne and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Délı̄ne	171	164	186	172	191	173
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020i).

Table 82: Living Cost Differentials, Délı̄ne, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Délı̄ne	175-180	165-170	170-175	160-165	160-165
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

Traditional Economy

Table 83 provides information about the proportion of the population of Délı̄ne, the Sahtu Region and the NWT that participated in traditional activities in 2018. Over 54% of the population in Délı̄ne participated in hunting and fishing, which was a higher participation rate than that for the NWT as a whole (36.3%) and the regional average (45.6%). Although smaller proportions of the residents of Délı̄ne participated in trapping and gathering berries, both of these participation levels are higher than the regional and territorial participation rates. Similarly, for over 62% of Délı̄ne residents, half or more of the meat/fish (country food) which they consumed was obtained through hunting/fishing, which is larger than the regional (56.6%) and territorial (22.5%) averages.

Table 83: Traditional Activities, Community of Délı̄ne, Sahtu Region and NWT, 2018

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Délı̄ne	54.5	14.3	44.0	30.0	62.3
Sahtu	45.6	8.9	33.6	27.0	56.6
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2019g). & NWT Bureau of Statistics. (2020g).

The data in **Table 84**, which identifies the percentage of people over the age of 15 who participated in hunting or fishing between 1998 and 2018, indicates that participation in hunting and fishing in Délı̄ne has fluctuated somewhat over the years, but is generally 5-9% higher than the regional participation rates, and 6-18% higher than the territorial average.

Table 84: Persons Over 15 Who Hunted or Fished in the Year, Community of Délı̄ne, Sahtu Region and NWT, 1998-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Délı̄ne	54.5	57.5	49.4	42.6	52.6
Sahtu	45.6	49.9	44.7	47.1	45.1
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

5.2.3.2.2 Colville Lake

Employment and Income

Tables 85 and 86 provide the 2021 community labour force statistics for Colville Lake compared to those of Sahtu Region and the NWT.

According to Statistics Canada (2022), the population 15+ within the community of Colville Lake makes up approximately 5% of the total population aged 15 years+ within Sahtu Region. Correspondingly, Colville Lake's labour force is 3% of Sahtu Region's. Colville Lake's participation rate and employment rate are lower than the Sahtu Region and NWT rates. Of all the communities within Sahtu Region, Colville Lake had the lowest employment rate in 2021 (tied with Tulita). There are no unemployment figures for Colville Lake for 2021.

Table 85: Labour Force Activity in Colville Lake, Sahtu Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Colville Lake	85	35	40	-	41.2	-	47.1
Sahtu	1,785	1,145	975	165	64.1	14.4	54.6
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Source: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Table 86 provides information about changes in the labour force over time. The labour force participation rate in the community decreased (from 55.6% to 41.2%) between 2011 and 2021: Colville Lake's participation rate was lower than the participation rate for the Sahtu Region in most of the years shown. The 2021 employment rate in Colville Lake increased by 8.2 percentage points compared to 2011. The community's unemployment rate decreased by 15.7 percentage points from 2011 to 2019. The unemployment rate for the region during the same period decreased by about 2.9 percentage points (from 19.9% to 17.0%) and the employment rate for the region increased by about 4.6 percentage points (from 55.5% to 60.1%).

Table 86: Labour Force Participation, Employment and Unemployment Rates in Colville Lake, Sahtu and NWT, 2011-2021

	Participation			Employment			Unemployment		
	NWT	Sahtu	Colville Lake	NWT	Sahtu	Colville Lake	NWT	Sahtu	Colville Lake
2011	75.4	68.9	55.6	66.8	55.5	38.9	11.4	19.9	30.0
2014	73.4	69.8	74.9	65.6	57.7	66.6	10.6	17.4	11.0
2016	74.1	70.6	61.1	66.2	59.3	50.0	10.6	16.0	18.2
2019	73.6	72.5	53.7	65.7	60.1	45.7	10.7	17.0	14.3
2021	70.7	64.1	41.2	64.6	54.6	47.1	8.6	14.4	-

Source: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 87 shows that in 2019, Colville Lake had a lower employment rate for males than females (40.7% vs. 51.5%): this was similar for the Sahtu Region, while the NWT as a whole had a slightly higher employment rate for males than females. The same patterns of employment rates for males vs. females persisted in 2021 for Colville Lake, the region and the territory.

Also, as shown in **Table 87**, the majority of employed people in the community in 2019 (71.6%) were working full time, which is less than the regional level (81.3%) and territorial level (83.3%). The community's part-time employment rate in Colville Lake (28.4%) was higher than that found in the Sahtu Region (18.7%) and the Territory (16.7%).

Table 87: Employment Rates in Colville Lake, Sahtu Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Colville Lake	2019	40.7	51.5	41.2	100	71.6	28.4
	2021	33.3	37.5	--*	--	--	--
Sahtu Region	2019	57.0	63.9	49.7	85.8	81.3	18.7
	2021	53.6	56.4	--*	--	--	--
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	--*	--	--	--

Source: NWT Bureau of Statistics. (2020e)., Statistics Canada. (2022a).

* Data not available

In 2019, the available labour supply in Colville Lake was identified by the NWT Bureau of Statistics as being comprised of 26 individuals, the majority of whom were male (53.6%), Indigenous (100%) and had less than a high school diploma (92.5%) (see **Table 88**). The proportion of the available labour supply in Colville Lake that are willing to do rotational work (65.3%) is similar to the regional rate and slightly higher than the territorial figure.

Table 88: Potential Labour Supply in Colville Lake, Sahtu Region and NWT, 2019

	Available Labour Supply (#)	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Colville Lake	26	65.3	53.6	100	92.5
Sahtu	444	63.4	63.5	94.1	61.6
NWT	5,545	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020e).

The 2019 average personal and family incomes in the Sahtu Region are lower than the territorial averages (data not available at the community level, see **Table 89**). The average personal income in the region is lower by 12%, and the average family income by 15%. The region also has a smaller proportion of families that are earning greater than \$75,000 and year, and a larger proportion of families earning less than \$30,000 when compared to the territorial level. There is no 2020 data on individual and family income for the community of Colville Lake.

Table 89: Individual and Family Income, Community of Colville Lake, Sahtu Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Colville Lake*	--	--	--	--
Sahtu	63,857	131,589	58.9	7.1
NWT	69,802	149,197	73.2	5.7

Source: Statistics Canada. (2022a).

* Data not available

The average personal income in Sahtu Region increased by 34.1% between 2011 and 2020 (data for the community is not available) (see **Table 90**), which is greater than the increase that occurred at the Territorial level (24.6%) over the same period.

Table 90: Average Personal Income (\$), Community of Colville Lake, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Colville Lake*	--	--	--	--	--	--	--	--	--	--
Sahtu	63,857	54,465	53,575	52,815	54,268	56,391	56,038	55,757	49,931	46,620
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

* Data not available

The average family income is also considerably lower in the Sahtu Region than the Territory (data for the community is not available) (see **Table 91**). Between the years 2011 and 2020, the average family income in the region ranged from 1% (2012) to 15% (2018) lower than the territorial average.

Table 91: Average Family Income (\$), Community of Colville Lake, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Colville Lake*	--	--	--	--	--	--	--	--	--	--
Sahtu	131,589	119,242	122,879	117,629	114,600	125,066	121,048	122,442	106,774	97,467
NWT	149,197	140,408	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089

Sources: NWT Bureau of Statistics. (2021e)., Statistics Canada. (2022a).

* Data not available

Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 92**) indicates that food prices were 84% higher in Colville Lake than in Yellowknife in 2019 and have been between 84-110% higher than Yellowknife since 2001. Similarly, **Table 93** shows that the overall cost of living in the community was 80-85% higher than Edmonton, in 2013, and 55-65% higher than in Yellowknife.

Table 92: Community Food Price Index, Colville Lake and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Colville Lake	184	196	210	203	186	190
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020i).

Table 93: Living Cost Differentials, Colville Lake, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Colville Lake	--	180-185	175-180	165-170	170-175
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

Traditional Economy

Table 94 provides information about the proportion of the population of Colville Lake, the Sahtu Region and the NWT that participated in traditional activities in 2018. Almost 60% of the population in Colville Lake participated in hunting and fishing, which was much higher than the participation rate for the region (45.6) and the average for the NWT as a whole (36.3%). Although smaller proportions of residents of Colville Lake participated in trapping, gathering berries and arts and crafts, participation levels in these activities are also higher than the regional and territorial rates. Similarly, for almost 84% of Colville Lake residents half or more of the meat/fish (country food) which they consumed was obtained through hunting/fishing, which is considerably larger than the regional (56.6%) and territorial (22.5%) averages.

Table 94: Traditional Activities, Community of Colville Lake, Sahtu Region and NWT, 2018

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Colville Lake	59.8	43.5	53.3	27.2	83.9
Sahtu	45.6	8.9	33.6	27.0	56.6
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2019g). & NWT Bureau of Statistics. (2020e).

The data in **Table 95**, which identifies the percentage of people over the age of 15 who participated in hunting or fishing between 1998 and 2018, indicates that participation in hunting and fishing in Colville Lake has fluctuated somewhat over the years. Since 1998, it has been higher than the regional and the territorial averages and is consistently one of the highest rates among all communities in the Territory.

Table 95: Persons Over 15 Who Hunted or Fished in the Year, Community of Colville Lake, Sahtu Region and NWT, 1999-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Colville Lake	59.8	78.3	66.3	58.8	56.1
Sahtu	45.6	49.9	44.7	47.1	45.1
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

5.2.3.2.3 Fort Good Hope

Employment and Income

Tables 96 and 97 provide 2021 community labour force information for Fort Good Hope compared to those of Sahtu Region and the NWT.

According to Statistics Canada (2022), the population 15+ within the community of Fort Good Hope makes up approximately 22% of the total population aged 15 years+ within Sahtu Region. Correspondingly, Fort Good Hope's labour force is 21% of Sahtu Region's. Fort Good Hope's participation rate and employment rate are lower than the Sahtu Region and NWT rates and its unemployment rate is higher than the Sahtu Region and NWT rates. Of all the communities within Sahtu Region, Fort Good Hope had the second lowest unemployment rate and the second highest employment rate in 2021.

Table 96: Labour Force Activity in Fort Good Hope, Sahtu Region and NWT, 2021

	Population 15+	Labour Force	Employed	Unemployed	Participation Rate (%)	Unemployment Rate (%)	Employment Rate (%)
Fort Good Hope	395	245	200	40	62	16.3	50.6
Sahtu	1,785	1,145	975	165	64.1	14.4	54.6
NWT	31,910	22,555	20,600	1,950	70.7	8.6	64.6

Source: Statistics Canada. (2022a).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Table 97 provides information about changes in the labour force over time. The labour force participation rate in the community increased (from 67.9% to 69.1%) between 2011 and 2019 but reduced to 62.0% in 2021: Fort Good Hope's participation rate was consistently lower than the participation rate for the Sahtu Region in each of the years shown. The 2019 employment rate in Fort Good Hope decreased by 4.9 percentage points compared to 2011; it increased to 50.6% in 2021, which was 1.8 percentage points less than it was in 2011. The community's unemployment rate decreased by 8.2 percentage points over the 10-year period. The unemployment rate for the region during the same period decreased by about 5.5 percentage points (from 19.9% to 14.4%) and the employment rate for the region decreased by about 0.9 percentage points (from 55.5% to 54.6%).

Table 97: Labour Force Participation, Employment and Unemployment Rates in Fort Good Hope, Sahtu and NWT, 2011-2021

	Participation			Employment			Unemployment		
	NWT	Sahtu	Fort Good Hope	NWT	Sahtu	Fort Good Hope	NWT	Sahtu	Fort Good Hope
2011	75.4	68.9	67.9	66.8	55.5	51.8	11.4	19.9	24.5
2014	73.4	69.8	67.6	65.6	57.7	43.7	10.6	17.4	30.5
2016	74.1	70.6	63.2	66.2	59.3	50.0	10.6	16.0	22.9
2019	73.6	72.5	69.1	65.7	60.1	46.9	10.7	17.0	27.8
2021	70.7	64.1	62.0	64.6	54.6	50.6	8.6	14.4	16.3

Source: NWT Bureau of Statistics. (2021g)., Statistics Canada. (2022a).

Table 98 shows that in 2019, Fort Good Hope had a lower employment rate for males than females (43.8% vs. 57.3%): this was similar for the Sahtu Region, while the NWT as a whole had a slightly higher employment rate for males than females. The same patterns of employment rates for males vs. females persisted in 2021 for Fort Good Hope, the region and the territory.

Also, as shown in **Table 98**, the majority of employed people in the community in 2019 (78.4%) were working full time, which was less than the regional level (81.3%) and territorial level (83.3%). The community's part-time employment rate in Fort Good Hope (21.6%) was higher than that found in the Sahtu Region (18.7%) and the Territory (16.7%).

Table 98: Employment Rates in Fort Good Hope, Sahtu Region and NWT, 2019 & 2021

	Year	Male	Female	Indigenous	Non-Indigenous	Full Time	Part Time
Fort Good Hope	2019	43.8	57.3	45.7	79.3	78.4	21.6
	2021	50.0	55.9	--*	--	--	--
Sahtu Region	2019	57.0	63.9	49.7	85.8	81.3	18.7
	2021	53.6	56.4	--*	--	--	--
NWT	2019	66.0	65.4	50.4	79.7	83.3	16.7
	2021	65.3	63.8	--*	--	--	--

Source: NWT Bureau of Statistics. (2020f)., Statistics Canada. (2022a).

* Data not available

In 2019, the available labour supply in Fort Good Hope was identified by the NWT Bureau of Statistics as being comprised of 113 individuals, the majority of whom were male (69.2%), Indigenous (97.3%) and had less than a high school diploma (65.8%) (see **Table 99**). The proportion of the available labour supply in Fort Good Hope that are willing to do rotational work (63.2%) is similar to the regional rate and slightly higher than the territorial figure.

Table 99: Potential Labour Supply in Fort Good Hope, Sahtu Region and NWT, 2019

	Available Labour Supply (#)	% Willing to Do Rotational	% Male	% Indigenous	% Less than High School Diploma
Fort Good Hope	113	63.2	69.2	97.3	65.8
Sahtu	444	63.4	63.5	94.1	61.6
NWT	5,545	59.8	55.9	81.5	53.6

Source: NWT Bureau of Statistics. (2020f).

Tables 100, 101 and 102 show that the average individual and family incomes in Fort Good Hope have been lower than the averages for both the region and the Territory. Similarly, a smaller proportion of families in the community have annual incomes above \$75,000 than is the case in the region and the Territory, and there are proportionately more families in Fort Good Hope with incomes below \$30,000.

Table 100: Individual and Family Income, Community of Fort Good Hope, Sahtu Region and NWT, 2020

	Average Personal Income (\$)	Average Family Income (\$)	% Families More than \$75,000	% Families Less than \$30,000
Fort Good Hope	48,591	105,208	50.0	8.3
Sahtu	63,857	131,589	58.9	7.1
NWT	69,802	149,197	73.2	5.7

Source: Statistics Canada. (2022a).

Table 101 shows that the average personal income of workers in Fort Good Hope has been consistently lower than that of workers in the region and the Territory since 2011. The average personal income in the community was highest in 2020, in which it was 24% lower than the average personal income in the region and 30% lower than the average personal income for the Territory for the same year. Personal incomes in the community range between 22% (2019) and 38% (2013) lower than Sahtu Region and between 30% (2020) and 46% (2011) lower than Sahtu Territory.

Table 101: Average Personal Income (\$), Community of Fort Good Hope, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Fort Good Hope	48,591	42,017	36,677	36,742	38,470	39,094	33,091	33,233	30,645	27,919
Sahtu	63,857	54,465	53,575	52,815	54,268	56,391	56,038	55,757	49,931	46,620
NWT	69,802	64,408	62,916	62,068	61,290	61,612	60,154	58,744	56,930	55,673

Sources: NWT Bureau of Statistics. (2021f)., Statistics Canada. (2022a).

The average family income is also lower in Fort Good Hope than in the region and the Territory (see **Table 102**). Between the years 2010 and 2020, the average family income in the community ranged from 20% (2020) to 37% (2014) less than the regional average, and between 29% (2020) to 45% (2011) less than the territorial average.

Table 102: Average Family Income (\$), Community of Fort Good Hope, Sahtu Region and NWT, 2011-2020

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Fort Good Hope	105,208	92,107	91,808	91,846	88,000	92,179	76,533	81,036	74,571	65,143
Sahtu	131,589	119,242	122,879	117,629	114,600	125,066	121,048	122,442	106,774	97,467
NWT	149,197	140,408	136,757	134,057	130,934	133,754	127,334	124,103	120,898	119,089

Sources: NWT Bureau of Statistics. (2021a). & NWT Bureau of Statistics. (2020f)., Statistics Canada. (2022a).

Cost of Living

The NWT Bureau of Statistics provides a Community Price Survey that allows for a comparison of prices across communities. This comparison takes the form of an index showing average prices compared to Yellowknife. The most recent Food Price Index (**Table 103**) indicates that food prices were 83% higher in Fort Good Hope than in Yellowknife in 2019 and have been between 66-91% higher than Yellowknife since 2001. Similarly, **Table 104** shows that the overall cost of living in the community was 75-80% higher than in Edmonton, in 2018, and 50-60% higher than in Yellowknife.

Table 103: Community Food Price Index, Fort Good Hope and Yellowknife, 2001-2019

	2019	2015	2012	2010	2004	2001
Fort Good Hope	183	167	194	180	191	166
Yellowknife	100	100	100	100	100	100

Source: NWT Bureau of Statistics. (2020i).

Table 104: Living Cost Differentials, Fort Good Hope, Yellowknife and Edmonton, 2000-2018

	2018	2013	2009	2005	2000
Fort Good Hope	175-180	175-180	170-175	160-165	160-165
Yellowknife	120-125	120-125	115-120	115-120	120-125
Edmonton	100	100	100	100	100

Source: NWT Bureau of Statistics. (2019f).

Traditional Economy

Table 105 provides information about the proportion of the population of Fort Good Hope, the Sahtu Region and the NWT that participated in traditional activities in 2018. Almost 45% of the population in Fort Good Hope participated in hunting and fishing, which was similar to the participation rate for the region (45.6%) and greater than the average for the NWT as a whole (36.3%). Although smaller proportions of residents of Fort Good Hope participated in trapping and arts and crafts, both of these participation levels are higher than the regional and territorial participation rates. Similarly, for over 74% of Fort Good Hope residents, half or more of the meat/fish (country food) which they consumed was obtained through hunting/fishing, which is considerably larger than the regional (56.6%) and territorial (22.5%) averages.

Table 105: Traditional Activities, Community of Fort Good Hope, Sahtu Region and NWT, 2018

	Hunted and Fished (%)	Trapped (%)	Gathered Berries (%)	Produced Arts & Crafts (%)	Consumed Country Food (Half or More) (%)
Fort Good Hope	44.9	10.8	32.6	30.7	74.5
Sahtu	45.6	8.9	33.6	27.0	56.6
NWT	36.3	4.7	26.4	21.6	22.5

Source: NWT Bureau of Statistics. (2019g). & NWT Bureau of Statistics. (2020f). Fort Good Hope – Statistical Profile

The data in **Table 106**, which identifies the percentage of people over the age of 15 who participated in hunting or fishing between 1998 and 2018, indicate that participation in hunting and fishing in Fort Good Hope has fluctuated somewhat over the years. Since 2003, it has generally been close to the regional participation rates, and higher than the territorial average.

Table 106: Persons Over 15 Who Hunted or Fished in the Year, Community of Fort Good Hope, Sahtu Region and NWT 1999-2018

	2018 (%)	2013 (%)	2008 (%)	2003 (%)	1998 (%)
Fort Good Hope	44.9	43.9	41.9	47.1	39.8
Sahtu	45.6	49.9	44.7	47.1	45.1
NWT	36.3	44.7	39.4	36.7	42.0

Source: NWT Bureau of Statistics. (2019h).

5.2.3.3 Northwest Territories

5.2.3.3.1 Gross Domestic Product and Government Revenues

Table 107 shows Gross Domestic Product (GDP) for the Northwest Territories for the years 2007 through 2022. The trend observed is of overall decline in GDP for the territory, from \$5,655M in 2007 to \$4,397M in 2022 – a net reduction of \$1,258M (or 22.2%). During this period, the year with the highest GDP was 2007 (\$5,655M) and the second highest 2018 (\$4,801M); the year with the lowest GDP was 2020 (\$4,133M) and the second lowest was 2012 (\$4,250M). The overall pattern is one of two ‘busts’ (2012 and 2018) with a small ‘boom’ (in 2018). The years 2021 and 2022 show a modest recovery from the 2020 low.

Table 107: Gross Domestic Product, Northwest Territories, 2007 to 2022
Millions of Chained (2012) Dollars at Basic Prices

Year	GDP (\$M)
2007	5,655
2008	5,114
2009	4,581
2010	4,707
2011	4,274
2012	4,250
2013	4,367
2014	4,575
2015	4,621
2016	4,570
2017	4,737
2018	4,801
2019	4,602
2020	4,133
2021	4,334
2022	4,397

Source: NWT Bureau of Statistics. (2020c).

The largest contributor to NWT GDP, the mining, oil and gas extraction industry, fell by 30.5% between 2019 and 2020 (see **Table 108**). The NWT Bureau of Statistics noted that oil and gas extraction and diamond mining industries dropped due to temporary shutdowns of production (the Ekati diamond mine was closed for most of 2020, while a fire suspended oil and gas production in Norman Wells for a few months of the summer)⁶⁹. In contrast, the construction industry grew by 27.4%, largely a result of increased engineering construction including projects such as the Tłı̄ch̄o Highway.

Other changes of note in 2020 included:

- Several service producing industries experienced large GDP declines, particularly those related to tourism;
- Air transportation declined by over 60% and accommodation and food services fell by 37%;
- Wholesale trade, which is linked to diamond production, declined by over 35% between 2019 and 2020;
- Service industries that can be linked to large-scale consumer purchases fared better than other industries; and,
- Retail trade and real estate both increased, as did finance and insurance.

⁶⁹ NWT Bureau of Statistics. (2020n). *Gross Domestic Product, NWT, 2020 Preliminary*.

Table 108: Gross Domestic Product by Industry⁷⁰, Northwest Territories, 2017 to 2020;
Millions of Chained (2012) Dollars in Basic Prices⁷¹

	2017	2018	2019	2020
All industries	4,736.6	4,763.8	4,376.4	3,920.1
Agriculture, forestry, fishing and hunting	10.3	10.3	10.4	10.0
Mining, quarrying, and oil and gas extraction	1,846.5	1,804.1	1,336.0	928.7
Oil and gas extraction	7.8	37.9	171.9	119.2
Diamond mining	1,993.2	1,882.9	1,167.3	814.1
Support activities for mining, oil and gas	66.9	68.8	43.1	28.7
Utilities	74.1	76.0	72.3	65.6
Construction	362.0	366.1	287.6	366.5
Residential building construction	34.6	32.6	28.3	31.5
Non-residential building construction	47.0	50.1	23.4	18.1
Engineering construction	158.5	166.1	123.7	199.0
Other activities of the construction industry	43.1	41.5	31.4	39.1
Repair construction	82.9	81.1	79.5	72.1
Manufacturing	9.9	10.5	8.3	7.7
Wholesale trade	117.3	123.1	104.2	66.1
Retail trade	161.0	165.1	160.6	167.6
Transportation and warehousing	217.3	223.2	223.8	121.6
Information and cultural industries	98.8	104.5	107.0	105.0
Finance and insurance	122.4	123.8	119.6	124.5
Real estate and rental and leasing	395.4	402.3	403.8	413.1
Professional, scientific and technical services	77.9	74.7	76.2	68.9
Management of companies and enterprises	22.4	19.6	16.2	13.9
Administrative and support, waste management and remediation services	53.4	50.9	52.8	48.7
Educational services	209.8	214.7	220.1	202.3
Health care and social assistance	304.0	309.6	319.0	300.4
Arts, entertainment and recreation	7.6	7.4	7.2	3.6
Accommodation and food services	94.0	93.8	95.2	60.2
Other services (except public administration)	58.2	57.8	56.3	51.0
Public administration	706.0	712.3	722.8	725.7
Federal government public administration	145.1	146.2	150.3	154.9
Provincial and territorial public administration	404.2	406.9	413.3	414.6
Local, municipal and regional public administration	96.2	98.7	98.0	95.8
Indigenous public administration	59.4	59.2	60.1	59.7

Source: NWT Bureau of Statistics. (2020h).

⁷⁰ North American Industry Classification System (NAICS)

⁷¹ The NWT Bureau of Statistics describes "chained dollar" data as showing changes in the quantities of goods and services produced, not their prices.

Table 109 shows the sources and proportions of government revenue in the Northwest Territories in the years from 2007 to 2021. During this 15-year period, total government revenue increased by 63.4%. Federal revenues fell in absolute terms (from \$702M in 2007 to \$479M in 2021) as well as proportionately (from 27.9% in 2007 to 13.8% in 2021), while territorial revenues nearly doubled in absolute terms and proportionately increased from 54.7% (in 2007) to 68.9% (in 2021). Indigenous government revenues during the same period increased by more than 60% in absolute terms and proportionately increased from 6.4% (in 2007) to 8.3% (in 2021). Local government revenues proportionately decreased from 11.0% (in 2007) to 9.1% (in 2021) during the same period. These figures indicate that from 2007 to 2021, the GNWT became the dominant source of revenue in the territory, while federal government revenues dramatically declined and Indigenous government revenues made modest gains.

Table 109: Government Revenue by Level of Government, Northwest Territories, 2007-2021 (Millions of \$)

Year	Total (\$M)	Federal (\$M)	Territorial (\$M)	Local (\$M)	Indigenous (\$M)
2007	2,514	702 (27.9%)	1,375 (54.7%)	277 (11.0%)	160 (6.4%)
2008	2,581	718	1,459	283	121
2009	2,672	693	1,564	291	124
2010	2,663	650	1,597	284	132
2011	2,811	780	1,615	282	134
2012	2,792	719	1,657	287	129
2013	2,738	656	1,676	276	130
2014	3,062	650	1,983	291	138
2015	3,097	612	2,063	277	145
2016	3,144	544	2,169	261	170
2017	3,250	531	2,243	287	189
2018	3,349	516	2,344	308	181
2019	3,501	494	2,464	330	213
2020	3,688	479	2,603	344	262
2021	3,949	543 (13.8%)	2,719 (68.9%)	361 (9.1%)	326 (8.3%)

Source: Statistics Canada. (2022b).

5.3 Infrastructure, Services, and Institutional Capacity

Existing transportation infrastructure in the assessment area (LAA and RAA) consists of:

- Mackenzie Valley Highway: paved between Jean Marie River and Fort Simpson (Łíídlıı Kųę); gravel between Fort Simpson (Łíídlıı Kųę) and the endpoint at Pehdzeh Ki N'deh (Wrigley);
- Mackenzie Valley Winter Road (MVWR): seasonal road along the Mackenzie Valley from Pehdzeh Ki N'deh (Wrigley) to Fort Good Hope (Rádey!łıkóé);
- Other winter roads: seasonal roads that connect to the MVWR, including to Délıneę (105.3 km long) and to Colville Lake (K'áhbamítúé) (165.0 km long); and
- Airports in all communities except Wrigley.

These features are shown in **Figure 8**.

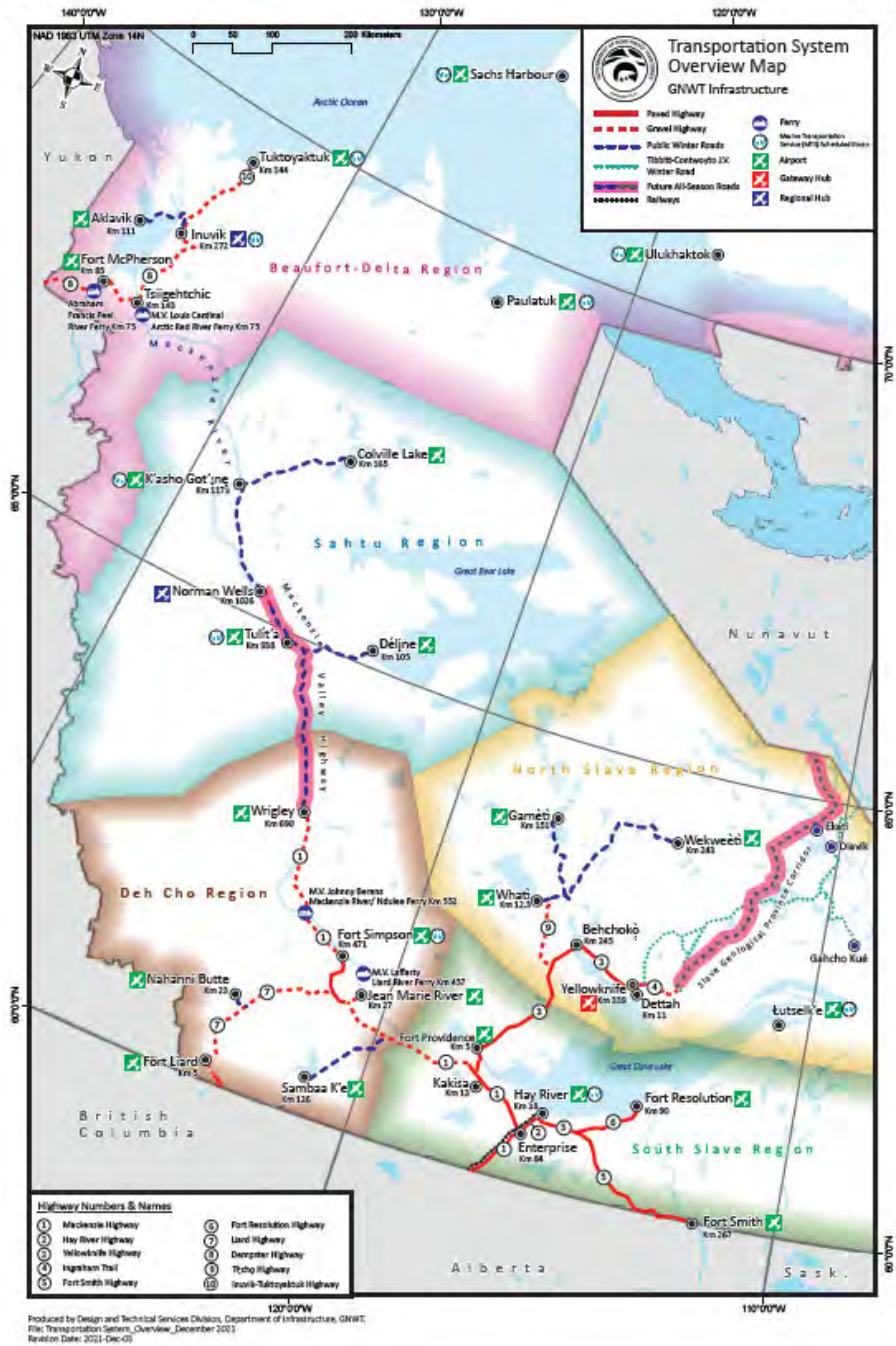


Figure 8: NWT Transportation Map

5.3.1 Local Assessment Area

Transportation Infrastructure in the LAA

The LAA community of Wrigley is serviced by the Mackenzie Highway (Hwy 1), while the LAA communities of Tulita and Norman Wells are accessible by land only seasonally via the MVWR. The MVWR's operating season is based on local climate; it tends to open from December 23 to March 28 (20-year average) between Wrigley and Tulita and from December 25 to April 1 (20-year average) between Tulita and Norman Wells. A comparison of average daily traffic volumes in the period from 2014-2019 is summarized below:

- Mackenzie Highway at Wrigley: data not available
- MVWR at Délı̄në junction (at km 914): minimum of 52 vehicles per day; maximum of 137 vehicles per day; average (2013-2019): 78.4 vehicles per day
- MVWR south of Norman Wells (at km 1022): minimum of 63 vehicles per day; maximum of 164 vehicles per day; average (2013-2019): 106.7 vehicles per day⁷².

5.3.1.1 Wrigley

5.3.1.1.1 Housing and Accommodation

There were 40 households in Wrigley in 2019 (see **Table 110**), a decrease of 10 households from 2014. There was a slight increase in the average household size over that period in the community (from an average of 2.6 people to 2.8) but a slight decrease in region (from 2.7 to 2.5). There was a substantial reduction in the number of households with 6 or more people in the region (a 44% reduction) and the Territory (a 19% reduction) between 2014 and 2019; data are not available for the community on this factor for 2019. There is no 2021 data at any level regarding the number of households with 6 or more people.

Table 110: Household Numbers and Size, for Wrigley, Dehcho and NWT, 2014 & 2021

	2014			2021		
	Number of Households	Average Household Size	Households with 6+ People	Number of Households	Average Household Size	Households with 6+ People
Wrigley	50	2.6	--	40	2.8	--
Dehcho	1,165	2.7	73	1,150	2.5	41 (2019)
NWT	14,728	2.8	898	15,205	2.7	731 (2019)

Sources: NWT Bureau of Statistics. (2015). 2014 NWT Community Survey; NWT Bureau of Statistics. (2020n). 2019 NWT Community Survey & Statistics Canada. (2022).

In 2019 46% of the 43 households in Wrigley were owned and 53.8% were rented⁷³. Of these households, the number with a housing problem⁷⁴ was high at 53.8%, with 50% not being adequate⁷⁵ and 15.4% not suitable^{76,77}. In terms of dwelling satisfaction, 57.7% of Wrigley households were satisfied with their dwelling⁷⁸.

⁷² Government of Northwest Territories. (2019d). Northwest Territories highway traffic report 2018.

⁷³ NWT Bureau of Statistics. (2019a). Housing Tenure by Community, Northwest Territories, 2019.

⁷⁴ A house is considered to have a housing problem if it has an affordability, adequacy or suitability issue.

⁷⁵ Adequate housing must have running water and must not require major repairs.

⁷⁶ Suitability is defined as having the appropriate number of bedrooms for the characteristics and number of occupants (as determined by the National Occupancy Standard requirements).

⁷⁷ NWT Bureau of Statistics. (2019b). Housing Problems, by Community, Northwest Territories, 2019.

⁷⁸ NWT Bureau of Statistics. (2019c). Dwelling Satisfaction by Community, Northwest Territories, 2019.

By 2021, the proportion of owned households had increased to 87.5% and the proportion of rented households had decreased to 25.0%. The proportion of housing that is not adequate remained the same as in 2019, at 50.0%, while the proportion of housing that is deemed not suitable had increased by nearly 10 percentage points from 2019 levels, at 25%⁷⁹.

Table 111 provides the 2019 and 2021 housing conditions statistics for Wrigley compared to those of the Dehcho Region.

Table 111: Wrigley and Dehcho Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	2019		2021	
	Wrigley	Dehcho	Wrigley	Dehcho
Total Number of Households	43.0	1,087	40	1,150
Owned (%)	46.2	60.4	87.5	51.7
Rented (%)	53.8	39.6	25.0	44.3
Housing Problem (%)	53.8	48.9	x	44.3
Not Adequate (%)	50.0	31.9	50.0	32.2
Not Affordable (%)	x	10.8	x	x
Not Suitable (%)	15.4	7.4	25.0	12.2
Very Satisfied with Dwelling (%)	x	20.3	x	x
Satisfied with Dwelling (%)	57.7	49.8	x	x

Sources: NWT Bureau of Statistics. (2019a-c); Statistics Canada. (2022).

Notes: 'x' means data has been suppressed by NWT Bureau of Statistics for data quality

5.3.1.1.2 Social Infrastructure

Emergency Services

Wrigley has a fire hall⁸⁰.

Health Facilities and Services

Wrigley has a health cabin⁸¹. As such, Wrigley receives intermittent health services from the Dehcho, in which a nurse or a nurse practitioner, with or without a physician (based on need), flies into the community approximately once per month to provide healthcare services to residents. Wrigley is water locked: during freeze up and break up, the community gets a community health nurse in for a whole period (2-3 weeks). Wrigley also has Community Health Representatives (CHR) who provide first aid, check blood pressure and do a set of vitals for residents as required, conduct home visits for elders and provide some basic homecare services⁸².

Social services (including mental health counsellors and social works) are provided by the Northwest Territories Health and Social Services Authority (NWTSSA). Satellite counsellors from Fort Simpson go to Wrigley on a monthly basis and are also available for emergencies⁸³.

⁷⁹ Statistics Canada. (2023). 2021 Census.

⁸⁰ Interview with community member.

⁸¹ Interview with community member.

⁸² interview with GNWT staff

⁸³ interview with GNWT staff

Wrigley lacks the capacity to address issues of family violence and sexual abuse because of its small population (per capita basis funding)⁸⁴.

Judicial Infrastructure

Wrigley has two police officers stationed in the community⁸⁵.

Recreation Infrastructure

Wrigley has a gymnasium⁸⁶.

5.3.1.1.3 Public Infrastructure

Transportation Infrastructure

Wrigley has an all-weather access road, marine re-supply facility, airport, and air terminal building. Roads in the community are gravel⁸⁷.

Wrigley is the northernmost all-season access point along the Heritage Route/Highway 1. In the winter, Wrigley provides a stop-over for vehicles driving further north on the winter roads to the communities of Tulita, Délı̄në, Norman Wells, Fort Good Hope and Colville Lake⁸⁸.

Communication Infrastructure

Wrigley has one radio station, satellite television reception, and non-accounting postal service⁸⁹.

Utilities Infrastructure (Electrical, Water, Waste Management)

Wrigley receives electricity by a diesel generator, supplied by the Northwest Territories Power Corporation (NWTPC). The municipality provides sanitation services via truck and both solid and sewage waste disposal services⁹⁰.

The community of Wrigley has a Class I water plant which uses water from the Mackenzie River and has a certified operator⁹¹.

5.3.1.1.4 Institutional Infrastructure and Services

Educational Infrastructure

Chief Julian Yendo School (CJYS) in Wrigley is a Dehcho Divisional Education Council (DDEC) school and offers classes from Junior Kindergarten to Grade 9. In the 2021-2022 school year, the school had 23 students and 2 teaching staff who teach in multi-graded classrooms. Students receive daily second language instruction in Dene Zhatı̄é and take part in cultural activities⁹².

⁸⁴ interview with GNWT staff

⁸⁵ Interview with community member.

⁸⁶ Interview with community member.

⁸⁷ Interview with community member.

⁸⁸ Government of Northwest Territories. (2021d). Parks: Heritage Route.

⁸⁹ Interview with community member.

⁹⁰ NWT Bureau of Statistics. (2013f). Wrigley Infrastructure Profile.

⁹¹ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). Drinking Water Report.

⁹² Information provided by GNWT-ECE staff.

Chief Julian Yendo School offers the following services for its students:

- Healthy Foods for Learning;
- Mental health support services (via Northern Counselling Therapeutic Services); and,
- Safe and Caring Schools (e.g., fire drills)⁹³.

Table 112 shows school enrolment (full-time equivalent (FTE)⁹⁴ by grade as of September 30, 2019, 2020 and 2021.

Table 112: Chief Julian Yendo School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrolment 2019-2021 (FTE)	0.5	1	2	4	1	1	3	2	0	1	5	-	-	-
Enrolment 2020-2021 (FTE)	1	2	1	2	4	1	1	3	3	0	1	-	-	-
2021-2022 (FTE)	0	1	2	2	1	2	4	1	1	2	2	4	1	-

Sources: Government of Northwest Territories. (2020), direct communication with GNWT-ECE staff.

There is one Early Childhood Consultant for the Dehcho region who is located in the Fort Simpson ECE Service Centre office. Wrigley currently does not have a licensed early learning and child care program for children from birth to three years of age⁹⁵.

Religious Infrastructure

Wrigley has two churches: Church of the Holy Heart of Mary (Catholic) and Jessie Hardisty Memorial (Anglican)⁹⁶.

5.3.1.2 Tulita

5.3.1.2.1 Housing and Accommodation

There were 135 households in Tulita in 2021 (see **Table 113**), a slight decrease from 2014. There was also a slight decrease in the average household size over that period in both the community (from an average of 3.1 people to 3.0), while the average household size stayed the same in the region (at 2.8). Similarly, there was a reduction in the number of households with 6 or more people in both the community (a 47% reduction) and the region (a 29% reduction) between 2014 and 2019. There is no 2021 data at any level regarding the number of households with 6 or more people.

⁹³ Government of Northwest Territories. (2018a). *Dehcho Divisional Education Council Operating Plan for the 2018-2019 School Year*.

⁹⁴ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

⁹⁵ Information provided by GNWT-ECE staff

⁹⁶ *Join My Church*. (n.d.a). *Churches in Wrigley, NWT*.

Table 113: Household Numbers and Size, for Tulita, Sahtu and NWT, 2014 & 2021

	2014			2021		
	Number of Households	Average Household Size	Households with 6+ People	Number of Households	Average Household Size	Households with 6+ People
Tulita	152	3.1	15	135	3.0	8 (2019)
Sahtu	838	2.8	66	815	2.8	47 (2019)
NWT	14,728	2.8	898	15,205	2.7	731 (2019)

Sources: NWT Bureau of Statistics. (2015). 2014 NWT Community Survey; NWT Bureau of Statistics. (2020n). 2019 NWT Community Survey & Statistics Canada. (2022).

In 2019, 39% of the 150 households in Tulita were owned and 61% were rented⁹⁷. Of these households, the number with a housing problem⁹⁸ was quite high at 51.7%, with 41.5% not being adequate⁹⁹, 5.9% not being affordable¹⁰⁰ and 16.1% not suitable¹⁰¹. In terms of dwelling satisfaction, 50.8% of households were satisfied with their dwelling and 27.1% were very satisfied¹⁰².

By 2021, the proportion of owned households had decreased to 33.3% and the proportion of rented households had increased to 66.7%. The proportion of housing that is not adequate increased by about one percentage point to 42.3%, while the proportion of housing that is deemed not suitable had increased by nearly 10 percentage points from 2019 levels, to 25.9%¹⁰³.

Table 114 provides the 2019 and 2021 housing conditions statistics for Tulita compared to those of the Sahtu Region.

Table 114: Tulita and Sahtu Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	2019		2021	
	Tulita	Sahtu	Tulita	Sahtu
Total Number of Households	150	816	135	815
Owned (%)	39.0	41.5	33.3	42.9
Rented (%)	61.0	58.5	66.7	57.7
Housing Problem (%)	51.7	50.1	59.3	45.4
Not Adequate (%)	41.5	39.3	42.3	29.4
Not Affordable (%)	5.9	11.4	x	x
Not Suitable (%)	16.1	12.5	25.9	17.8
Very Satisfied with Dwelling (%)	27.1	31.4	x	x
Satisfied with Dwelling (%)	50.8	43.5	x	x

Sources: NWT Bureau of Statistics (2019c-e); Statistics Canada. (2022).

⁹⁷ NWT Bureau of Statistics. (2019a). *Housing Tenure by Community, Northwest Territories, 2019*.

⁹⁸ A house is considered to have a housing problem if it has an affordability, adequacy or suitability issue.

⁹⁹ Adequate housing must have running water and must not require major repairs.

¹⁰⁰ Affordable housing is defined as shelter costs (e.g., rent or mortgage payments, utilities, heat, insurance & property taxes) being less than 30% of household income.

¹⁰¹ Suitability is defined as having the appropriate number of bedrooms for the characteristics and number of occupants (as determined by the National Occupancy Standard requirements); NWT Bureau of Statistics. (2019b). *Housing Problems, by Community, Northwest Territories, 2019*.

¹⁰² NWT Bureau of Statistics. (2019c). *Dwelling Satisfaction by Community, Northwest Territories, 2019*.

¹⁰³ Statistics Canada. (2023). *2021 Census*.

Tulita does not have a shelter to temporarily accommodate people who lack housing. The school gym can serve as an emergency shelter (e.g., flood, fire, power outage) with cots and mats for 50 people¹⁰⁴.

5.3.1.2.2 Social Infrastructure and Services

Emergency Services

Tulita has a fire hall with two pumper trucks. The community also has an all-terrain vehicle equipped with a 60-gallon tank and pump to service campground and trails outside Tulita, as well as a 200-gallon tank and pump system that can be put on a pickup truck or trailer. The community has eight volunteer firefighters, who receive weekly training on EMS procedures. Tulita's fire department services the community as well as responds to accidents on winter road, forest fires, floods, and is involved search and rescue operations outside the community¹⁰⁵.

Tulita owns a Suburban, which is used as a makeshift ambulance when required¹⁰⁶.

Health Facilities and Services

Tulita has a health facility called the Harriet Gladue Health Centre, which has a group of community health nurses lead by a nurse in charge¹⁰⁷. The health centre offers childcare, walk-in health services, and homecare for elders. Residents who experience medical emergencies (e.g., trauma) are flown to Yellowknife via Medevac¹⁰⁸.

A new health centre (Tulita Health Centre) is currently under construction¹⁰⁹. It is expected to be about 1,398 square metres (15,048 square feet) and will be similar to the Level B facilities in Fort Providence and Fort Resolution¹¹⁰.

Social services are provided by NWT HSSA. Tulita has mental health councillors and social workers in the community¹¹¹.

Judicial Infrastructure

Tulita has three police officers stationed in the community. The detachment serves only Tulita (i.e., it does not serve any other community)¹¹².

Recreation Infrastructure

Tulita's recreational infrastructure included a community hall, an arena, a gymnasium and a seasonal swimming pool. The community also has a central square and arbour which is used by residents for cook-outs, drumming and games¹¹³.

Other recreation infrastructure includes the Two Rivers Trail, the Mackenzie River Campground and the Bear River Campground. Details on this infrastructure are provided in Section 5.1.1.

¹⁰⁴ Interview with community members.

¹⁰⁵ Interview with community members.

¹⁰⁶ Interview with community members.

¹⁰⁷ Interview with GNWT staff.

¹⁰⁸ Interview with community members.

¹⁰⁹ Interview with community members.

¹¹⁰ Whitehouse, Simon. (2020). Opening of new \$18.9-million Tulita Health Centre set for fall 2021, in Yellowknife.

¹¹¹ Interview with GNWT staff

¹¹² Interview with community member.

¹¹³ Interview with community member.

5.3.1.2.3 Public Infrastructure

Transportation Infrastructure

Tulita has a winter road, airport, and air terminal building. Roads in the community are gravel¹¹⁴. Tulita is connected to Délı̄nę, Wrigley and Norman Wells by the winter road, which is maintained by the GNWT Department of Transportation¹¹⁵.

Ursus is a native owned charter airline based out of Tulita and Yellowknife which offers charter service with single, multi, or wheels/floats/ski aircraft¹¹⁶.

In the summer months (mid-June to late-September) Tulita and other communities located along the Mackenzie River are supplied by a tug and barge service. The barges are owned and run by a private company that ships domestic and commercial items¹¹⁷.

Communication Infrastructure

Tulita has one radio station, satellite television reception, 4G cellular service, and full postal service¹¹⁸.

Utilities Infrastructure (Electrical, Water, Waste Management)

Tulita receives electricity by a diesel generator, supplied by the NWTPC. The municipality provides sanitation services via truck and both solid and sewage waste disposal services¹¹⁹.

Tulita has a landfill which current has between 2-5 years remaining until the end of its lifespan. The Tulita Dene Band provides a drop-in recycling program twice a year. The community has a composting program which converts 500 pounds of food waste and 200 pounds of paper waste per week into compost. Plans are in place to expand the composting program to include more paper goods in 2023¹²⁰.

The community of Tulita has a Class I water plant which uses water from the Great Bear River and has a certified operator¹²¹.

5.3.1.2.4 Institutional Infrastructure and Services

Educational Infrastructure

Chief Albert Wright School (CAWS) in Tulita is a Sahtu Divisional Education Council (SDEC) school and offers classes from Junior Kindergarten to Grade 12. Grades 10-12 have courses offered through the Northern Distance Learning program as well¹²². The school uses NWT approved curriculum which includes NWT created curriculum such as Dene Kede, and adapted or adopted curriculum from other jurisdictions such as Alberta, Saskatchewan and Manitoba¹²³. Students receive second language instruction in Dene Kede and Dene Kede immersion is offered

¹¹⁴ Interview with community member.

¹¹⁵ Sahtu Land Use Planning Board. (July 2010). Sahtu Land Use Plan Background Report.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ Interview with community member.

¹¹⁹ Interview with community member.

¹²⁰ Interview with community members.

¹²¹ Interview with community member; Government of Northwest Territories Department of Municipal and Community Affairs. (2016). Drinking Water Report.

¹²² Sahtu Divisional Education Council. (2018). Operating Plan for 2018-2019.

¹²³ As per information provided by ECE staff, public schools in the NWT are in the process of transiting to the BC curriculum beginning in the 2023-2024 school year and moving to the introduction of all subjects, in all grades, in all schools by the 2027-2028 school year.

in Junior Kindergarten (JK)/Senior Kindergarten (K)¹²⁴. For the 2021-2022 school year, 88 students were enrolled (FTE) and 12 teaching staff were employed. **Table 115** shows school enrolment (FTE¹²⁵) by grade as of September 30, 2019, 2020, and 2021.

Table 115: Chief Albert Wright School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrolment 2019-2020 (FTE)	2	2	6	4	8	5	5	2	12.5	9	7	9	3	4
2020-2021 (FTE)	5	3	2	6	4	9	4	5	3	12	8	9.25	4	6
2021-2022 (FTE)	4	8	7	4	3	5	5	11	5	5	4	20	5	2

Source: Government of Northwest Territories. (2020), direct communication from GNWT-ECE staff.

There is one Early Childhood Consultant for the Sahtu region who is located in the Norman Wells ECE Service Centre office. Licensed early learning and childcare program Sister Celeste Child Development Centre is licensed for 20 preschool spaces¹²⁶. Tulita has Early Childhood and Learning programs operating¹²⁷.

Tulita also has an Aurora College Community Learning Centre (CLC). The facility is equipped with an Atco trailer, one classroom, one computer room (with seven computers), small kitchen and a head office¹²⁸. (details on programs are provided in Section 5.4.1).

Religious Infrastructure

Tulita has two churches: Church of St. Theresa of Avila (Roman Catholic) and St. David Church (Anglican)¹²⁹.

5.3.1.3 Norman Wells

5.3.1.3.1 Housing and Accommodation

The number of households in Norman Wells has decreased between 2014 and 2021 from 304 to 270 (see **Table 116**). The average number of people living in each household in the community has increased from 2.3 to 2.5 over the same period and continues to be less than the average for the region (2.8 in both 2014 and 2021) and the Territory (2.8 in 2014 and 2.7 in 2021).

Between 2014 and 2019, the number of households in the community with six or more people dropped from ten to six. Fewer than 2% of all households in the community having more than six members, which is much less than the proportion of households with six or more people in the Sahtu Region (4.9%) or the Territory (5.6%).

¹²⁴ Information provided by GNWT-ECE staff.

¹²⁵ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

¹²⁶ Information provided by GNWT-ECE staff.

¹²⁷ Interview with community member.

¹²⁸ Interview with community member.

¹²⁹ Join My Church. (n.d.b). Churches in Tulita, NWT.

Table 116: Household Numbers and Size, for Norman Wells, Sahtu and NWT, 2014 & 2021

	2014			2021		
	Number of Households	Average Household Size	Households with 6+ People	Number of Households	Average Household Size	Households with 6+ People
Norman Wells	304	2.3	10	270	2.5	6 (2019)
Sahtu	838	2.8	66	815	2.8	47 (2019)
NWT	14,728	2.8	898	15,205	2.7	731 (2019)

Sources: NWT Bureau of Statistics. (2015). 2014 NWT Community Survey; NWT Bureau of Statistics. (2020n). 2019 NWT Community Survey & Statistics Canada. (2022).

In 2019 37.4% of the 289 households in Norman Wells were owned and 62.6% were rented¹³⁰. Of these households, the percentage with a housing problem¹³¹ was 33.9%, with 22.9% not being adequate¹³², 13.7% not affordable¹³³ and 4.8% not suitable^{134,135}. In terms of dwelling satisfaction, 44.1% of households were satisfied with their dwelling and 41.1% were very satisfied¹³⁶.

By 2021, the proportion of owned households had increased to 42.6% and the proportion of rented households had decreased to 55.6%. The proportion of housing that is not adequate decreased to 18.5%, while the proportion of housing that is deemed not suitable had increased by more than 2 percentage points from 2019 levels, to 7.4%¹³⁷.

Table 117 provides the 2019 and 2021 housing conditions statistics for Norman Wells compared to those of the Sahtu Region.

Table 117: Norman Wells and Sahtu Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	Norman Wells	Sahtu	Norman Wells	Sahtu
Total Number of Households	289	816	270	815
Owned (%)	37.4	41.5	42.6	42.9
Rented (%)	62.6	58.5	55.6	57.7
Housing Problem (%)	33.9	50.1	29.6	45.4
Not Adequate (%)	22.9	39.3	18.5	29.4
Not Affordable (%)	13.7	11.4	x	x
Not Suitable (%)	4.8	12.5	7.4	17.8
Very Satisfied with Dwelling (%)	41.4	31.4	x	x
Satisfied with Dwelling (%)	44.1	43.5	x	x

Sources: NWT Bureau of Statistics. (2020n)., Statistics Canada. (2022).

¹³⁰ NWT Bureau of Statistics. (2019a). *Housing Tenure by Community, Northwest Territories, 2019*.

¹³¹ A house is considered to have a housing problem if it has an affordability, adequacy or suitability issue.

¹³² Adequate housing must have running water and must not require major repairs.

¹³³ Affordable housing is defined as shelter costs (e.g., rent or mortgage payments, utilities, heat, insurance & property taxes) being less than 30% of household income.

¹³⁴ Suitability is defined as having the appropriate number of bedrooms for the characteristics and number of occupants (as determined by the National Occupancy Standard requirements).

¹³⁵ NWT Bureau of Statistics. (2019b). *Housing Problems, by Community, Northwest Territories, 2019*.

¹³⁶ NWT Bureau of Statistics. (2019c). *Dwelling Satisfaction by Community, Northwest Territories, 2019*.

¹³⁷ Statistics Canada. (2023). *2021 Census*.

Norman Wells does not have a shelter for abused women¹³⁸.

5.3.1.3.2 Social Infrastructure

Emergency Services

Norman Wells has a fire hall which contains two pumper trucks and one rescue truck. Fire services are provided only within the boundaries of the community. The Town has a paid Fire Chief and 15 paid volunteer firefighters¹³⁹.

At present, the community does not have EMS or ambulance, as the GNWT provides funding for EMS to communities that have a highway linking it to other communities (which Norman Wells does not presently have). Norman Wells also does not have medivac services¹⁴⁰.

Health Facilities and Services

In 2018, Sahtú Got'iné Regional Health and Social Services Centre was opened to replace the old health cabin. The new health and social service centre provides the following services:

- Community health nursing programs such as prenatal health, child health, adult health, health promotion, chronic care and treatment services;
- Community counselling, social services such as child protection, family violence, guardianship, adoption, fostering, and homeless programs;
- Transitional care;
- Long term care; and
- The adult day program¹⁴¹.

The health centre also provides elder care. Norman Wells' community health centre has a group of community health nurses as well as a nurse practitioner¹⁴². The community possesses a recently constructed and newly opened long term care facility¹⁴³.

Residents who experience medical emergencies (e.g., trauma) are flown to Yellowknife via Medevac¹⁴⁴.

Social services are provided by NWT HSSA. Norman Wells has mental health councillors and social workers in the community¹⁴⁵.

Judicial Infrastructure

Norman Wells has three police officers stationed in the community. The detachment serves only Norman Wells (i.e., it does not serve any other community)¹⁴⁶.

¹³⁸ Interview with municipal staff.

¹³⁹ Interview with municipal staff.

¹⁴⁰ Interview with community members.

¹⁴¹ Government of Northwest Territories. (2018b). *Grand Opening of the Sahtú Got'iné Regional Health and Social Services Centre and Sahtú Dene Nechá Kó Long Term Care Facility*.

¹⁴² Interviews with GNWT staff and community members.

¹⁴³ interview with GNWT staff

¹⁴⁴ Interview with community members.

¹⁴⁵ interview with GNWT staff

¹⁴⁶ Interview with community member.

Recreation Infrastructure

Norman Wells has the following recreational facilities:

- Penguin Palace (Pool);
- Ray Persson Memorial Arena;
- Norman Wells Curling Club;
- Mackenzie Mountain School Gymnasium;
- Dennis Drolet Memorial (Community) Hall;
- Norman Wells Library;
- Norman Wells Youth and Elder Centre;
- Fitness Centre;
- Royal Canadian Legion;
- Ptarmigan Field (Ball Diamond);
- Ptarmigan Ridge Golf Club;
- Norman Wells Historical Centre;
- Tennis/Basketball Court;
- Parks and Playgrounds (Mackenzie Mountain School, the RCMP detachment, Tulita Street, Jackfish Lake Park, and Mountain Avens Court);
- A small number of trails located throughout Town with more expansive trail networks in the surrounding area;
- Canol Trail (which cuts through Norman Wells); and,
- Mackinnon Territorial Park (located southeast of the town)¹⁴⁷.

Social Services

The Norman Wells Youth and Elder Centre is a drop-in center which provides programmed events for Youth and Elders in the community¹⁴⁸.

5.3.1.3.3 Public InfrastructureTransportation Infrastructure

Norman Wells has a winter access road, marine re-supply facility, airport, and air terminal building. Roads in the community are partially paved, gravel and chip sealed¹⁴⁹.

Communication Infrastructure

Norman Wells has one radio station, cable and satellite television reception, 4G cellular service and full-service postal service¹⁵⁰.

Utilities Infrastructure (Electrical, Water, Waste Management)

Norman Wells receives electricity by diesel and wood pellets¹⁵¹. The municipality provides sanitation services via truck and both solid and sewage waste disposal services¹⁵².

¹⁴⁷ Expedition Management Consulting. (2021). *Norman Wells Recreation Master Plan*.

¹⁴⁸ Expedition Management Consulting. (2021). *Norman Wells Recreation Master Plan*.

¹⁴⁹ Interview with community member; Town of Norman Wells (2021a). *Normal Wells Community Plan*.

¹⁵⁰ Interview with community member.

¹⁵¹ Interview with community member.

¹⁵² Interview with community members.

The community's landfill has approximately 15 years of life left. The Town's recycling program at present is able only to recycle cans¹⁵³.

The community of Norman Wells has a Class II water plant which uses water from the Mackenzie River and has a certified operator¹⁵⁴. Drinking water quality is monitored by the community government¹⁵⁵.

5.3.1.3.4 Institutional Infrastructure and Services

Educational Infrastructure

Mackenzie Mountain School is an SDEC school and provides Junior Kindergarten to grade 12. The school also offers a Core French Language Program and students receive second language instruction in Dene Kede. Grades 10-12 have courses offered through the Northern Distance Learning program as well. For the 2021-2022 school year, 156 students were enrolled (FTE) and 16 teaching staff were employed¹⁵⁶. **Table 118** shows school enrolment (FTE¹⁵⁷) by grade as of September 30, 2019, 2020, and 2021.

Table 118: Mackenzie Mountain School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrolment 2019-2020 (FTE)	12	18	6.5	11.5	8	10	8	9	17	16	10	14.5	21	5
2020-2021 (FTE)	10	10	19	6.5	10	6	11	8	8	15.5	10	15	11	18
2021-2022 (FTE)	13	13	13	12	19	9	9	3	10	8	7	20.5	10.5	9

Sources: Government of Northwest Territories. (2020), direct communication from GNWT-ECE staff.

Norman Wells does not presently have Early Childhood and Learning programs operating¹⁵⁸. The Town of Norman Wells has a local library¹⁵⁹.

There is one Early Childhood Consultant for the Sahtu region who is located in the Norman Wells ECE Service Centre office. Norman Wells currently does not have a licensed early learning and child care program for children from birth to three years of age¹⁶⁰.

Norman Wells also has an Aurora College CLC with classrooms and six computers available for use (details on programs are provided in Section 5.4.1).

Religious Infrastructure

Norman Wells has two churches: Church of St. Anthony (Roman Catholic) and Sahtu Baptist Church (Baptist)¹⁶¹.

¹⁵³ Interview with community members.

¹⁵⁴ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

¹⁵⁵ Interview with municipal staff.

¹⁵⁶ Information provided by GNWT-ECE staff.

¹⁵⁷ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

¹⁵⁸ Interview with community members.

¹⁵⁹ Town of Norman Wells. (2021a). *Norman Wells Community Plan*.

¹⁶⁰ Information provided by GNWT-ECE staff.

¹⁶¹ Join My Church. (n.d.c). *Churches in Norman Wells, NWT*.

5.3.2 Regional Assessment Area

Transportation Infrastructure in the RAA

The RAA community of Fort Simpson is serviced by Hwy 1, while the RAA communities of Délı̄nę, Colville Lake and Fort Good Hope are accessible by land only seasonally via the MVWR and other access winter roads. The operating seasons for the access winter roads to Colville Lake and Délı̄nę are similar to the MVWR as outlined above. A comparison of average daily traffic volumes in the period from 2014-2019 is summarized below:

- Hwy 1 at Fort Simpson (at km 477): minimum of 60 vehicles per day; maximum of 90 vehicles per day; average (2013-2018): 78.3 vehicles per day
- MVWR north of Norman Wells (to Fort Good Hope – at km 1031): minimum of 28 vehicles per day; maximum of 68 vehicles per day; average (2013-2019): 37.7 vehicles per day
- Délı̄nę access winter road (at km 1): minimum of 22 vehicles per day; maximum of 71 vehicles per day; average (2013-2019): 39.1 vehicles per day
- Colville Lake access winter road (at km 1): minimum of 16 vehicles per day; maximum of 68 vehicles per day; average (2014-2019): 16.6 vehicles per day¹⁶².

5.3.2.1 Dehcho Region/Fort Simpson

5.3.2.1.1 Fort Simpson

Housing and Accommodation

In 2019, there were 471 households in Fort Simpson, with 56.4% of these households being owned and 43.6% being rented¹⁶³. Of these households, the number with a housing problem¹⁶⁴ was lower than at the regional level, at 39.4%, with 26.9% not being adequate¹⁶⁵ and 5.6% not suitable^{166,167}. The proportion of Fort Simpson households that found housing to be not affordable was 12.0%, which was higher than for the Dehcho Region as a whole¹⁶⁸. In terms of dwelling satisfaction, 46.7% of households in Fort Simpson in 2019 were satisfied with their dwelling¹⁶⁹.

By 2021, the proportion of owned households had decreased by 4 percentage points to 52.2% and the proportion of rented households had increased to 48.9%. The proportion of housing that is not adequate had decreased by 2 percentage points to 24.4%, while the proportion of housing that is deemed not suitable had more than doubled from 2019 levels to 13.3%¹⁷⁰.

¹⁶² Government of Northwest Territories. (2019d). Northwest Territories highway traffic report 2018.

¹⁶³ NWT Bureau of Statistics. (2019a). Housing Tenure by Community, Northwest Territories, 2019.

¹⁶⁴ A house is considered to have a housing problem if it has an affordability, adequacy or suitability issue.

¹⁶⁵ Adequate housing must have running water and must not require major repairs.

¹⁶⁶ Suitability is defined as having the appropriate number of bedrooms for the characteristics and number of occupants (as determined by the National Occupancy Standard requirements).

¹⁶⁷ NWT Bureau of Statistics. (2019b). Housing Problems, by Community, Northwest Territories, 2019.

¹⁶⁸ NWT Bureau of Statistics. (2019b). Housing Problems, by Community, Northwest Territories, 2019.

¹⁶⁹ NWT Bureau of Statistics. (2019c). Dwelling Satisfaction by Community, Northwest Territories, 2019.

¹⁷⁰ Statistics Canada. (2023). 2021 Census.

Table 119 provides the 2019 and 2021 housing conditions statistics for Fort Simpson compared to those of the Dehcho Region.

Table 119: Fort Simpson and Dehcho Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	2019		2021	
	Fort Simpson	Dehcho	Fort Simpson	Dehcho
Total Number of Households	471	1,087	450	1,150
Owned (%)	56.4	60.4	52.2	51.7
Rented (%)	43.6	39.6	48.9	44.3
Housing Problem (%)	39.4	48.9	40.0	44.3
Not Adequate (%)	26.9	31.9	24.4	32.2
Not Affordable (%)	12.0	10.8	x	x
Not Suitable (%)	5.6	7.4	13.3	12.2
Very Satisfied with Dwelling (%)	30.2	20.3	x	x
Satisfied with Dwelling (%)	46.1	49.8	x	x

Sources: NWT Bureau of Statistics. (2019a-c); Statistics Canada. (2022).

Fort Simpson has an overnight shelter; many Wrigley residents access it¹⁷¹.

Social Infrastructure and Services

Emergency Services

Fort Simpson has a fire hall¹⁷².

Health Facilities and Services

Fort Simpson has a health centre¹⁷³.

Judicial Infrastructure

Fort Simpson has six police officers stationed in the community¹⁷⁴.

Recreation Infrastructure

Fort Simpson has a community hall, arena, curling rink, three gymnasiums, and a seasonal swimming pool¹⁷⁵.

Public Infrastructure

Transportation Infrastructure

Fort Simpson has an all-weather access road, marine re-supply facility, airport, and air terminal building. Roads in the community are paved and chip sealed¹⁷⁶.

¹⁷¹ Interview with GNWT staff.

¹⁷² Interview with community member.

¹⁷³ Interview with community member.

¹⁷⁴ Interview with community member.

¹⁷⁵ Interview with community member.

¹⁷⁶ Interview with community member.

Communication Infrastructure

Fort Simpson has one radio station, satellite television reception, 4G cellular service, and full-service postal service¹⁷⁷.

Utilities Infrastructure (Electrical, Water, Waste Management)

Fort Simpson receives electricity by a diesel generator, supplied by the NWTPC. The municipality provides sanitation services via truck and both solid and sewage waste disposal services¹⁷⁸.

The community of Fort Simpson has a Class II water plant which uses water from the Mackenzie River and has a certified operator¹⁷⁹.

Institutional Infrastructure and Services

Educational Infrastructure

Łíídlı́ Kú ę Elementary School in Fort Simpson is a DDEC school and offers classes from Junior Kindergarten to Grade 6. In 2021-2022, the school had 78 students and nine staff members. Students receive second language instruction in Dene Zhatié. Łíídlı́ Kú ę Regional High School offers classes from Grade 7 to Grade 12. In 2021-2022, the school had 85 students and nine staff members¹⁸⁰. Students in grades 7-9 receive second language instruction in Dene Zhatié. Grades 10-12 have courses offered through the Northern Distance Learning program as well. **Table 120** shows school enrolment (FTE¹⁸¹) by grade as of September 30, 2018 and 2019.

Table 120: Łíídlı́ Kú ę Elementary and Łíídlı́ Kú ę Secondary School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrolment 2019-2020 (FTE)	7	15	8	11	14	14	20	11	8	13.5	11	14	18	16.25
Enrolment 2020-2021 (FTE)	11	13	17	7	10	13	14	18	12	8	8	15.5	10	14.5
2021-2022 (FTE)	5	9	9	14	13	7	11	10	15.5	15	11.5	37	4	2

Sources: Government of Northwest Territories. (2020), direct communication with GNWT-ECE staff.

There is one Early Childhood Consultant for the Dehcho region who is located in the Fort Simpson ECE Service Centre office.

Licensed early learning and child care programs in Fort Simpson include:

- Kid's Corner Daycare is licensed for a total of 31 spaces (8 infant, 18 preschool and 5 out-of-school spaces).
- Open Doors Society Preschool is licensed for 16 preschool spaces.
- Open Door Society Toy Lending Library is licensed for 30 out-of-school spaces¹⁸².

¹⁷⁷ Interview with community member.

¹⁷⁸ Interview with community member.

¹⁷⁹ Interview with community member; Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

¹⁸⁰ Information provided by GNWT-ECE staff.

¹⁸¹ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

¹⁸² Information provided by GNWT-ECE staff.

Religious Infrastructure

Fort Simpson has two churches: Church of the Sacred Heart (Roman Catholic) and St. David (Anglican)¹⁸³

5.3.2.2 Sahtu Region/Déłı̄ṅę, Colville Lake, Fort Good Hope

5.3.2.2.1 Déłı̄ṅęHousing and Accommodation

In 2019, there were 168 households in Déłı̄ṅę, with 55 (or 32.8%) of these households being owned and 113 (or 67.2%) dwellings being rented¹⁸⁴. Of these households, the number with a housing problem was 51.6%, with 36.9% not being adequate, 12.3% not affordable and 13.1% not suitable¹⁸⁵. In terms of dwelling satisfaction, 49.2% of households were satisfied with their dwelling and 26.2% were very satisfied¹⁸⁶.

By 2021, the proportion of owned households had increased to 36.8% and the proportion of rented households had decreased to 60.5%. The proportion of housing that is not adequate remained the same as in 2019, at 50.1%, while the proportion of housing that is deemed not suitable had increased by 8 percentage points from 2019 levels to 21.1%¹⁸⁷.

Table 121 provides the 2019 and 2021 housing conditions statistics for Déłı̄ṅę compared to those of the Sahtu Region.

Table 121: Déłı̄ṅę and Sahtu Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	2019		2021	
	Déłı̄ṅę	Sahtu	Déłı̄ṅę	Sahtu
Total Number of Households	168	816	190	815
Owned (%)	32.8	41.5	36.8	42.9
Rented (%)	67.2	58.5	60.5	57.7
Housing Problem (%)	51.6	50.1	52.6	45.4
Not Adequate (%)	36.9	39.3	34.2	29.4
Not Affordable (%)	12.3	11.4	x	x
Not Suitable (%)	13.1	12.5	21.1	17.8
Very Satisfied with Dwelling (%)	26.2	31.4	x	x
Satisfied with Dwelling (%)	49.2	43.5	x	x

Sources: NWT Bureau of Statistics. (2019a-c).; Statistics Canada. (2022).

Déłı̄ṅę does not have a shelter to temporarily accommodate people who lack housing¹⁸⁸.

¹⁸³ Join My Church. (n.d.d). Churches in Fort Smith, NWT.

¹⁸⁴ NWT Bureau of Statistics. (2019a). Housing Tenure by Community, Northwest Territories, 2019.

¹⁸⁵ NWT Bureau of Statistics. (2019b). Housing Problems, by Community, Northwest Territories, 2019.

¹⁸⁶ NWT Bureau of Statistics. (2019c). Dwelling Satisfaction by Community, Northwest Territories, 2019.

¹⁸⁷ Statistics Canada. (2023). 2021 Census.

¹⁸⁸ Interview with community member.

Social Infrastructure and ServicesEmergency Services

Déłıne has a fire hall¹⁸⁹.

Health Facilities and Services

A health centre is located in Déłıne, with a total of 10 staff, including three nurses. The staff is all “fly-in” on an 8 weeks in / 8 weeks out rotation¹⁹⁰.

Judicial Infrastructure

Déłıne has three police officers stationed in the community¹⁹¹.

Recreation Infrastructure

Déłıne has a community hall, arena, and a gymnasium¹⁹².

Public InfrastructureTransportation Infrastructure

Déłıne has a winter access road, airport, and air terminal building. Roads in the community are gravel¹⁹³.

Communication Infrastructure

Déłıne has one radio station, satellite television reception and full-service postal service¹⁹⁴.

Utilities Infrastructure (Electrical, Water, Waste Management)

Déłıne receives electricity by a diesel generator, supplied by the NWTPC. The municipality provides sanitation services via truck and both solid and sewage waste disposal services¹⁹⁵.

The community of Déłıne has a ‘small system’ classified water plant which uses water from Great Bear Lake. It has no certified operator¹⁹⁶.

¹⁸⁹ Interview with community member.

¹⁹⁰ Interview with community member.

¹⁹¹ Interview with community member.

¹⁹² Interview with community member.

¹⁹³ Interview with community member.

¹⁹⁴ Interview with community member.

¹⁹⁵ Interview with community member.

¹⁹⁶ Interview with community member; Government of Northwest Territories Department of Municipal and Community Affairs. (2016). Drinking Water Report.

Educational Infrastructure

The ʔehtseo Ayha School is an SDEC school and provides Junior Kindergarten to grade 12. Students receive second language instruction in Dene Kede and Dene Kede immersion is offered in JK/K. In 2021-2022, 99 students were enrolled, and nine teaching staff were employed¹⁹⁷. **Table 122** shows school enrolment (FTE¹⁹⁸) by grade as of September 30, 2019, 2020, and 2021.

Table 122: ʔehtseo Ayha School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrolment 2019-2020 (FTE)	6	10	7	15	3	5	13	3	12	4	6	3	4	14.5
2020-2021 (FTE)	5	6	11	2	11	1	3	12	5	10	3	5	2	9
2021-2022 (FTE)	7	2	4	7	11	4	12	4	3	15	5	22	3	0

Source: Government of Northwest Territories. (2020), direct communication with GNWT-ECE staff.

There is one Early Childhood Consultant for the Sahtu region who is located in the Norman Wells ECE Service Centre office. Tudzə ʔerjht'ékō Daycare is licensed for a total of 24 spaces (8 infant and 16 preschool)¹⁹⁹.

Déljñę has a preschool²⁰⁰.

5.3.2.2.2 Colville Lake

Housing and Accommodation

In 2019, there were 36 households in Colville Lake, with 24 (or 66.7%) of these households being owned and 12 (or 33.3%) dwellings being rented²⁰¹. Of these households, the number with a housing problem was 90.3%, with 83.9% not being adequate, 6.5% not affordable and 32.3% not suitable²⁰². In terms of dwelling satisfaction, 29.8% of households were satisfied with their dwelling and 9.7% were very satisfied²⁰³.

By 2021, the proportion of owned households had increased to 83.3% and the proportion of rented households had decreased. The proportion of housing that is not adequate had reduced substantially to 33.3%, while the proportion of housing that is deemed not suitable had remained largely unchanged at 33.3%²⁰⁴.

¹⁹⁷ Information provided by GNWT-ECE staff.

¹⁹⁸ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

¹⁹⁹ Information provided by GNWT-ECE staff.

²⁰⁰ Interview with community member.

²⁰¹ NWT Bureau of Statistics. (2019a). *Housing Tenure by Community, Northwest Territories, 2019*.

²⁰² NWT Bureau of Statistics. (2019b). *Housing Problems, by Community, Northwest Territories, 2019*.

²⁰³ NWT Bureau of Statistics. (2019c). *Dwelling Satisfaction by Community, Northwest Territories, 2019*.

²⁰⁴ Statistics Canada. (2023). *2021 Census*.

Table 123 provides the 2019 and 2021 housing conditions statistics for Colville Lake compared to those of the Sahtu Region.

Table 123: Colville Lake and Sahtu Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	2019		2021	
	Colville Lake	Sahtu	Colville Lake	Sahtu
Total Number of Households	36	816	30	815
Owned (%)	66.7	41.5	83.3	42.9
Rented (%)	33.3	58.5	0.0	57.7
Housing Problem (%)	90.3	50.1	x	45.4
Not Adequate (%)	83.9	39.3	33.3	29.4
Not Affordable (%)	6.5	11.4	x	X
Not Suitable (%)	32.3	12.5	33.3	17.8
Very Satisfied with Dwelling (%)	9.7	31.4	x	x
Satisfied with Dwelling (%)	29.8	43.5	x	x

Sources: NWT Bureau of Statistics. (2019a-c).; Statistics Canada. (2022).

The community of Colville Lake does not have a shelter to temporarily accommodate people who lack housing²⁰⁵.

Social Infrastructure and Services

Emergency Services

Colville Lake has no emergency services (e.g., fire hall)²⁰⁶.

Health Facilities and Services

Colville Lake has a health cabin. It has three non-medical staff who are based in the community. Nurses come every week or two; doctors visit less frequently – sometimes once every two or three months²⁰⁷.

Judicial Infrastructure

Colville Lake has no judicial infrastructure (e.g., police officers, correctional facility)²⁰⁸.

Recreation Infrastructure

Colville Lake has a gymnasium²⁰⁹.

Public Infrastructure

Transportation Infrastructure

Colville Lake has a winter access road, airport, and air terminal building. Roads in the community are gravel²¹⁰.

²⁰⁵ Interview with community member.

²⁰⁶ Interview with community member.

²⁰⁷ Interview with community member.

²⁰⁸ Interview with community member.

²⁰⁹ Interview with community member.

²¹⁰ Interview with community member.

Communication Infrastructure

Colville Lake has satellite television reception and non-accounting postal service²¹¹.

Utilities Infrastructure (Electrical, Water, Waste Management)

Colville Lake receives electricity by a diesel generator, supplied by the NWTPC. The municipality provides sanitation services via truck and both solid and sewage waste disposal services²¹².

Colville Lake has a new landfill. It does not have a recycling program²¹³.

The community of Colville Lake has a “small system” class water plant which uses water from the Colville Lake. It does not have a certified operator²¹⁴.

Institutional Infrastructure and Services

Educational Infrastructure

The Colville Lake School is an SDEC school and provides Junior Kindergarten to grade 12. Students receive second language instruction in Dene Kede (JK-12) and Northern Distance Learning (10-12). In 2021-2022, 47 students were and eight teaching staff were employed²¹⁵. **Table 124** shows school enrolment (FTE²¹⁶) by grade as of September 30, 2019, 2020, and 2021.

Table 124: Colville Lake School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrolment 2019-2020 (FTE)	2	4	1	4	4	3	4	7	5	1	1	21.5	0	0
2020-2021 (FTE)	2	2	3	1	4	4	2	4	5	3	0	0	8	0
2021-2022 (FTE)	4	3	2	2	4	1	3	3	2	4	6	9.5	3.5	0

Source: Government of Northwest Territories. (2020), direct communication with GNWT-ECE staff.

Colville Lake does not presently have an operating Aurora College CLC: there used to be one, but it was discontinued circa 2018. Community members have stated that they regret not having taken advantage of it when it was open in the community²¹⁷.

There is one Early Childhood Consultant for the Sahtu region who is located in the Norman Wells ECE Service Centre office. Colville Lake currently does not have a licensed early learning and childcare program for children from birth to three years of age²¹⁸. The community does not have an early childhood and learning program²¹⁹.

²¹¹ Interview with community member.

²¹² Interview with community member.

²¹³ Interview with community member.

²¹⁴ Interview with community member; Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

²¹⁵ Information provided by GNWT-ECE staff.

²¹⁶ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

²¹⁷ Interview with community member.

²¹⁸ Information provided by GNWT-ECE staff.

²¹⁹ Interview with community member.

Religious Infrastructure

Colville Lake has one church: St. Theresa of the Child Jesus (Roman Catholic)²²⁰.

5.3.2.2.3 Fort Good HopeHousing and Accommodation

In 2019, there were 176 households in Fort Good Hope, with 92 (or 53.3%) of these households being owned and 81 (or 46.7%) dwellings being rented²²¹. Of these households, the number with a housing problem was 65.7%, with 57.7% not being adequate, 12.4% not affordable and 17.5% not suitable²²². In terms of dwelling satisfaction, 34.3% of households were satisfied with their dwelling and 27.7% were very satisfied²²³.

By 2021, the proportion of owned households had decreased to 46.2% and the proportion of rented households had increased to 56.4%. The proportion of housing that is not adequate reduced by more than 20 percentage points to 35.9%, while the proportion of housing that is deemed not suitable had increased by more than 5 percentage points from 2019 levels to 23.1%²²⁴.

Table 125 provides the 2019 and 2021 housing conditions statistics for Fort Good Hope compared to those of the Sahtu Region.

Table 125: Fort Good Hope and Sahtu Region Housing Conditions, 2019 & 2021

Housing Condition Indicator	2019		2021	
	Fort Good Hope	Sahtu	Fort Good Hope	Sahtu
Total Households	176	816	195	815
Owned (%)	53.3	41.5	46.2	42.9
Rented (%)	46.7	58.5	56.4	57.7
Housing Problem (%)	65.7	50.1	56.4	45.4
Not Adequate (%)	57.7	39.3	35.9	29.4
Not Affordable (%)	12.4	11.4	x	x
Not Suitable (%)	17.5	12.5	23.1	17.8
Very Satisfied with Dwelling (%)	34.3	31.4	x	x
Satisfied with Dwelling (%)	27.7	43.5	x	x

Sources: NWT Bureau of Statistics. (2019a-c).; Statistics Canada. (2022).

Fort Good Hope does not have a shelter to temporarily accommodate people who lack housing²²⁵.

²²⁰ Interview with community member.

²²¹ NWT Bureau of Statistics. (2019a). *Housing Tenure by Community, Northwest Territories, 2019*.

²²² NWT Bureau of Statistics. (2019b). *Housing Problems, by Community, Northwest Territories, 2019*.

²²³ NWT Bureau of Statistics. (2019c). *Dwelling Satisfaction by Community, Northwest Territories, 2019*.

²²⁴ Statistics Canada. (2023). *2021 Census*.

²²⁵ Interview with community member.

Social Infrastructure and ServicesEmergency Services

Fort Good Hope has a fire hall²²⁶.

Health Facilities and Services

Fort Good Hope has a health centre²²⁷. The health centre has a staff of four nurses: some of them are stationed in FGH and some nurses are “fly-in”²²⁸.

Judicial Infrastructure

Fort Good Hope has five police officers stationed in the community²²⁹.

Recreation Infrastructure

Fort Good Hope has a community hall, arena, curling rink, and a gymnasium²³⁰.

Public InfrastructureTransportation Infrastructure

Fort Good Hope has a winter access road, airport, and air terminal building. Roads in the community are paved, gravel and chip sealed²³¹.

Communication Infrastructure

Fort Good Hope has one radio station, satellite television reception, 4G cellular service, and full-service postal service²³².

Utilities Infrastructure (Electrical, Water, Waste Management)

Fort Good Hope receives electricity by a diesel generator, supplied by the NWTPC. The municipality provides sanitation services via truck and both solid and sewage waste disposal services²³³.

The community of Fort Good Hope has a Class I water plant that uses water from the Mackenzie River. It has no certified operator²³⁴.

²²⁶ Interview with community member.

²²⁷ Interview with community member.

²²⁸ Interview with community member.

²²⁹ Interview with community member.

²³⁰ Interview with community member.

²³¹ Interview with community member.

²³² Interview with community member.

²³³ Interview with community member.

²³⁴ Interview with community member; Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

Institutional Infrastructure and ServicesEducational Infrastructure

Chief T'Selehye School is an SDEC school and provides Junior Kindergarten to grade 12. Students receive second language instruction in Dene Kede and the school offers cultural activities (JK-12). In 2021-2022, 127.5 students were enrolled and 13 teaching staff were employed²³⁵. **Table 126** shows school enrolment (FTE²³⁶) by grade as of September 30, 2019, 2020, and 2021.

Table 126: Chief T'Selehye School Enrolment (FTE) by Grade, 2019-2022

	Grades													
	JK	K	1	2	3	4	5	6	7	8	9	10	11	12
2019-2020 (FTE)	12	7	9	7	5	9	11	6	11	12	6	9.5	11.5	6
2020-2021 (FTE)	6	17	8	8	8	5	7	7	6	11	14	14	4	7.5
2021-2022 (FTE)	3	8	7	15	8	12	7	4.5	8	11	7	28	8.5	2

Source: Government of Northwest Territories. (2020), direct communication with GNWT-ECE staff.

There is one Early Childhood Consultant for the Sahtu region who is located in the Norman Wells ECE Service Centre office. K'asho Got'ine Child Care Centre is licensed for a total of 24 spaces (8 infant and 16 preschool)²³⁷.

The community has a Community Learning Center, which is presently active and has one Adult Educator. Equipment at the CLC includes scanner, printer, and laptops²³⁸.

Religious Infrastructure

Fort Good Hope has one church: Church of Our Lady of Good Hope (Roman Catholic)²³⁹.

²³⁵ Information provided by GNWT-ECE staff.

²³⁶ FTE stands for home/origin school full-time equivalents with 60% or more attendance as of September 30, 2017.

²³⁷ Information provided by GNWT-ECE staff.

²³⁸ Interview by community member.

²³⁹ Join My Church. (n.d.e). Churches in Fort Good Hope, NWT.

5.4 Education, Training and Skills

5.4.1 Local Assessment Area

5.4.1.1 Wrigley

5.4.1.1.1 Level of Education

Table 127 compares the proportion of adult population in the community of Wrigley that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. In all years, Wrigley has had a lower percentage of population with high school diploma or more than the territorial average. The gap between the community and territory has remained around 30 percentage points in the years between 2004-2021: in 2004, the gap was 29.9 percentage points, while in 2021, the gap was 32.0 percentage points. In real terms, the percentage of population with high school diploma or more in Wrigley increased by 4.5 percentage points from 2004-2021, while in the NWT as a whole, the amount increased by 6.6 percentage points during the same period. The highest proportion in the community during this 17-year period was 54.2% (in 2019); the lowest was 37.6% (in 2004).

Table 127: % of Population with High School Diploma or More, Wrigley and NWT, 2004-2021

	2004	2009	2014	2019	2021
Wrigley	37.6%	37.4%	43.1%	54.2%	42.1%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source: NWT Bureau of Statistics. (2020d). Wrigley – Statistical Profile; Statistics Canada. (2022).

5.4.1.2 Tulita

5.4.1.2.1 Level of Education

Table 128 compares the proportion of the adult population in the community of Tulita that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. In all years, Tulita has a lower percentage of population with high school diploma or more than the territorial average. While the percentage of population with high school diploma or more of the territorial population overall has gradually increased from 67.5% in 2004 to 74.1% in 2021 (a total of 6.6 percentage points increase), Tulita's percentage of population with high school diploma from 2004 to 2021 has increased from 36.3% to 52.2% (a total of 15.9 percentage points). The highest proportion in the community during this 20-year period was 55.9% (in 2014); the lowest was 36.3% (in 2004).

Table 128: % of Population with High School Diploma or More, Tulita and NWT, 2004-2021

	2004	2009	2014	2019	2021
Tulita	36.3%	46.6%	55.9%	44.8%	52.2%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source: NWT Bureau of Statistics. (2020c); Statistics Canada. (2022).

5.4.1.2.2 Education and Skills Development Programs

Tulita has an Aurora College CLC and one Adult Educator on staff. Current courses/programs include Developmental Studies, English, Math, and Introduction to Computers²⁴⁰.

As a Sahtu community, Tulita receives about \$13,000 from GNWT-ECE's community literacy development fund. Tulita and shares a Community Development officer with Délı̄ne²⁴¹.

5.4.1.3 Norman Wells

5.4.1.3.1 Level of Education

Table 129 compares the proportion of adult population in the community of Norman Wells that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. Norman Wells' percentage of population with high school diploma or more has been consistently above 80% during this period. In all years, Norman Wells has a higher percentage of population with high school diploma or more than the territorial average. However, the gap between the community and territory has closed to some degree during this 17-year period due to a combination of rising percentage rates in the territory and reducing rates in the community.

Table 129: % of Population with High School Diploma or More, Norman Wells and NWT, 2004-2021

	2004	2009	2014	2019	2021
Norman Wells	85.0%	81.5%	81.9%	81.3%	82.2%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source: NWT Bureau of Statistics. (2020b); Statistics Canada. (2022).

5.4.1.3.2 Education and Skills Development Programs

As a Sahtu community, Norman Wells receives about \$13,000 from GNWT's community literacy development fund.²⁴² Norman Wells' Aurora College CLC offers the Aurora College Adult Literacy and Basic Education program along with various other programs and training throughout the year based on community need and funding secured by the municipal government. Past training has included literacy and essential skills training (including digital literacy), pre-trades math, industrial mechanics, P.A.L. courses (firearms safety training), first aid, drivers license certification and Class 1-3 driver training, Construction Basics, Heavy Equipment Operation training, WHMIS training, and others.

Labour Market Programs delivered by ECE Service Center in Norman Wells included²⁴³:

- programs for individuals:
 - Skills Development Program - Provides support for eligible individuals to participate in training opportunities to upgrade skills and knowledge and/or develop essential employability skills;
 - Self-Employment Program - Provides support to eligible individuals with the opportunity to start a small business.

²⁴⁰ Interview with community members.

²⁴¹ Interview with GNWT staff.

²⁴² Interview with GNWT staff.

²⁴³ GNWT Education, Culture and Employment. (n.d.). Career, Employment and Training Services.

- programs for employers:
 - Wage Subsidy Program - Provides support to an employer to hire and train NWT residents;
 - Employee Training Program - Assists employers to offset the cost of training for new employees.
- and programs for organizations:
 - Community Training Partnerships - Provides training/skills development opportunities in order to improve the subsequent employment prospects of the participants;
 - Job Creation Partnerships - Provides work experience opportunities to improve the subsequent employment prospects of the participants;
 - Strategic Workforce Initiatives - Supports community partners in undertaking labour market activities that promote labour force development, workforce adjustments and effective human resources planning;
 - Employment Assistance Services - Enables Regional ECE Service Centres to enter into arrangements with external service providers to extend the delivery of services throughout their region.

Some of the training is provided by the community adult educator posted to the CLC and others are provided by trainers who are brought into the community. Current challenges faced by the CLC include usable shop space, cost and availability of outside training instructors, and internet bandwidth and connectivity issues.

5.4.2 Regional Assessment Area

5.4.2.1 Dehcho Region/Fort Simpson

5.4.2.1.1 Level of Education

Table 130 compares the proportion of adult population in the community of Fort Simpson that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. In all years, Fort Simpson has a slightly lower percentage of population with high school diploma or more than the territorial average (most years, by about 4 percentage points). The one exception was 2014, where the proportion of Fort Simpson's amount was only 0.1 percentage points less than the NWT. While the percentage of population with high school diploma or more of the territorial population overall has gradually increased from 67.5% in 2004 to 74.1% in 2021 (a total of 6.6 percentage points increase), Fort Simpson's percentage of population with high school diploma from 2004 to 2021 has increased from 63.4% to 69.0% (a total of 5.6 percentage points).

Table 130: % of Population with High School Diploma or More, Fort Simpson and NWT, 2004-2021

	2004	2009	2014	2019	2021
Fort Simpson	63.4%	65.1%	73.5%	67.9%	69.0%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source NWT Bureau of Statistics. (2020a); Statistics Canada. (2022).

5.4.2.1.2 Education and Skills Development Programs

Aurora College has a CLC in the community²⁴⁴.

²⁴⁴ Interview with GNWT staff.

5.4.2.2 Sahtu Region/Déłı̨ę, Colville Lake, Fort Good Hope

5.4.2.2.1 Déłı̨ę – Level of Education

Table 131 compares the proportion of adult population in the community of Déłı̨ę that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. In all years, Déłı̨ę has a much lower (most years, by 15 – 35 percentage points) percentage of population with high school diploma or more than the territorial average. The proportion of Déłı̨ę residents with a high school diploma or more increased by more than 13 percentage points between 2004 and 2021, thereby closing the gap between the community rate and the territorial rate.

Table 131: % of Population with High School Diploma or More, Déłı̨ę and NWT, 2004-2021

	2004	2009	2014	2019	2021
Déłı̨ę	31.6%	45.0%	46.7%	56.5%	44.8%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source: NWT Bureau of Statistics. (2020g); Statistics Canada. (2022).

5.4.2.2.1 Education and Skills Development Programs

Aurora College has a CLC in the community. As a Sahtu community, Déłı̨ę receives about \$13,000 from GNWT's community literacy development fund. Déłı̨ę has spent much on cultural training. Déłı̨ę and Tulita share a Career Development officer²⁴⁵.

5.4.2.2.2 Colville Lake – Level of Education

Level of Education

Table 132 compares the proportion of adult population in the community of Colville Lake that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. In all years, Fort Simpson has a much lower percentage of population with high school diploma or more than the territorial average (most years, by 30+ percentage points). 2014 was the year with the highest proportion of adults with a high school diploma in the community (45.3%) and 2021 was the year with the lowest proportion (11.8%). While the NWT has a trend of gradually increasing proportion of high school graduating population, no clear trend exists in Colville Lake, although the rate has declined between 2014 and 2021.

Table 132: % of Population with High School Diploma or More, Colville Lake and NWT, 2004-2021

	2004	2009	2014	2019	2021
Colville Lake	32.5%	26.5%	45.3%	27.0%	11.8%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source: NWT Bureau of Statistics. (2020e); Statistics Canada. (2022).

²⁴⁵ Interviews with GNWT staff.

5.4.2.2.1 Education and Skills Development Programs

As a Sahtu community, Colville Lake receives about \$13,000 from GNWT's community literacy development fund. There is presently no training facility or CLC (Aurora College campus) in Colville Lake²⁴⁶.

5.4.2.2.2 Fort Good Hope – Level of Education

Table 133 compares the proportion of adult population in the community of Fort Good Hope that has an education level of high school diploma or more with the NWT average in selected years between 2004 and 2021. In all years, Fort Good Hope has a much lower percentage of population with high school diploma or more than the territorial average (most years, by 20 to 30 percentage points). The percentage of residents with a high school diploma or more has been below 40% for most years; however, the rate had increased to 46.2% in 2021, which is 8.0 percentage points higher than in 2004.

Table 133: % of Population with High School Diploma or More, Fort Good Hope and NWT, 2004-2021

	2004	2009	2014	2019	2021
Fort Good Hope	38.2%	39.3%	38.6%	[not available]	46.2%
Northwest Territories	67.5%	69.3%	73.6%	72.2%	74.1%

Source: NWT Bureau of Statistics. (2020f); Statistics Canada. (2022).

5.4.2.2.1 Education and Skills Development Programs

Aurora College has a CLC in the community. Courses currently delivered by the Fort Good Hope CLC include math, introduction to office skills, building trades helper program, first aid, transportation of dangerous goods, food safety, boater skills, and online English classes²⁴⁷. As a Sahtu community, Fort Good Hope receives about \$13,000 from GNWT's community literacy development fund²⁴⁸.

²⁴⁶ Interview with GNWT staff.

²⁴⁷ Interview with community member.

²⁴⁸ Interview with GNWT staff.

5.5 Human Health and Community Wellness

5.5.1 Local Assessment Area

5.5.1.1 Wrigley

5.5.1.1.1 Population Composition and Migration

Population Trends

The community of Wrigley is one of the smaller communities within the Dehcho Region. In 2022, Wrigley had a population of 126 people, which is just under 4% of the population in the Dehcho Region (see **Table 134**). The population data indicate that 57% of community members are male, 43% are female, and 94% are Indigenous.

Table 134: Population Overview for Wrigley, Dehcho Region and NWT, 2022

	Population	Male		Female		Indigenous		Non-Indigenous	
		#	%	#	%	#	%	#	%
Wrigley	126	72	57	54	43	118	94	--	--
Dehcho	3,316	1,796	54	1,520	46	2,784	84	532	16
NWT	45,605	23,450	51	1,520	46	22,940	50	22,665	50

Sources: NWT Bureau of Statistics. (2023b, 2023e).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

The population in Wrigley varied between 121 and 128 over the past 5 years (see **Table 135**), with a net increase between 2018 (121 persons) and 2022 (126 persons). The 4% population increase in Wrigley is in contrast to the 2% population decline in Dehcho Region over the same period (from 3,400 in 2018 to 3,316 in 2022). A trend of decreasing population is forecast to continue in Dehcho Region and to occur in Wrigley, which is projected to decrease by a further 11% to 112 community members by 2037. In contrast, the population for the Territory has been steadily increasing by between 0.01% and 0.6% annually since 2018 and is forecast to continue growing in the coming 15 years.

Table 135: Population Trends and Projections for Wrigley, Dehcho and NWT, 2018-2037

	Historical Population					Population Projections		
	2018	2019	2020	2021	2022	2027	2032	2037
Wrigley	121	128	128	125	126	123	120	112
Dehcho	3,400	3,390	3,333	3,325	3,316	3,238	3,175	3,107
NWT	44,981	45,070	45,346	45,597	45,605	45,941	46,185	46,573

Sources: NWT Bureau of Statistics. (2023a, 2023d).

Table 136 provides the total population in the community of Wrigley in selected years between 2002 and 2022 and the community as a percentage of the Dehcho Region's population and NWT population, as well as the ethnic components of the community during the same period. Wrigley's population as a proportion of the total Dehcho Region's population during this period varied from a high of 5.1% (in 2002) and a low of 3.4% (in 2007), with a general trend of decline between 2002 and 2002. The community's population varied between 0.25% and 0.42% of the territory's total population during this same period. Therefore, not only has the population of Wrigley reduced in absolute numbers since 2002, but it has also a decreased proportion of the regional and territorial populations between 2002 and 2022.

Virtually all of Wrigley's population was Indigenous throughout the 2002-2022 period.

Table 136: Wrigley Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	176	121	145	120	126
Indigenous Population	175	113	139	114	118
Non-Indigenous Population	--	--	--	--	--
Total Regional (Dehcho) Population	3,443	3,344	3,388	2,624	3,316
Community as % of Regional Population	5.1%	3.4%	4.1%	4.3%	3.6%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	0.42%	0.26%	0.32%	0.25%	0.26%

Source: Northwest Territories Bureau of Statistics. (2023a, 2023b).

Demographics

Table 137 breaks down the population of Wrigley by age group in selected years between 2007 and 2022. According to the available statistics, the population has been gradually aging; that is, the proportion of the population over 25 years of age has remained fairly static over the past 15 years. For the adult age groups of 25-44 years, the percentage of the total population was slightly higher in 2022 than in 2007, while for the age groups of 45-59 and 60+, the proportion of the population decreased by two percentage points. The proportion of Wrigley's population under 25 years of age is incomplete.

Table 137: Wrigley Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	% Total	#	% Total	#	% Total	#	% Total
Total Population	121	--	145	--	120	--	126	--
0 to 4	--	--	--	--	--	--	--	--
5 to 9	--	--	14	10%	--	--	--	--
10 to 14	13	11%	12	8%	--	--	--	--
15 to 24	15	12%	31	21%	23	19%	15	12%
25 to 44	35	29%	31	21%	30	25%	38	30%
45 to 59	24	20%	20	14%	21	18%	23	18%
60+	24	20%	28	19%	23	19%	25	18%

Source: NWT Bureau of Statistics. (2023a, 2023c).

5.5.1.1.2 Population HealthSelf-Perceived Health

Table 138 compares self-perceived physical health in the community of Wrigley in 2019, along with self-perceived health aggregated at the regional and territorial levels²⁴⁹. In general, fewer Wrigley residents perceive their physical health as either “very good” or “excellent” than is the case in either Dehcho Region as a whole or the NWT as a whole. Looking at the categories separately, Wrigley exceeds the regional score for “very good” self-perceived physical health status by 0.5 percentage point but is less than the territorial score by more than 10 percentage points. No community-level data were available for “excellent” physical health. No comparable data for other years were available.

Table 138: Self-Perceived Physical Health, Wrigley, Dehcho Region and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Wrigley	27.9%	N/A	23.3%
Dehcho Region	35.2%	12.4%	22.8%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

Mental Health and Well-Being

Self-perceived mental health in the community of Wrigley in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 139**²⁵⁰. In general, fewer Wrigley residents perceive their mental health as either “very good” or “excellent” than either Dehcho Region as a whole or the NWT as a whole. In terms of “very good” self-perceived mental health status, Wrigley exceeds the regional score by 5 percentage points, but is less than the territory by more than 4 percentage points. No community-level data were available for “excellent” mental health. No comparable data for other years were available.

Table 139: Self-Perceived Mental Health, Wrigley, Dehcho Region, NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Wrigley	34.9%	N/A	27.9%
Dehcho Region	35.2%	12.4%	22.8%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

Health and Wellness Plan

The community of Wrigley produced a health and wellness plan in 2018, which was based on community feedback²⁵¹. It covers the topics of culture and traditional values, addiction and crime, youth support, institutional partnerships, diversity in education, elder support, and on-the-land training.

²⁴⁹ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁵⁰ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁵¹ Momentum Training Services. (2018). Pehdzek Ki First Nation (Wrigley) Health and Wellness Plan 2018.

5.5.1.1.3 Social Determinants of Health²⁵²Income Assistance Cases

Table 140 provides the monthly average number of income assistance cases in the community of Wrigley between 2015 and 2022. According to available statistics, the community's monthly income assistance cases has varied between a high of 7 (in 2015, 2016 and 2018) and a low of 2 (in 2022), with an average during this period of 5.3 cases. There is a trend of reduced number of income assistance cases in Wrigley between 2015 and 2022. When compared to the number of monthly income assistance cases in Dehcho Region, Wrigley's proportion reduced from 3.8% in 2015 to 0.9% in 2022. In comparison with the number of monthly income assistance cases in the NWT, Wrigley has reduced from 0.42% of the territory total in 2015 to 0.11% in 2022. While Wrigley's monthly caseload has quite consistently reduced since 2015, the caseload numbers in both the Dehcho Region and the territory have generally increased from 2015-2022 (though both peaked in 2020).

Table 140: Monthly Income Assistance Cases, Wrigley, Dehcho Region and NWT, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022
Wrigley	7	7	6	7	5	5	3	2
Dehcho	185	222	227	253	247	261	179	225
% Dehcho	3.8%	3.2%	2.6%	2.8%	2.0%	1.9%	1.7%	0.9%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	0.42%	0.40%	0.31%	0.33%	0.24%	0.22%	0.19%	0.11%

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

5.5.1.1.4 Community, Family and Social TiesSatisfaction with Community

Table 141 provides a break-down of components of community satisfaction in the community of Wrigley in 2019, along with community satisfaction aggregated at the regional and territorial levels²⁵³. No data were available for the 'cost of living', 'employment opportunities', and 'variety of community & recreational activities' components of community satisfaction for Wrigley; therefore, no data are provided at the regional and territorial levels below. Regarding 'access to social services', Wrigley's satisfaction level is considerably lower (0.0% very satisfied and 26.9% satisfied) than for both the region as a whole (5.3% very satisfied and 45.8% satisfied) and the territory (5.8% very satisfied and 42.5% satisfied). Regarding 'sense of belonging', Wrigley's satisfaction level is slightly lower (0.0% very satisfied and 50.0% satisfied) than for both the region as a whole (21.1% very satisfied and 55.9% satisfied) and the territory (21.8% very satisfied and 53.2% satisfied). Data are not available for other years.

²⁵² Due to its small population, statistical data on persons in low income and single parent families are not available for the community of Wrigley.

²⁵³ NWT Bureau of Statistics. (2019e). *Satisfaction with Community, by Community, Northwest Territories, 2019*.

Table 141: Households Satisfied with Community, Wrigley, Dehcho Region and NWT, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Wrigley	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	26.0%	0.0%	50.0%
Dehcho Region							5.3%	45.8%	21.1%	55.9%
Northwest Territories							5.8%	42.5%	21.8%	53.2%

Source: NWT Bureau of Statistics. (2019e). Satisfaction with Community, by Community, Northwest Territories, 2019.

Community Belonging

Table 142 provides a break-down of the sense of community belonging in the community of Wrigley, the Dehcho Region and NWT in 2014²⁵⁴. The people of Wrigley have a considerably lower proportion of citizens with a 'very strong' sense of community belonging (15.7%) than either the Dehcho Region (31.7%) or the territorial population as a whole (34.7%). Conversely, proportionately more of Wrigley's residents (59.5%) have a 'somewhat strong' sense of community compared to the region and NWT; and a relatively large proportion of the community's residents (15.9%) feel a 'somewhat weak' or 'very weak' sense of community belonging compared to Dehcho Region (12.6%) and the NWT (13.0%). In summary, the largest proportion of residents of Wrigley have, overall, a 'somewhat strong' sense of community belonging.

Table 142: Sense of Community Belonging in Wrigley, Dehcho Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Wrigley	15.7	59.5	15.9
Dehcho Region	31.7	51.2	12.6
Northwest Territories	34.7	43.8	13.0

Source: NWT Bureau of Statistics. (2014b).

²⁵⁴ Northwest Territories Bureau of Statistics. (2014b). Sense of Community Belonging.

5.5.1.1.5 Social PressuresCrime

Table 143 details the types and rates of crime reported in the community of Wrigley in selected years between 2009 and 2021. According to available statistics, the overall reported crimes increased from 2009 to 2014 and then consistently decreased from 2014 to 2021, with the rate in 2021 being lower than in 2009. A similar trend is observed in most crime categories (property crimes, traffic, and federal statutes crimes). For reported crimes of violence the peak year was 2019; however, like most other crimes, the rate in 2021 was lower than in 2009. The other minor exception to this pattern is 'other criminal codes' where the rate in 2009 was lower than in 2021; however, it had 2014 as the peak year in reported crimes of this type in Wrigley. There are no crime statistics for Wrigley prior to 2009.

Table 143: Number of Crimes Reported in Wrigley, 2009 - 2021

	2009	2014	2019	2021
All Incidents	36	49	37	30
Crimes of Violence	16	15	21	14
Property Crimes	16	22	10	9
Other Criminal Code	2	7	4	5
Traffic	-	2	1	1
Federal Statutes	2	3	1	1

Source: NWT Bureau of Statistics. (2019d).; Statistics Canada. (2022).

Table 144 compares how Wrigley residents perceive their community in terms of crime in 2019, along with crime level perceptions at the LAA, regional and territorial levels²⁵⁵. Nearly 2/3 of Wrigley residents (65.1%) believe that their community has a lower crime rate than other communities in the territory. This is higher than in the Dehcho Region as a whole (44.3%) and the NWT residents as a whole (34.6%) but is lower than Local Assessment Area (67.6%). About 1/5 of Wrigley residents (18.6%) think that their community has higher crime rates than other communities; this level is lower than NWT resident perceptions (20.6%), but higher than perceptions at the Local Assessment Area (7.3%) and Dehcho Region (15.7%).

Table 144: Perceived Crime, Wrigley, LAA, Dehcho Region and NWT, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Wrigley	18.6%	N/A	65.1%
Local Assessment Area	7.3%	22.2%	67.6%
Dehcho Region	15.7%	37.4%	44.3%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Teen Pregnancies

In the years from 2008 to 2017, the community of Wrigley had a total of two teen pregnancies: both in 2015²⁵⁶.

²⁵⁵ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁵⁶ NWT Bureau of Statistics. (2020d). Wrigley – Statistical Profile.

Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018²⁵⁷, of the 43 households in the community of Wrigley, more than half (22) stated that they worry about not having enough money for food; of these, 8 stated that they are “often” worried, and 13 stated that they are “sometimes” worried. These rates are much higher than those at both the regional and territorial levels (about double the territorial level), as detailed in **Table 145**. Data are not available for other years.

Table 145: Households “Worried Not Enough Money for Food” in Wrigley, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Wrigley	43	22	50.0%	8	19.2%	13	30.8%
Dehcho	1,087	342	31.5%	85	7.8%	255	23.4%
NWT	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018a).

Drinking Water Quality

In 2015, Wrigley’s water plant had 92% compliance in treated water bacterial tests; in 2016, it had 100% compliance²⁵⁸.

5.5.1.2 Tulita

5.5.1.2.1 Population Composition and MigrationPopulation Trends

With a population of 543 in 2022, Tulita is the second smallest community within the Sahtu Region, larger only than Colville Lake (population of 161 in 2022). In 2022, the community of Tulita comprised just over 20% of the region’s population (see **Table 146**). The population data indicate that in 2022 47% of community members are male, 39% are female, and 76% are Indigenous.

Table 146: Population Overview for Tulita, Sahtu Region and NWT, 2022

	Population	Male		Female		Indigenous		Non-Indigenous	
		#	%	#	%	#	%	#	%
Tulita	543	295	47%	248	39%	478	76%	65	10%
Sahtu	2,669	1,427	53%	1,242	47%	2,037	76%	632	24%
NWT	45,605	23,450	51%	23,450	51%	23,450	51%	23,450	51%

Sources: NWT Bureau of Statistics. (2023b, 2023e).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

²⁵⁷ NWT Bureau of Statistics. (2018a). *Households Worried Not Enough Money for Food, Northwest Territories, 2018*.

²⁵⁸ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

The population in both the Sahtu Region and in Tulita have had a net increase in the period from 2018 to 2022. The population forecast indicates that this trend is expected to reverse in future, with a projected decrease in Tulita's population of 4% between 2022 and 2037. This decrease is larger than the projected population change for the region as a whole, which is expected to decrease by 1.4% over the same period (see **Table 147**).

Table 147: Population Trends and Projections for Tulita, Sahtu and NWT, 2018-2037

	Historical				Projections			
	2018	2019	2020	2021	2022	2027	2032	2037
Tulita	530	511	533	526	543	542	535	521
Sahtu	2,621	2,638	2,671	2,677	2,669	2,649	2,641	2,631
NWT	44,981	45,070	45,346	45,597	45,605	45,941	46,185	46,573

Sources: NWT Bureau of Statistics. (2023a, 2023d).

Table 148 provides the total population in the community of Tulita in selected years between 2002 and 2022 and the community as a percentage of the Sahtu Region's population and NWT population, as well as the ethnic components of the community during the same period. According to the NWT Bureau of Statistics, Tulita's population has fluctuated between a low of 497 (in 2012) and a high of 543 (in 2022) with a general pattern of increase over the 20-year period. Similarly, the population in both the Sahtu Region and the NWT has increased over this 20-year period. The community has represented approximately 20% of the regional population and between 1.14% and 1.22% of the NWT population between 2002 and 2022.

Tulita is primarily an Indigenous community: its non-Indigenous population has varied from as few as 20 persons (or 4% of the total population) in 2002 to as many as 75 (or 14% of the total population) in 2017. The overall ethnic population trend over the 2002-2022 period has been an increase in non-Indigenous population.

Table 148: Tulita Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	509	522	497	526	543
Indigenous Population	489	477	456	451	478
Non-Indigenous Population	20	45	41	75	65
Total Regional (Sahtu) Population	2,528	2,477	2,452	2,562	2,652
Percent of Regional Population	20.1%	21.1%	20.2%	20.5%	20.5%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	1.22%	1.20%	1.14%	1.17%	1.19%

Sources: NWT Bureau of Statistics. (2023a, 2023b).

Demographics

Table 149 breaks down the population of Tulita by age group in selected years between 2007 and 2022. According to available statistics, the population has been gradually aging: that is, the proportion of the population over 25 years of age has slightly increased over the past 15 years. For all adult age groups (25-44 years; 45-59 years; 60+ years), the percentage of the total population was higher in 2022 than in 2007. The population aged 60+ has doubled between 2007-2022 (from 10% of the total population to 20%), while the population age group of 25-49 increased by 13 percentage points (from 22% to 35%). In contrast, the proportion of all age groups between 0 and 24 years decreased during the same 15-year period.

Table 149: Tulita Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	% Total	#	% Total	#	% Total	#	% Total
Total Population	522		497		526		543	
0 to 4	45	9%	37	7%	33	6%	33	6%
5 to 9	41	8%	36	7%	31	6%	30	6%
10 to 14	72	14%	31	6%	35	7%	28	5%
15 to 24	116	22%	142	29%	90	17%	65	12%
25 to 44	113	22%	114	23%	144	27%	188	35%
45 to 59	84	16%	84	17%	106	20%	90	17%
60+	51	10%	53	11%	87	17%	109	20%

Sources: NWT Bureau of Statistics. (2023a, 2023c).

5.5.1.2.2 Population HealthSelf-Perceived Health

Table 150 compares self-perceived physical health in the community of Tulita in 2019, along with self-perceived health aggregated at the regional and territorial levels. In general, fewer Tulita residents perceive their physical health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” physical health, the community scores lower than the region and Territory by about 2 percentage points. In terms of “very good” self-perceived physical health status, the community score is about 2 percentage points lower than the regional score, and 6 percentage points lower than the territorial score. No comparable data for other years were available.

Table 150: Self-Perceived Physical Health, Tulita, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Tulita	39.3%	12.0%	27.3%
Sahtu	43.5%	14.3%	29.2%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

Mental Health and Well-Being

Self-perceived mental health in the community of Tulita in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 151**. Fewer Tulita residents perceive their mental health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” mental health, the community scores approximately 5-7 percentage points lower than the region and territory; while in terms of “very good” self-perceived mental health status, Tulita exceeds the regional score by 1.7 percentage points and the territory by 2.5 percentage points. No comparable data for other years were available.

Table 151: Self-Perceived Mental Health, Tulita, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Tulita	49.3%	14.7%	34.7%
Sahtu	55.3%	22.3%	33.0%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

Health and Wellness Plan

The community of Tulita has a health and wellness plan which is based on community feedback²⁵⁹. It covers the topics of healthy child and youth development, healthy living and disease prevention, and mental health and disease prevention.

5.5.1.2.3 Social Determinants of HealthPersons in Low Income

Table 152 compares the number of persons in low income (and percentage of the total population who are low income) in the community of Tulita in the years 2015 to 2019, along with persons in low income at the LAA, regional and territorial levels. In terms of percentage of total population, Tulita had between 21.3% and 28.3% of its population in low income: this was a higher percentage than either the LAA as a whole (15.0 – 18.1%), the Sahtu Region (19.7% - 23.5%) or the NWT (18.3% - 19.0%). In terms of trends, all areas had their smallest low-income population in 2015, and all areas other than Tulita had their highest level of low-income population in 2017 (for Tulita it was 2016).

Table 152: Persons in Low Income, Tulita, LAA, Sahtu Region and NWT, 2016-2020

	2016	2017	2018	2019	2020
Tulita	130 (28.3%)	130 (27.1%)	110 (23.4%)	130 (27.7%)	70 (15.6%)
Local Assessment Area	200 (17.2%)	210 (18.1%)	180 (15.4%)	190 (16.7%)	140 (12.2%)
Sahtu	460 (20.5%)	530 (23.5%)	470 (20.8%)	500 (22.2%)	310 (14.3%)
Northwest Territories	7,720 (18.3%)	8,080 (19.0%)	7,780 (18.3%)	7,910 (18.5%)	5010 (11.9%)

Source: NWT Bureau of Statistics. (2021a).

²⁵⁹ Tulita Dene Band. (n.d.). Tulita Community Wellness Plan.

Income Assistance Cases

Table 153 provides the monthly average number of income assistance cases in the community of Tulita between 2015 and 2022. According to available statistics, the community's monthly income assistance cases have varied between a high of 42 (in 2020) and a low of 21 (in 2021), with an average during this period of 31.1 cases. There is a trend in terms of income assistance cases in both Tulita and Sahtu Region of a general increased number of cases from 2015-2022 with a peak number of cases in 2020. When compared to the number of monthly income assistance cases in Sahtu Region, Tulita's proportion varied from a high of 29.2% in 2017 to a low of 24.7% in 2021, with no particular trend over the eight-year period. In comparison with the number of monthly income assistance cases in the NWT, Tulita ranged from 1.34% of the territory total (in 2021) to 1.86% (in 2020), with no particular pattern and a proportion in 2022 (1.73%) that is very close to the proportion in 2015 (1.76% of the NWT total).

Table 153: Monthly Income Assistance Cases, Tulita, Sahtu Region and NWT, 2015-2022

Cases	2015	2016	2017	2018	2019	2020	2021	2022
Tulita	29	27	31	36	31	42	21	32
Sahtu	102	108	106	128	123	149	85	116
% Sahtu	28.4%	25.0%	29.2%	28.1%	25.2%	28.2%	24.7%	27.6%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	1.76%	1.54%	1.61%	1.72%	1.47%	1.86%	1.34%	1.73%

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

Lone Parent Families

Table 154 compares the number of lone parent families in the community of Tulita in the years 2016 to 2021, along with lone parent families at the LAA, regional and territorial levels²⁶⁰. Tulita has had a consistently larger proportion of lone parent families than occurred in the region, the LAA or the Territory since 2016. While there have been slight increases in the number of lone parent families in the region, LAA and Territory over this period, the number in Tulita has remained the same.

Table 154: Lone Parent Families, Tulita, LAA, Sahtu Region and NWT, 2016-2021

	2016	2017	2018	2019	2021
Tulita	50 (38.5%)	50 (38.5%)	50 (38.5%)	50 (38.5%)	50 (41.7%)
Local Assessment Area	80 (25.8%)	90 (29.0%)	90 (30.0%)	100 (32.3%)	100 (33.3%)
Sahtu Region	190 (31.7%)	180 (31.0%)	190 (32.8%)	220 (36.7%)	200 (35.7%)
NWT	2,620 (23.1%)	2,710 (23.7%)	2,820 (24.6%)	2,920 (25.6%)	29,610 (25.7%)

Sources: NWT Bureau of Statistics. (2021a)., Statistics Canada. (2022).

²⁶⁰ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

5.5.1.2.4 Community, Family and Social TiesSatisfaction with Community

Table 155 provides a break-down of components of community satisfaction in the community of Tulita in 2019, along with community satisfaction aggregated at the regional and territorial levels²⁶¹. Regarding 'cost of living', Tulita's satisfaction level (28.0%) is higher than either the region (22.3%) or the territory (19.9%). Similarly, in terms of 'sense of belonging', Tulita's "very satisfied" households (42.4%) is higher than either Sahtu Region (37.9% or the NWT (21.8%). However, in the areas of 'employment opportunities', and 'variety of community & recreational activities', Tulita households are less satisfied than those at both the regional and territorial levels. And regarding 'access to social services', Tulita households are more satisfied than the NWT as a whole, but slightly less than Sahtu Region as a whole (45.8% vs. 47.0%).

Table 155: Households Satisfied with Community, Tulita, Sahtu Region and NWT, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Tulita	-	28.0%	-	17.8%	5.9%	51.7%	-	45.8%	42.4%	39.0%
Sahtu	-	22.3%	-	31.9%	7.1%	53.5%	-	47.0%	37.9%	48.1%
Northwest Territories	-	19.9%	-	41.9%	14.3%	48.3%	-	42.5%	21.8%	53.2%

Source: NWT Bureau of Statistics. (2019e).

Community Belonging

Table 156 provides a break-down of the sense of community belonging in the community of Tulita, the Sahtu Region and NWT in 2014²⁶². Fewer people in Tulita have a 'very strong' sense of community belonging (22.3%) than either the Sahtu Region (40.8%) or the territorial population as a whole (34.7%). Similarly, proportionately fewer of Tulita's residents (3.1%) have a 'somewhat weak or very weak' sense of community compared to the region and NWT. However, a large majority of Tulita residents (74.3%) have a 'somewhat strong' sense of community belonging, which is more about 30 percentage points higher than either the regional or territorial levels. In summary, the residents of Tulita have, on average, a 'somewhat strong' sense of community belonging.

Table 156: Sense of Community Belonging in Tulita, Sahtu Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Tulita	22.3	74.3	3.1
Sahtu	40.8	44.9	10.3
Northwest Territories	34.7	43.8	13.0

Source: NWT Bureau of Statistics. (2014b).

²⁶¹ NWT Bureau of Statistics. (2019e). *Satisfaction with Community, by Community, Northwest Territories, 2019.*

²⁶² Northwest Territories Bureau of Statistics. (2014b). *Sense of Community Belonging.*

5.5.1.2.5 Social PressuresCrime

Table 157 details the types and rates of crime reported in the community of Tulita in selected years between 2004 and 2021. According to available statistics, the overall number of reported crimes increased from 2004 to 2009, subsequently reduced to 2019, and then increased in 2021 with the number of incidents more than 60% higher than in 2004. Crimes of violence, property crimes, other criminal code crimes and federal statute crimes in Tulita experienced a similar trend with a first peak in 2009 and a second peak in 2021 that has a rate higher than in 2004. Traffic crimes are an exception: in Tulita, the number of traffic crimes has steadily increased from 2004 (9) to 2021 (42). The other exception is federal statute crimes, in which there was a peak in 2009 but no reported cases in 2021.

Table 157: Number of Crimes Reported in Tulita, 2004 - 2021

	2004	2009	2014	2019	2021
All Incidents	237	343	315	291	387
Crimes of Violence	48	74	57	51	67
Property Crimes	138	164	165	134	202
Other Criminal Code	37	78	71	65	76
Traffic	9	11	14	39	42
Federal Statutes	5	16	8	2	0

Source: NWT Bureau of Statistics. (2019d)., Statistics Canada. (2022).

Table 158 compares how Tulita residents perceive their community in terms of crime in 2019, along with crime level perceptions at the LAA, regional and territorial levels. Over half of Tulita residents (55.3%) believe that their community has a lower crime rate than other communities in the territory. This is higher than the territorial and Regional scores, but lower than in the LAA as a whole (67.6%). A small proportion of Tulita residents (6.7%) think that their community has higher crime rates than other communities, which is a smaller proportion than residents in the LAA, region or Territory. About one third of residents think that their community has the same rates of crime as other communities (34%), which is higher than the regional and territorial levels.

Table 158: Perceived Crime, Tulita, LAA, Sahtu Region and NWT, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Tulita	6.7%	34.0%	55.3%
Local Assessment Area	7.3%	22.2%	67.6%
Sahtu	12.9%	30.4%	54.7%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Teen Pregnancies

In the years from 2008 to 2017, the community of Tulita had a total of eight teen pregnancies. The overall trend has been a reduced incidence of teen pregnancy, with the highest number per year (2) in 2008 and 2009; one birth each year in 2010 – 2012; and only one teen birth in total from 2013 - 2017²⁶³.

5.5.1.2.6 Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018²⁶⁴, of the 150 households in the community of Tulita, about a quarter (39) stated that they worry about not having enough money for food; of these, 10 (or 6.8% of the total) stated that they are “often” worried, and 29 (or 19.5% of the total) stated that they are “sometimes” worried. These rates are higher than the territorial level, but less than the regional level, as detailed in **Table 159**. Data are not available for other years.

Table 159: Households “Worried Not Enough Money for Food” in Tulita, Sahtu Region and NWT, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Tulita	150	39	26.3%	10	6.8%	29	19.5%
Sahtu	816	255	31.2%	56	6.9%	199	24.4%
Northwest Territories	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018c).

5.5.1.2.7 Drinking Water Quality

In 2015, Tulita’s water plant had 100% compliance in treated water bacterial tests; in 2016, it had 94% compliance²⁶⁵.

5.5.1.2.8 Public Safety

An emergency preparedness plan for Tulita was tabled before the NWT Legislative Assembly in 2013²⁶⁶.

There were six *Motor Vehicle Act* activities recorded in Tulita since 2017: one in 2020, three in 2021, and two in 2022. Those statistics reflect activity under the *Motor Vehicles Act*, i.e., they could be speeding tickets or other and not necessarily reflective of Motor Vehicle accidents²⁶⁷.

²⁶³ NWT Bureau of Statistics. (2020c). *Tulita – Statistical Profile*.

²⁶⁴ NWT Bureau of Statistics. (2018c). *2018 Food Insecurity*.

²⁶⁵ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

²⁶⁶ Legislative Assembly of the Northwest Territories. (2013). *Emergency Preparedness Plan: A Community Plan for the People of Tulita*.

²⁶⁷ Interview with Tulita RCMP.

5.5.1.3 Norman Wells

5.5.1.3.1 Population Composition and Migration

Population Trends

Norman Wells is the largest community within the Sahtu Region. In 2022, Norman Wells had a population of 704 people, which is about 26% of the region's population (see **Table 160**). The population data indicate that 54% of community members are male, 46% of community members are female, and 37% are Indigenous, which is considerably less than the regional average (76%).

Table 160: Population Overview for Norman Wells, Sahtu Region and NWT, 2022

	Population	Male		Female		Indigenous		Non-Indigenous	
		#	%	#	%	#	%	#	%
Norman Wells	704	381	54%	323	46%	258	37%	446	63%
Sahtu	2,669	1,427	53%	1,242	47%	2,037	76%	632	24%
NWT	45,605	23,450	51%	23,450	51%	23,450	51%	23,450	51%

Sources: NWT Bureau of Statistics. (2023b, 2023e).

Note: Sum of categories may not always equal the total due to weighting or due to unorganised areas included in the total.

Although the population in the Sahtu Region has had net growth between 2018 and 2022, the population of Norman Wells reduced every year between 2018 and 2022 (see **Table 161**). The population forecast indicates that a return to higher population numbers in Norman Wells is expected, with a projected increase of almost 7% between 2022 and 2037. This trend is in contrast with the projected population for the region as a whole, which is expected to decrease 1.4% over the same period.

Table 161: Population Trends and Projections for Norman Wells, Sahtu and NWT, 2018-2037

	Historical Population					Population Projections		
	2018	2019	2020	2021	2022	2027	2032	2037
Norman Wells	789	776	750	745	704	714	725	751
Sahtu	2,621	2,638	2,671	2,677	2,669	2,649	2,641	2,631
NWT	44,981	45,070	45,346	45,597	45,605	45,941	46,185	46,573

Source: NWT Bureau of Statistics. (2023a, 2023d).

The 2021 Norman Wells Community Plan²⁶⁸ also notes that the community's population has steadily grown in the last 25 years, with occasional spikes and decreases characteristic of an industry town susceptible to boom and bust cycles. The Plan suggests some caution when considering population forecasts, noting that changes in economic cycles for resource-based industries can have important impacts on the community²⁶⁹. Although there are no community-specific statistics on in/out migration, the Community Plan also notes that Norman Wells has a "shadow population" (defined as temporary residents of a municipality who are employed by an industrial or commercial establishment in the municipality for a minimum of 30 days) and transient workers that impact community services and housing but are unlikely to be reflected in the population data²⁷⁰.

Demographics

Table 162 provides the total population in the community of Norman Wells in selected years between 2002 and 2022 and the community as a percentage of the Sahtu Region's population and NWT population, as well as the ethnic components of the community during the same period. According to the NWT Bureau of Statistics, the population of Norman Wells has fluctuated between a low of 704 persons (2022) and a high of 822 persons (2017), with no clear trend during the 20-year period. In contrast, the population of Sahtu Region and the NWT as a whole has generally increased during the same 20-year period. Norman Wells' population varied between 29.4% and 33.1% of the total Sahtu Region's population from 2002 to 2017, but reduced to 26.5% of the regional population in 2022. For the territory as a whole the community represented approximately 1.8% of the NWT population in 2002 and approximately 1.5% to 1.9% of the NWT population in 2022, showing a declining community population as a proportion of the territorial population.

Norman Wells' Indigenous population has also fluctuated during this period and has constituted between 29.2% of the community's total population (2002) and 38.2% of the total population (2017), with a general increase in proportion of Indigenous population during the 20-year period.

Table 162: Norman Wells Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	744	821	764	822	704
Indigenous Population	217	330	279	314	258
Non-Indigenous Population	527	491	485	508	446
Total Regional (Sahtu) Population	2,528	2,477	2,452	2,562	2,652
Percent of Regional Population	29.4%	33.1%	31.2%	32.1%	26.5%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	1.78%	1.89%	1.75%	1.83%	1.54%

Source: NWT Bureau of Statistics. (2023a, 2023b).

Table 163 breaks down the population of Norman Wells by age group in selected years between 2007 and 2022. According to available statistics, the elder proportion of the population has been aging, but there is no clear overall trend. In particular, the proportion of the population aged 60+ nearly tripled from 5% of the total population in 2007 to 13% of the total population by 2022. Other age groups which increased over this period was 5 to 9 years (from 5% to 8% of the total population) and 15 to 24 years (from 14% to 15% of the total population). Age groups which declined as a proportion are 0 to 4 years (from 8% of the total in 2007 to 4% in 2022), 25 to 44 years (from 35% of the total population in 2007 to 32% in 2022) and 45 to 59 years (from 24% of the total population in 2007 to 23% in 2022). The age group of 10 to 14 years was the same in both 2007 and 2022 (at 5% of the total population).

²⁶⁸ Town of Normal Wells. (2021a). *Normal Wells Community Plan*.

²⁶⁹ Town of Normal Wells. (2021a). *Normal Wells Community Plan*.

²⁷⁰ Town of Normal Wells. (2021a). *Normal Wells Community Plan*.

Table 163: Norman Wells Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	%	#	%	#	%	#	%
Total Community Population	821*		764*		822		704	
0 to 4	65	8%	55	7%	59	7%	29	4%
5 to 9	57	7%	52	7%	44	5%	57	8%
10 to 14	45	5%	45	6%	68	8%	34	5%
15 to 24	118	14%	98	13%	110	13%	105	15%
25 to 44	291	35%	260	34%	258	31%	222	32%
45 to 59	202	24%	175	23%	186	23%	163	23%
60+	43	5%	79	10%	97	12%	94	13%

Source: NWT Bureau of Statistics. (2023a, 2023c).

*Note: Calculated as sum of age groups

5.5.1.3.2 Population Health

Self-Perceived Health

Table 164 compares self-perceived physical health in the community of Norman Wells in 2019, along with self-perceived health aggregated at the regional and territorial levels²⁷¹. In general, more Norman Wells residents perceive their physical health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” physical health, the community exceeds the region and territory by about 3 percentage points; while in terms of “very good” self-perceived physical health status, the community exceeds the territory by 7 percentage points and the region by over 11 percentage points. No comparable data for other years were available.

Table 164: Self-Perceived Physical Health, Norman Wells, Sahtu and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Norman Wells	58.1%	17.6%	40.5%
Sahtu	43.5%	14.3%	29.2%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

²⁷¹ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Mental Health and Well-Being

Self-perceived mental health in the community of Norman Wells in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 165**²⁷². More Norman Wells residents perceive their mental health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” mental health, the community exceeds the region by about 8 percentage points and territory by about 10 percentage points; while in terms of “very good” self-perceived mental health status, Norman Wells exceeds the region by about 1 percentage point and the territory by 1.7 percentage points. No comparable data for other years were available.

Table 165: Self-Perceived Mental Health, Norman Wells, Sahtu and NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Norman Wells	64.0%	30.1%	33.9%
Sahtu	55.3%	22.3%	33.0%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

Health and Wellness Plan

The community of Norman Wells produced a health and wellness plan in 2017, which was based on community feedback²⁷³. It identifies the need to focus in the areas of:

- Promotion of Aboriginal culture and language;
- Health promotion, especially toward youths;
- Healthy eating and nutrition education;
- Early literacy and learning, and early childhood development activities;
- Physical health and activity promotion;
- Disease prevention, management and support;
- Injury and prevention;
- Capacity building and continuing education;
- Cultural and Elder support;
- Mental wellness promotion;
- Addictions, suicide and abuse prevention; and,
- Early intervention activities and support to prevent and reduce substance abuse.

²⁷² NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁷³ Norman Wells Land Corporation. (2017). Refreshed Norman Wells Community Wellness Plan.

5.5.1.3.3 Social Determinants of HealthPersons in Low Income

Table 166 compares the number of persons in low income (and percentage of the total population who are in low income) in the community of Norman Wells in the years 2015 to 2019, along with persons in low income at the LAA, regional and territorial levels. In terms of percentage of total population, Norman Wells had between 9.0% and 11.8% of its population in low income: this was a lower percentage than either the LAA as a whole (15.0 – 18.1%), the Sahtu Region (19.7% - 23.5%) and the NWT (18.3% - 19.0%). In terms of trends, all levels being compared had their highest level of low-income population in 2017; and most levels had their smallest low-income population in 2015 – although Norman Wells had its smallest low-income population in 2018.

Information concerning average family incomes and income distribution is provided in section 5.2.1.3.1.

Table 166: Persons in Low Income, Norman Wells, LAA, Sahtu Region and NWT, 2016-2020

	2016	2017	2018	2019	2020
Norman Wells	70 (10.0%)	80 (11.8%)	70 (10.0%)	60 (9.0%)	70 (10%)
Local Assessment Area	200 (17.2%)	210 (18.1%)	180 (15.4%)	190 (16.7%)	140 (12.2%)
Sahtu	460 (20.5%)	530 (23.5%)	470 (20.8%)	500 (22.2%)	310 (14.6%)
Northwest Territories	7,720 (18.3%)	8,080 (19.0%)	7,780 (18.3%)	7,910 (18.5%)	5,010 (11.9%)

Source: NWT Bureau of Statistics. (2021a).

Income Assistance Cases

Table 167 provides the monthly average number of income assistance cases in the community of Norman Wells between 2015 and 2022. According to available statistics, the community's monthly income assistance cases has varied between a high of 13 (in 2020) and a low of 6 (in 2021), with an average during this period of 9.5 cases. There was a trend in terms of income assistance cases in Norman Wells, showing an increase from 2015-2020, and a general decrease from 2020-2022. When compared to the number of monthly income assistance cases in Sahtu Region, Norman Wells' proportion ranged from a low of 7.0% in 2018 to a high of 9.4% in 2019, with a general increase in the period from 2015-2022. At the territorial level, Norman Wells cases ranged as a proportion from 0.38% in 2021 to 0.57% in 2020, but with no particular pattern and most years hovering close to 0.5%.

Table 167: Monthly Income Assistance Cases, Norman Wells, Sahtu Region and NWT, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022
Norman Wells	8	9	10	9	11	13	6	10
Sahtu	102	108	106	128	123	149	85	116
% Sahtu	7.8%	8.3%	9.4%	7.0%	8.9%	8.7%	7.1%	8.6%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	0.49%	0.51%	0.52%	0.43%	0.52%	0.57%	0.38%	0.54%

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

Lone Parent Families

Table 168 compares the number of lone parent families in the community of Norman Wells in the years 2016 to 2021, along with lone parent families at the LAA, regional and territorial levels²⁷⁴. Norman Wells had a smaller proportion of lone parent families (between 16.7% and 23.5% of total) than either the LAA as a whole (25.8 – 33.3%), or the Sahtu Region (31.0% - 36.7%) throughout this time period. When compared to the NWT as a whole, Norman Wells had proportionately fewer lone parent families until 2018, but has had a slightly larger proportion than the NWT in 2019 and 2021. In terms of trends, all levels being compared have had an increased proportion of lone parent families since 2016.

Table 168: Lone Parent Families, Norman Wells, LAA, Sahtu Region and NWT, 2016-2021

	2016	2017	2018	2019	2021
Norman Wells	30 (16.7%)	40 (22.2%)	40 (23.5%)	50 (27.8%)	50 (27.8%)
Local Assessment Area	80 (25.8%)	90 (29.0%)	90 (30.0%)	100 (32.3%)	100 (33.3%)
Sahtu Region	190 (31.7%)	180 (31.0%)	190 (32.8%)	220 (36.7%)	200 (35.7%)
NWT	2,620 (23.1%)	2,710 (23.7%)	2,820 (24.6%)	2,920 (25.6%)	29,610 (25.7%)

Sources: NWT Bureau of Statistics. (2021a)., Statistics Canada. (2022).

5.5.1.3.4 Community, Family and Social TiesSatisfaction with Community

Table 169 provides a break-down of components of community satisfaction in the community of Norman Wells in 2019, along with community satisfaction aggregated at the regional and territorial levels²⁷⁵. In the area of employment opportunities, Norman Wells community members were more satisfied than either Sahtu Region or the NWT in general; they were also higher than the region or territory in terms of “very satisfied” with ‘sense of belonging’ and “satisfied” with ‘access to social services. In all other areas of satisfaction, Norman Wells residents were between the regional and territorial levels.

Table 169: % of Households Satisfied with Community, Norman Wells, Sahtu Region and NWT, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Norman Wells	-	20.7	10.6	60.8	12.3	51.1	4.4	48.9	39.2	48.9
Sahtu	-	22.3	4.7	31.9	7.1	53.5	2.5	47.0	37.9	48.1
Northwest Territories	-	19.9	9.6	41.9	14.3	48.3	5.8	42.5	21.8	53.2

Source: NWT Bureau of Statistics. (2019e).

²⁷⁴ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁷⁵ NWT Bureau of Statistics. (2019e). Satisfaction with Community, by Community, Northwest Territories, 2019.

Community Belonging

Table 170 provides a break-down of the sense of community belonging in the community of Norman Wells, the Sahtu Region and NWT in 2014²⁷⁶. The people of Norman Wells have a slightly lesser 'very strong' sense of community belonging (39.5%) than the Sahtu Region (40.8%), but more than the territorial population as a whole (34.7%). Proportionately fewer residents of Norman Wells (42.5%) have a 'somewhat strong' sense of community compared to the region and NWT; while a relatively large proportion of the community's residents (15.2%) feel a 'somewhat weak' or 'very weak' sense of community belonging compared to Sahtu Region (10.3%) and the NWT (13.0%). In summary, the residents of Norman Wells have, overall, a weak sense of community belonging.

Table 170: Sense of Community Belonging in Norman Wells, Sahtu Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Norman Wells	39.5	42.5	15.2
Sahtu	40.8	44.9	10.3
Northwest Territories	34.7	43.8	13.0

Source: Northwest Territories Bureau of Statistics. (2014b).

5.5.1.3.5 Social PressuresCrime

Table 171 details the types and rates of crime reported in the community of Norman Wells in selected years between 2004 and 2021. According to available statistics, the trend in overall reported number of crimes reduced from 2004 to 2009, and then increased from 2009 to 2021 to a level that was higher than in 2004. A similar pattern appears in 'property crimes'. For 'crimes of violence', 'traffic' crimes and 'other criminal code' crimes in the community of Norman Wells, a somewhat similar pattern appears, with the number reaching the lowest point in 2009 or 2014, followed by a peak in 2019 or 2021 which exceeds the number in 2004. However, for 'federal statute' crimes, the number consistently decreased from 2004 to 2021.

Table 171: Number of Crimes Reported in Norman Wells, 2004 - 2021

	2004	2009	2014	2019	2021
All Incidents	218	148	209	248	300
Crimes of Violence	51	28	25	29	61
Property Crimes	95	60	117	123	156
Other Criminal Code	38	35	48	67	55
Traffic	13	6	5	25	24
Federal Statutes	21	19	14	4	4

Source: NWT Bureau of Statistics. (2019d).; Statistics Canada. (2022).

²⁷⁶ Northwest Territories Bureau of Statistics. (2014b). *Sense of Community Belonging*.

Table 172 compares how Norman Wells residents perceive their community in terms of crime in 2019, along with crime level perceptions at the LAA, regional and territorial levels²⁷⁷. Nearly 3/4 of Norman Wells residents (over 74%) believe that their community has a lower crime rate than other communities in the territory. This is higher than in the LAA as a whole (67.6%), the Sahtu Region (54.7) and the NWT residents as a whole (34.6%). A very small proportion of Norman Wells residents (5.9%) think that their community has higher crime rates than other communities or think that their community has the same rates of crime as other communities (17.6). These levels are lower than at the LAA, Sahtu Region and NWT resident perceptions.

Table 172: Perceived Crime, Norman Wells, LAA, Sahtu Region and NWT, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Norman Wells	5.9%	17.6%	74.4%
Local Assessment Area	7.3%	22.2%	67.6%
Sahtu	12.9%	30.4%	54.7%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Teen Pregnancies

In the years from 2008 to 2017, the community of Norman Wells had a total of one teen birth: it occurred in 2017²⁷⁸.

5.5.1.3.6 Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018²⁷⁹, of the 289 households in the community of Norman Wells, less than a quarter (50) stated that they worry about not having enough money for food; of these, 5 stated that they are “often” worried, and 45 stated that they are “sometimes” worried. These rates are lower than at both the regional and territorial levels (less than 1/3 of Sahtu Region regarding ‘often worried’), as detailed in **Table 173**.

Table 173: Households “Worried Not Enough Money for Food” in Norman Wells, Sahtu Region and NWT, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Norman Wells	289	50	17.2%	5	1.8%	45	15.4%
Sahtu	816	255	31.2%	56	6.9%	199	24.4%
Northwest Territories	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018a).

²⁷⁷ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁷⁸ NWT Bureau of Statistics. (2020b). Norman Wells – Statistical Profile.

²⁷⁹ NWT Bureau of Statistics. (2018a). Households Worried Not Enough Money for Food, Northwest Territories, 2018.

5.5.1.3.7 Nuisance

Air Quality

The GNWT Department of Environment and Natural Resources (ENR) currently monitors air quality at Norman Wells. The air quality data are provided in an annual report and published on the ENR website²⁸⁰.

5.5.1.3.8 Drinking Water Quality

In both 2015 and 2016, Norman Wells' water plant had 100% compliance in treated water bacterial tests²⁸¹.

5.5.1.3.9 Public Safety

Norman Wells has a Community Emergency Plan, which was last updated in 2020²⁸². The plan describes emergency management roles and responsibilities within the community government; operational levels; response levels; process for declaring an emergency; communications methods and processes; emergency site management; use of volunteers; hazard management; recovery from an emergency; and the process of plan maintenance²⁸³.

5.5.2 Regional Assessment Area

5.5.2.1 Dehcho Region/Fort Simpson

5.5.2.1.1 Population Composition and Migration

Population Trends

Table 174 provides the total population in the community of Fort Simpson in selected years between 2002 and 2022 and the community as a percentage of the Dehcho Region's population and NWT population, as well as the ethnic components of the community during the same period. According to the NWT Bureau of Statistics, the population within Fort Simpson fluctuated between 1,230 persons (in 202) and 1,286 persons (in 2017), with no particular trend between 2002-2022. Fort Simpson's population represented 36.6% of the total Dehcho Region's population in 2002 and approximately 37.1% of the total Dehcho Region's population in 2022 (the regional population declined during this period); and for the territory as a whole, the community's population has reduced from approximately 3.0% of the total in 2002 to 2.7% of the total in 2022. Like Dehcho Region as a whole, the population of Fort Simpson declined during the period from 2002-2022, while the territorial population has increased.

Fort Simpson is primarily an Indigenous community: its Indigenous population has varied from a low of 864 persons (or 69.8% of the total population) in 2007 to as many as 920 persons (or 71.5% of the total population) in 2017. The overall ethnic population trend over the 2002-2022 period has been an increase in Indigenous proportion of the population.

²⁸⁰ Sahtu Land Use Planning Board. (2013). *Sahtu Land Use Plan*.

²⁸¹ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

²⁸² Town of Norman Wells. (2020). *Norman Wells Community Emergency Plan*.

²⁸³ Town of Norman Wells. (2020). *Norman Wells Community Emergency Plan*.

Table 174: Fort Simpson Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	1,259	1,237	1,262	1,286	1,230
Indigenous Population	880	864	914	920	889
Non-Indigenous Population	379	373	348	366	341
Total Regional (Dehcho) Population	3,443	3,344	3,388	3,394	3,316
Community as % of Regional Population	36.6%	37.0%	37.2%	37.9%	37.1%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	3.02%	2.85%	2.89%	2.86%	2.70%

Source: NWT Bureau of Statistics. (2023a, 2023b).

Demographics

Table 175 breaks down the population of Fort Simpson by age group in selected years between 2007 and 2022. According to available statistics, the population has been gradually aging: that is, the proportion of population over 45 years of age has increased over the past 15 years, while the population under 45 years of age has been decreasing. The most dramatic change has been for age group 10 – 14 years which has declined by over 50% between 2002 and 2022; and for the population aged 60+ years, which has increased nearly 2.5 times between 2002 (9% of the total population) and 2022 (22% of the total population).

Table 175: Fort Simpson Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	% Total	#	% Total	#	% Total	#	% Total
Total Community Population	1,237*	--	1,262*	--	1,286*	--	1,230*	--
0 to 4	76	6%	87	7%	71	6%	57	5%
5 to 9	86	7%	90	7%	66	5%	52	4%
10 to 14	110	9%	80	6%	70	5%	52	4%
15 to 24	196	16%	184	15%	168	13%	142	12%
25 to 44	363	29%	363	29%	363	28%	376	31%
25 to 59	290	23%	306	24%	355	28%	282	23%
60+	116	9%	152	12%	193	15%	269	22%

Source: NWT Bureau of Statistics. (2023a, 2023c).

*Note: Calculated as sum of age groups

5.5.2.1.2 Population HealthSelf-Perceived Health

Table 176 compares self-perceived physical health in the community of Fort Simpson in 2019, along with self-perceived health aggregated at the regional and territorial levels²⁸⁴. In general, proportionately fewer Fort Simpson residents perceive their physical health as either “very good” or “excellent” than is the case in either the Dehcho Region as a whole or the NWT as a whole. In terms of “excellent” physical health, the community rating is lower than the region and territory by about 3 percentage points; while in terms of “very good” self-perceived physical health status, the community is lower than the territory by 13 percentage points and less than the region by 3 percentage points. No comparable data for other years were available.

Table 176: Self-Perceived Physical Health, Fort Simpson, Dehcho Region and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Fort Simpson	29.6%	9.6%	19.9%
Dehcho	35.2%	12.4%	22.8%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

Mental Health and Well-Being

Self-perceived mental health in the community of Fort Simpson in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 177**²⁸⁵. In general, Fort Simpson residents’ perceived mental health is less than the territorial level, but more than the level in Dehcho Region as a whole. In terms of “excellent” mental health, the community exceeds the region by about 3 percentage points but is less than the territory by about 5 percentage points. A similar pattern exists regarding “very good” self-perceived mental health status, with Fort Simpson exceeds the region by about 8 percentage points but is less than the territory by about 2 percentage points. No comparable data for other years were available.

Table 177: Self-Perceived Mental Health, Fort Simpson, Dehcho Region and NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Fort Simpson	46.3%	15.7%	30.6%
Dehcho	35.2%	12.4%	22.8%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

²⁸⁴ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁸⁵ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Health and Wellness Plan

The community of Fort Simpson (Łíídlı́ Kú ę́) produced a health and wellness plan in 2017, which was based on based on the goals of the Łíídlı́ Kú ę́ First Nation strategic plan and community feedback²⁸⁶. It covers the issues of preserving traditional Dene culture, healthy activities available for youth and adults, traditional games, suicide awareness and prevention, lateral violence prevention, alcohol and drug prevention, elder support, and on-the-land healing.

5.5.2.1.3 Social Determinants of Health

Persons in Low Income

Table 178 compares the number of persons in low income (and percentage of the total population who are in low income) in the community of Fort Simpson in the years 2015 to 2019, along with persons in low income at the RAA, regional and territorial levels²⁸⁷. In terms of percentage of total population, Fort Simpson had between 20.1% and 23.1% of its population in low income: this was a lower percentage than either the RAA as a whole (21.9% - 24.2%) or the Dehcho Region (28.2% - 30.0%), but higher than the NWT (18.3% - 19.0%). In terms of trends, all levels being compared had their lowest level of low-income population in 2016; however, each level had their largest low-income population in different years.

Table 178: Persons in Low Income, Fort Simpson, Dehcho Region and NWT, 2016-2020

	2016	2017	2018	2019	2020
Fort Simpson	270 (20.1%)	270 (20.1%)	280 (21.1%)	270 (20.3%)	180 (14.1%)
Regional Assessment Area	750 (21.9%)	780 (24.2%)	790 (23.6%)	780 (23.8%)	350 (15.2%)
Dehcho	750 (28.2%)	780 (29.1%)	790 (30.0%)	780 (29.2%)	400 (15.7%)
Northwest Territories	7,720 (18.3%)	8,080 (19.0%)	7,780 (18.3%)	7,910 (18.5%)	5,010 (11.9%)

Source: NWT Bureau of Statistics. (2021a).

Income Assistance Cases

Table 179 provides the monthly average number of income assistance cases in the community of Fort Simpson between 2015 and 2022. According to available statistics, the community's monthly income assistance cases have varied between a low of 47 (in 2021) and a high of 74 (in 2020), with an average during this period of 65.8 cases. In terms of trends, the number of cases in the community generally increased from 2015-2020 and decreased from 2020-2022, with the number of monthly cases in 2022 slightly lower than in 2015. A similar general pattern occurred in Dehcho Region; however, with the number of monthly cases in 2022 being somewhat higher than in 2015. When compared to the number of monthly income assistance cases in the Dehcho Region, Fort Simpson's proportion has varied between 26.2% and 34.1%, with a general decreasing percentage from 2015-2022. The number of monthly cases in the NWT as a whole has followed the same general pattern of increase from 2015-2020, followed by a decrease after 2020. In comparison with the number of monthly income assistance cases in the NWT, Fort Simpson has varied between 3.01% and 4.00% of the territory total, with the percentage consistently above 3.5% in the years 2015-2017 and below 3.5% from 2018-2022.

²⁸⁶ Liidlı́ Kue First Nation. (n.d.) Liidlı́ Kue Community Wellness Plan.

²⁸⁷ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Table 179: Monthly Income Assistance Cases, Fort Simpson, Dehcho Region and NWT, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022
Fort Simpson	63	70	73	70	70	74	47	59
Dehcho	185	222	227	253	247	261	179	225
% Dehcho	34.1%	31.5%	32.2%	27.7%	28.3%	28.4%	26.3%	26.2%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	3.82%	4.00%	3.79%	3.34%	3.31%	3.27%	3.01%	3.19%

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

Lone Parent Families

Table 180 compares the number of lone parent families in the community of Fort Simpson in the years 2016 to 2021, along with lone parent families at the RAA, regional and territorial levels²⁸⁸. Fort Simpson had a smaller proportion of lone parent families (between 27.8% and 28.6% of total) than the RAA as a whole (31.4% – 32.8%) throughout this time period, and a smaller proportion than in the Dehcho Region as a whole since 2018. The community has had a larger proportion of lone parent families than the NWT overall (by between 2 and 6 percentage points) throughout this period. In terms of trends, Fort Simpson had its highest proportion of lone parent families in 2017, after which it reduced in 2018/2019 and slightly increased in 2021; while the Regional Assessment Area, Dehcho Region and the NWT had their highest proportion of lone parent families in 2021 and have experienced a general increase since 2016.

Table 180: Lone Parent Families, Fort Simpson, RAA, Dehcho Region and NWT, 2016-2021

	2016	2017	2018	2019	2021
Fort Simpson	100 (27.8%)	110 (29.7%)	100 (27.8%)	100 (27.8%)	100 (28.6%)
Regional Assessment Area	110 (31.4%)	120 (31.6%)	120 (31.6%)	120 (32.4%)	200 (32.8%)
Dehcho Region	200 (27.4%)	220 (29.7%)	210 (29.2%)	210 (29.6%)	220 (31.4%)
Northwest Territories	2,620 (23.1%)	2,710 (23.7%)	2,820 (24.6%)	2,920 (25.6%)	2,910 (25.7%)

Sources: NWT Bureau of Statistics. (2021a)., Statistics Canada. (2022).

5.5.2.1.4 Community, Family and Social Ties

Satisfaction with Community

Table 181 provides a break-down of components of community satisfaction in Fort Simpson in 2019, along with community satisfaction aggregated at the regional and territorial levels²⁸⁹. Based on the percentage of “very satisfied” residents, Fort Simpson residents seem to be more satisfied with three components of their community than either Dehcho Region residents in general or NWT residents in general: ‘variety of community & recreation activities’, ‘access to social services’ and ‘sense of belonging’. In terms of ‘employment opportunities’, Fort Simpson residents are more satisfied than Dehcho Region residents in general, but less than NWT residents in general. Regarding ‘cost of living’, however, fewer Fort Simpson residents were satisfied than the Dehcho Region in general, and the same level of satisfaction as the NWT in general.

²⁸⁸ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁸⁹ NWT Bureau of Statistics. (2019e). Satisfaction with Community, by Community, Northwest Territories, 2019.

Table 181: Households Satisfied with Community, Fort Simpson, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Fort Simpson	-	19.9%	4.8%	33.6%	17.7%	42.0%	9.7%	37.5%	34.2%	45.3%
Dehcho	-	25.1%	2.9%	23.6%	9.1%	37.7%	5.3%	45.8%	21.1%	55.9%
Northwest Territories	-	19.9%	9.6%	41.9%	14.3%	48.3%	5.8%	42.5%	21.8%	53.2%

Source: NWT Bureau of Statistics. (2019e).

Community Belonging

Table 182 provides a break-down of the sense of community belonging in Fort Simpson, the Dehcho Region and NWT in 2014²⁹⁰. The people of Fort Simpson have a very strong sense of community belonging (38.9%) when compared to either the Dehcho Region (31.7%) and the territorial population as a whole (34.7%). However, 14.0% of the community's residents feel a 'somewhat weak' or 'very weak' sense of community belonging, which is higher than either the regional or NWT proportions. More than 2/5 of Fort Simpson's residents (45.0%) have a 'somewhat strong' sense of community. In summary, the residents of Fort Simpson have, overall, a more 'divided' sense of community belonging, with higher levels at both the 'very strong' and 'very weak' sides of the spectrum.

Table 182: Sense of Community Belonging in Fort Simpson, Dehcho Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Fort Simpson	38.9	45.0	14.0
Dehcho	31.7	51.2	12.6
Northwest Territories	34.7	43.8	13.0

Source: Northwest Territories Bureau of Statistics. (2014b).

5.5.2.1.5 Social Pressures

Crime

Table 183 details the types and rates of crime reported in the community of Fort Simpson in selected years between 2004 and 2021. According to available statistics, the overall reported crimes do not have a clear trend from 2004 to 2021 but shows a lowest incidence in 2009, a highest incidence in 2019, and the number of reported crimes in 2021 nearly the same as in 2004. Most types of crimes (crimes of violence, property crimes, traffic) generally increased during this 17-year period, with either 2009 or 2014 as the lowest year. 'Federal statutes' crimes and 'other criminal code' crimes are the exceptions, where the highest number of crimes were in 2004.

²⁹⁰ Northwest Territories Bureau of Statistics. (2014b). *Sense of Community Belonging*.

Table 183: Number of Crimes Reported in Fort Simpson, 2004 - 2021

	2004	2009	2014	2019	2021
All Incidents	892	676	689	1,006	898
Crimes of Violence	173	168	140	319	307
Property Crimes	318	295	366	326	355
Other Criminal Code	318	161	132	266	171
Traffic	46	29	35	63	55
Federal Statutes	37	23	16	32	10

Source: NWT Bureau of Statistics. (2019d).; Statistics Canada. (2022).

Table 184 compares how Fort Simpson residents perceive their community in terms of crime in 2019, along with crime level perceptions at the RAA, regional and territorial levels²⁹¹. More than 2/5 of Fort Simpson residents (41%) believe that their community has a lower crime rate than other communities in the territory. This is higher than in the RAA as a whole (40.2%) and the NWT residents as a whole (34.6%) but is lower than Dehcho Region (44.3%). Another 2/5 of Fort Simpson residents (42.7%) believe that their community has the same crime rate as other communities in the Territory; which is higher than in the RAA as a whole (41.0%) and the Dehcho Region (37.4%) and less than the NWT residents as a whole (43.4%). A small proportion of Fort Simpson residents (11.7%) think that their community has higher crime rates than other communities; this level is lower than at the RAA, Dehcho Region and NWT resident perceptions.

Table 184: Perceived Crime, Fort Simpson, RAA, Dehcho Region and NWT, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Fort Simpson	11.7%	42.7%	41.0%
Regional Assessment Area	15.8%	41.0%	40.2%
Dehcho	15.7%	37.4%	44.3%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Teen Pregnancies

In the years from 2008 to 2017, the community of Fort Simpson had a total of 13 teen births. Most years saw one teen birth; 2008 had 3 teen births and 2014 had 4 teen births. Both 2010 and 2015 had no teen births. There is no observable trend in teen births: over time the rate does not seem to be either increasing or decreasing²⁹².

²⁹¹ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁹² NWT Bureau of Statistics. (2020a). Fort Simpson – Statistical Profile.

5.5.2.1.6 Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018²⁹³, of the 471 households in the community of Fort Simpson, about one-quarter (120, or 25.5%) stated that they worry about not having enough money for food; of these, 23 (or 4.8% of total households) stated that they are “often” worried, and 98 (or 20.7% of total households) stated that they are “sometimes” worried. These rates are lower than at the regional level but a bit higher than the territorial level, as detailed in **Table 185**. Data are not available for other years.

Table 185: Households “Worried Not Enough Money for Food” in Fort Simpson, Dehcho Region and NWT, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Fort Simpson	471	120	25.5%	23	4.8%	98	20.7%
Dehcho	1,087	342	31.5%	85	7.8%	255	23.4%
Northwest Territories	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018a).

5.5.2.1.7 Drinking Water Quality

In both 2015 and 2016, Fort Simpson's water plant was 100% compliant for treated water bacteria tests²⁹⁴.

5.5.2.2 Déłıne

5.5.2.2.1 Population Composition and Migration

Population Trends

Table 186 provides the total population in the community of Déłıne in selected years between 2002 and 2022 and the community as a percentage of the Sahtu Region's population and NWT population, as well as the ethnic components of the community during the same period. According to the NWT Bureau of Statistics, the population of Déłıne fluctuated between 498 persons (in 2012) and 633 persons (in 2022), with a reducing trend between 2002-2012 and increasing trend between 2012 and 2022. Déłıne's population represented between 20.3% of the total Sahtu Region's population (in 2012) and 23.7% of the total Sahtu Region's population (in 2022). The same pattern appears as Déłıne's population as a proportion of the total NWT population (between 1.14% and 1.39%), with a slight overall decreased proportion between 2002 and 2012 followed by an increased proportion from 2012 to 2022 and overall increase between 2002-2022. The community's general trend of increased population between 2002-2022 follows the regional and territorial trends.

Déłıne is primarily an Indigenous community: its non-Indigenous population has varied from as few as 28 persons (or 5% of the total population) in 2002 to as many as 53 (or 8% of the total population) in 2022. The overall ethnic population trend over the 2002-2022 period has been an increase in non-Indigenous proportion of the population.

²⁹³ NWT Bureau of Statistics. (2018a). *Households Worried Not Enough Money for Food, Northwest Territories, 2018*.

²⁹⁴ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

Table 186: Délı̄nę Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	551	533	498	571	633
Indigenous Population	523	492	468	537	580
Non-Indigenous Population	28	41	30	34	53
Total Regional (Sahtu) Population	2,522	2,583	2,451	2,624	2,669
Community as % of Regional Population	21.8%	20.6%	20.3%	21.8%	23.7%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	1.32%	1.23%	1.14%	1.27%	1.39%

Source: NWT Bureau of Statistics. (2023a, 2023b).

Demographics

Table 187 breaks down the population of Délı̄nę by age group in selected years between 2007 and 2022. According to available statistics, the population has been gradually aging, that is, the proportion of population over 45 years of age has increased over the past 15 years, while the proportion of the population under 45 years of age has been decreasing. The most dramatic population reductions were for age groups 10 – 14 years (reduced by 50%) and 15 – 24 years (reduced by 35%), while the most significant population increase was for the age group 60+, which doubled as a proportion of the total population from 9% in 2007 to 17% in 2022.

Table 187: Délı̄nę Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	% Total	#	% Total	#	% Total	#	% Total
Total Community Population	533*	--	498*	--	571*	--	633	--
0 to 4	38	7%	32	6%	43	8%	45	7%
5 to 9	42	8%	28	6%	33	6%	38	6%
10 to 14	64	12%	33	7%	37	6%	40	6%
15 to 24	102	20%	113	23%	101	18%	85	13%
25 to 44	166	32%	148	30%	162	28%	197	31%
45 to 59	72	14%	102	21%	117	20%	122	19%
60+	49	9%	42	8%	78	14%	106	17%

Source: NWT Bureau of Statistics. (2023a, 2023c).

*Note: Calculated as sum of age groups

5.5.2.2.2 Population HealthSelf-Perceived Health

Table 188 compares self-perceived physical health in the community of Déłıne in 2019, along with self-perceived health aggregated at the regional and territorial levels²⁹⁵. In general, proportionately fewer Déłıne residents perceive their physical health as either “very good” or “excellent” in comparison with either Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” physical health, the community is less than the region and territory by about 4 percentage points; while in terms of “very good” self-perceived physical health status, the community is less than the region by about 8 percentage points and the territory by about 12 percentage points. No comparable data for other years were available.

Table 188: Self-Perceived Physical Health, Déłıne, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Déłıne	32.1%	10.7%	21.4%
Sahtu	43.5%	14.3%	29.2%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

Mental Health and Well-Being

Self-perceived mental health in the community of Déłıne in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 189**²⁹⁶. Proportionately more Déłıne residents perceive their mental health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “very good” mental health, the community exceeds the region by about 6 percentage points and territory by about 7 percentage points; however, in terms of “excellent” self-perceived mental health status, Déłıne is less than the region by about 3 percentage points and the territory by 1 percentage point. No comparable data for other years were available.

Table 189: Self-Perceived Mental Health, Déłıne, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Déłıne	58.3%	19.4%	38.9%
Sahtu	55.3%	22.3%	33.0%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

²⁹⁵ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

²⁹⁶ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Health and Wellness Plan

The community of Délı̄nę created its community wellness plan in 2018, which was based on community feedback²⁹⁷. It focuses on the issue of revitalization of language and culture with the priorities of:

- Prenatal and ages 0-5,
- Youth,
- Elders,
- Community wellness, and
- Mental health and addiction.

Each priority area has identified target groups, goals, programming objectives, and current status.

5.5.2.2.3 Social Determinants of Health

Persons in Low Income

Table 190 compares the number of persons in low income (and percentage of the total population who are in low income) in the community of Délı̄nę in the years 2015 to 2019, along with persons in low income at the RAA, regional and territorial levels²⁹⁸. In terms of percentage of total population, Délı̄nę had between 26.3% and 30.4% of its population in low income: this was a higher percentage than the RAA (21.9% – 24.2%), the Sahtu Region (19.7% - 23.5%) and the NWT (18.3% - 19.0%). In terms of trends, most levels being compared had their highest level of low-income population in 2017; and most levels had their smallest low-income population in 2015; however, Délı̄nę had its smallest low-income population in 2019 and its highest low-income population in 2015 and 2018.

Table 190: Persons in Low Income, Délı̄nę, RAA, Sahtu Region and NWT, 2016-2020

	2016	2017	2018	2019	2020
Délı̄nę	150 (27.3%)	150 (27.8%)	170 (30.4%)	150 (26.3%)	90 (17%)
Regional Assessment Area	750 (21.9%)	780 (24.2%)	790 (23.6%)	780 (23.8%)	350 (15.2%)
Sahtu	460 (20.5%)	530 (23.5%)	470 (20.8%)	500 (22.2%)	310 (14.3%)
Northwest Territories	7,720 (18.3%)	8,080 (19.0%)	7,780 (18.3%)	7,910 (18.5%)	7,910 (18.5%)

Source: NWT Bureau of Statistics. (2021a).

Income Assistance Cases

Table 191 provides the monthly average number of income assistance cases in the community of Délı̄nę between 2015 and 2022. According to available statistics, the community's monthly income assistance cases has varied between a low of 36 (in 2009) and a high of 46 (in 2012), with an average during this period of 41 cases. In terms of trends, the number of cases in the community varied between 30 (in 2021) to 48 (in 2020) with no particular trend and an average monthly caseload of 42.6. In Sahtu Region a similar pattern exists with no clear trend and a highest number of cases in 2020 followed by the lowest number of cases in 2021. As a proportion of the region's cases, Délı̄nę has generally reduced from 41.2% in 2015 to 35.3% in 2022. In comparison with the number of monthly income assistance cases in the NWT, Délı̄nę has varied between 1.92% and 2.57% of the territory total, with the percentage consistently above 2.5% in the years 2015-2016 and below 2.5% from 2017-2022.

²⁹⁷ Délı̄nę Government. (2018). 2018 Délı̄nę Community Wellness Plan.

²⁹⁸ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Table 191: Monthly Income Assistance Cases, Délıne, Sahtu Region and NWT, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022
Délıne	42	45	40	48	47	48	30	41
Sahtu	102	108	106	128	123	149	85	116
% Sahtu	41.2%	41.7%	37.7%	37.5%	38.2%	32.2%	35.3%	35.3%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	2.55%	2.57%	2.08%	2.29%	2.22%	2.12%	1.92%	2.22%

Source: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

Lone Parent Families

Table 192 compares the number of lone parent families in the community of Délıne in the years 2016 to 2021, along with lone parent families in the RAA, region and Territory²⁹⁹. Délıne had a higher proportion of lone parent families (between 35.7% and 46.7% of total) than the RAA (31.4% – 32.8%), the Sahtu Region (31.0% - 36.7%) and the NWT (23.1% - 25.7%). In terms of trends, all levels have experienced a general increase in proportion of lone parent families during this six-year period, with the lowest proportion in either 2016 or 2017 and the highest proportion in either 2019 or 2021.

Table 192: Lone Parent Families, Délıne, RAA, Sahtu Region and NWT, 2016-2021

	2016	2017	2018	2019	2021
Délıne	60 (42.9%)	50 (35.7%)	60 (40.0%)	70 (46.7%)	60 (42.9%)
Regional Assessment Area	110 (31.4%)	120 (31.6%)	120 (31.6%)	120 (32.4%)	200 (32.8%)
Sahtu Region	190 (31.7%)	180 (31.0%)	190 (32.8%)	220 (36.7%)	200 (35.7%)
NWT	2,620 (23.1%)	2,710 (23.7%)	2,820 (24.6%)	2,920 (25.6%)	2,910 (25.7%)

Sources: NWT Bureau of Statistics. (2021a)., Statistics Canada. (2022).

5.5.2.2.4 Community, Family and Social Ties

Satisfaction with Community

Table 193 provides a break-down of components of community satisfaction in the community of Délıne in 2019, along with community satisfaction aggregated at the regional and territorial levels³⁰⁰. Based on the percentage of “satisfied” and “very satisfied” residents, Délıne residents seem to be more satisfied with one component of their community than either Sahtu Region residents in general or NWT residents in general: ‘cost of living’; while Délıne residents seem to be less satisfied than regional and territorial residents regarding ‘employment opportunities’. For the other three components of community satisfaction – ‘variety of community & recreational activities’, ‘access to social services’ and ‘sense of belonging’ are between the regional and territorial levels of satisfaction.

²⁹⁹ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

³⁰⁰ NWT Bureau of Statistics. (2019e). Satisfaction with Community, by Community, Northwest Territories, 2019.

Table 193: % of Households Satisfied with Community, Délı̄ne, Sahtu Region and NWT, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Délı̄ne	-*	27.9%	-*	23.0%	4.9%	51.6%	-*	45.1%	33.6%	50.0%
Sahtu	1.0%	22.3%	4.7%	31.9%	7.1%	53.5%	2.5%	47.0%	37.9%	48.1%
Northwest Territories	1.8%	19.9%	9.6%	41.9%	14.3%	48.3%	5.8%	42.5%	21.8%	53.2%

Source: NWT Bureau of Statistics. (2019e).

*Note: NWT statistics does not include numbers that are less than 10.

Community Belonging

Table 194 provides a break-down of the sense of community belonging in Délı̄ne, the Sahtu Region and NWT in 2014³⁰¹. The people of Délı̄ne have a very strong sense of community belonging (71.0%) when compared to both the Sahtu Region (40.8%) and the territorial population as a whole (34.7%). About 1/5 of Délı̄ne's residents (21.5%) have a 'somewhat strong' sense of community and less than 1/25 of the community's residents (3.6%) feel a 'somewhat weak' or 'very weak' sense of community belonging. These rates are lower than either the regional or territorial level. In summary, the residents of Délı̄ne have, overall, a very strong sense of community belonging.

Table 194: Sense of Community Belonging in Délı̄ne, Sahtu Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Délı̄ne	71.0	21.5	3.6
Sahtu	40.8	44.9	10.3
Northwest Territories	34.7	43.8	13.0

Source: Northwest Territories Bureau of Statistics. (2014b).

5.5.2.2.5 Social Pressures

Crime

Table 195 details the types and rates of crime reported in the community of Délı̄ne in selected years between 2004 and 2021. According to available statistics, the overall number of reported crimes increased from 2004 to 2021 with an 80% increase during this period. In three of these five types of crime incidents ('property crimes', 'other criminal code' and 'traffic'), the number of incidents followed a similar pattern of increase between 2004 to 2021 (or 2019). However, for two types of crime ('crimes of violence' and 'federal statutes'), the number of incidents in 2021 was less than in 2004.

³⁰¹ Northwest Territories Bureau of Statistics. (2014b). Sense of Community Belonging.

Table 195: Number of Crimes Reported in Délı̄ne, 2004 - 2021

	2004	2009	2014	2019	2021
All Incidents	238	240	256	411	430
Crimes of Violence	93	58	65	116	86
Property Crimes	98	122	119	146	225
Other Criminal Code	31	43	50	89	60
Traffic	8	14	10	57	58
Federal Statutes	8	3	12	3	1

Source: NWT Bureau of Statistics. (2019d).; Statistics Canada. (2022).

Table 196 compares how Délı̄ne residents perceive their community in terms of crime in 2019, along with crime level perceptions at the RAA, regional and territorial levels³⁰². Nearly 2/3 of Délı̄ne residents (over 62%) believe that their community has a lower crime rate than other communities in the territory. This is higher than in the RAA (40.2%), the Sahtu Region (54.7%) and the NWT residents as a whole (34.6%). A very small proportion of Délı̄ne residents (4.8%) think that their community has higher crime rates: this is lower than at the RAA, regional and territorial levels. About 1/3 of Délı̄ne residents (32.1%) think that their community has about the same crime rate as other communities: this is less than the territorial level (43.4%) and RAA (41.0%), but higher than the regional level (30.4%) perceptions.

Table 196: Perceived Crime, Délı̄ne, RAA, Sahtu Region and NWT, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Délı̄ne	4.8%	32.1%	62.5%
Regional Assessment Area	15.8%	41.0%	40.2%
Sahtu	12.9%	30.4%	54.7%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Teen Pregnancies

In the years from 2008 to 2017, the community of Délı̄ne had a total of seven teen births. Most years had either one or no teen births, while 2008 had three teen births. There is no clearly observable trend in teen births in the community, although there seems to be a general decrease over the ten-year period covered in the statistics³⁰³.

³⁰² NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

³⁰³ NWT Bureau of Statistics. (2020k). Délı̄ne Statistical Profile.

5.5.2.2.6 Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018³⁰⁴, of the 168 households in the community of Délı̄ne, 81 households (48.4% of total households) stated that they worry about not having enough money for food; of these, 23 households (or 13.9% of total households) stated that they are “often” worried, and 58 households (or 34.4% of total households) stated that they are “sometimes” worried. These rates are higher than both the regional level and the territorial level, as detailed in **Table 197**. Data are not available for other years.

Table 197: Households “Worried Not Enough Money for Food” in Délı̄ne, Sahtu Region and NWT, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Délı̄ne	168	81	48.4%	23	13.9%	58	34.4%
Sahtu	816	255	31.2%	56	6.9%	199	24.4%
Northwest Territories	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018a).

5.5.2.2.7 Drinking Water Quality

In both 2015 and 2016, 100% of Délı̄ne’s treated water bacteria tests were compliant³⁰⁵.

5.5.2.3 Colville Lake

5.5.2.3.1 Population Composition and Migration

Population Trends

Table 198 provides the total population in the community of Colville Lake in selected years between 2002 and 2022 and the community as a percentage of the Sahtu Region’s population and NWT population, as well as the ethnic components of the community during the same period. According to the NWT Bureau of Statistics, the population within the community of Colville Lake varied between 116 persons (in 2002) to 161 persons (in 2022), with a general trend of increasing population during the 20-year period. Colville Lake’s population represented 4.6% of the total Sahtu Region’s population in 2002 and approximately 6.0% of the total Sahtu Region’s population in 2022, showing that the community’s population grew faster than the region during this period. For the territory as a whole, the community’s population has varied between 0.28% and 0.36% of the NWT total between 2002 and 2022, with no particular trend but a general proportional increase over the 20-year period.

Throughout the period from 2002 – 2022, Colville Lake’s Indigenous population varied between 100% (in 2002, 2007 and 2017) and 90% (in 2022). There is no trend regarding the proportion of Indigenous population in the community during this 20-year period.

³⁰⁴ NWT Bureau of Statistics. (2018a). *Households Worried Not Enough Money for Food, Northwest Territories, 2018*.

³⁰⁵ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

Table 198: Colville Lake Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	116	133	155	131	161
Indigenous Population	116	133	142	131	145
Non-Indigenous Population	0	0	13	0	16
Total Regional (Sahtu) Population	2,522	2,583	2,451	2,624	2,669
Community as % of Regional Population	4.6%	5.1%	6.3%	5.0%	6.0%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	0.28%	0.31%	0.36%	0.29%	0.35%

Source: NWT Bureau of Statistics. (2023a, 2023b).

*Note: NWT statistics does not include population numbers that are less than 10.

Demographics

Table 199 breaks down the population of Colville Lake by age group in selected years between 2007 and 2022. According to available statistics, the population has been gradually aging, that is, the proportion of population over 15 years of age has increased over the past 15 years, while the proportion of the population under 15 years of age has been decreasing. The most dramatic population reductions were for age groups 0 - 4 years (reduced by 33%) and 10 – 14 years (reduced by 27%), while the most significant population increases were for the age group 15 - 24 (increased by 58%) and 45 – 59 (increased by 78%). Although the general trend has been for the population to increase in age over time, during the 2007 – 2022 period, the age group 60+ decreased slightly (from 11% of the community's total population to 8% of the total).

Table 199: Colville Lake Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	% Total	#	% Total	#	% Total	#	% Total
Total Community Population	141*	--	155*	--	126*	--	161*	--
0 to 4	26	18%	16	10%	16	13%	19	12%
5 to 9	18	13%	24	15%	13	10%	17	11%
10 to 14	15	11%	21	14%	18	14%	13	8%
15 to 24	17	12%	25	16%	29	23%	31	19%
25 to 44	36	26%	29	19%	30	24%	43	27%
45 to 59	13	9%	24	9%	20	16%	25	16%
60+	16	11%	16	10%	--	--	13	8%

Source: NWT Bureau of Statistics. (2023a, 2023c).

Note: NWT statistics does not include population numbers that are less than 10.

* Calculated as sum of age groups

5.5.2.3.2 Population HealthSelf-Perceived Health

Table 200 compares self-perceived physical health in the community of Colville Lake in 2019, along with self-perceived health aggregated at the regional and territorial levels³⁰⁶. In general, many fewer Colville Lake residents perceive their physical health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “very good” self-perceived physical health status, the community was less than the region by nearly 10 percentage points and the territory by over 14 percentage points. No community-level data were available regarding “excellent” physical health. No comparable data for other years were available.

Table 200: Self-Perceived Physical Health, Colville Lake, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Colville Lake	25.0%	N/A	19.4%
Sahtu	43.5%	14.3%	29.2%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

Mental Health and Well-Being

The self-perceived mental health in the community of Colville Lake in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 201**³⁰⁷. Proportionately, more Colville Lake residents perceive their mental health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “very good” mental health, the community exceeds the region by about 5 percentage points and territory by about 6 percentage points; however, in terms of “excellent” self-perceived mental health status, Colville Lake was less than the region by about 3 percentage points and the territory by less than 1 percentage point. No comparable data for other years were available.

Table 201: Self-Perceived Mental Health, Colville Lake, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Colville Lake	58.3%	19.4%	38.9%
Sahtu	55.3%	22.3%	33.0%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

³⁰⁶ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

³⁰⁷ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Health and Wellness Plan

The community of Colville Lake (Behdzi Ahda First Nation) produced a wellness plan in 2018, which was based on based on community feedback³⁰⁸. It identified the following priority areas:

- Strengthening culture and tradition,
- The Early Years,
- Healthy Eating,
- School Nutrition Program,
- Healthy living,
- Youth,
- Elders,
- Mental Wellness, and
- Building economy on the community's strengths.

5.5.2.3.3 Social Determinants of Health³⁰⁹

Income Assistance Cases

Table 202 provides the monthly average number of income assistance cases in the community of Colville Lake between 2015 and 2022. According to available statistics, the community's monthly income assistance cases have varied between a low of 3 (in 2015) and a high of 13 (in 2020), with an average during this period of 6.6 cases. In terms of trends, the number of cases in the community generally increased from 2015-2022, with the number of monthly cases in 2022 triple the number in 2015. A similar pattern occurred in Sahtu Region, with the number of monthly cases peaking in 2020 and the number of monthly cases in 2022 being more than in 2015. When compared to the number of monthly income assistance cases in Sahtu Region, Colville Lake's proportion varied between 2.9% and 8.7%, with no general pattern but the proportion being below 5% of the regional total in the years from 2015-2019 and above 5% from 2020-2022. Similarly, in comparison with the number of monthly income assistance cases in the NWT, Colville Lake has varied between 0.18% to 0.57% of the territory total, with the community proportion being at or below 0.31% in the period of 2015-2019 and at or above 0.45% in the years 2020-2022.

Table 202: Monthly Income Assistance Cases, Colville Lake, Sahtu Region and NWT, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022
Colville Lake	3	4	6	5	6	13	7	9
Sahtu	102	108	106	128	123	149	85	116
% Sahtu	2.9%	3.7%	5.7%	3.9%	4.9%	8.7%	8.2%	7.8%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	0.18%	0.23%	0.31%	0.24%	0.28%	0.57%	0.45%	0.49%

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

³⁰⁸ Behdzi Ahda First Nation. (2018). *Colville Lake Wellness Plan*.

³⁰⁹ Due to its small population, statistical data on persons in low income and single parent families are not available for the community of Colville Lake.

5.5.2.3.4 Community, Family and Social TiesSatisfaction with Community

Table 203 provides a break-down of components of community satisfaction in Colville Lake in 2019, along with community satisfaction aggregated at the regional and territorial levels³¹⁰. Based on the percentage of “satisfied” residents, Colville Lake residents seem to be more satisfied with the cost of living in their community than either Sahtu Region residents in general or NWT residents in general. The same is true for ‘satisfied’ with ‘sense of belonging’ – although the percentage of community members who are ‘very satisfied’ with sense of belonging is less than either the regional or territorial percentages. Regarding ‘employment opportunities’, ‘variety of community & recreational activities’ and ‘access to social services’, Colville Lake households are less satisfied than either the Sahtu Region or NWT percentages. It is important to note, however, that with only 36 households in the community of Colville Lake, the data are sparse, especially for any category in which less than 10 households responded (which is ‘very satisfied’ in most categories).

Table 203: % of Households Satisfied with Community, Colville Lake, Sahtu Region and NWT, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Colville Lake	-*	29.0%	-*	22.6%	-*	19.4%	-*	22.6%	22.6%	64.5%
Sahtu	1.0%	22.3%	4.7%	31.9%	7.1%	53.5%	2.5%	47.0%	37.9%	48.1%
Northwest Territories	1.8%	19.9%	9.6%	41.9%	14.3%	48.3%	5.8%	42.5%	21.8%	53.2%

Source: NWT Bureau of Statistics. (2019e). Satisfaction with Community, by Community, Northwest Territories, 2019.

*Note: NWT statistics does not include numbers that are less than 10.

Community Belonging

Table 204 provides a break-down of the sense of community belonging in Colville Lake, the Sahtu Region and NWT in 2014³¹¹. The people of Colville Lake have a very strong sense of community belonging (47.4%) when compared to either the Sahtu Region (40.8%) and the territorial population as a whole (34.7%). About 2/5 of Colville Lake’s residents (40.3%) have a ‘somewhat strong’ sense of community and less than 1/10 of the community’s residents (9.9%) feel a ‘somewhat weak’ or ‘very weak’ sense of community belonging. These rates are lower than either the regional or territorial level. In summary, the residents of Colville Lake have, overall, a very strong sense of community belonging.

Table 204: Sense of Community Belonging in Colville Lake, Sahtu Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Colville Lake	47.4	40.3	9.9
Sahtu	40.8	44.9	10.3
Northwest Territories	34.7	43.8	13.0

Source: NWT Bureau of Statistics. (2014b).

³¹⁰ NWT Bureau of Statistics. (2019e). Satisfaction with Community, by Community, Northwest Territories, 2019.

³¹¹ NWT Bureau of Statistics. (2014b). Sense of Community Belonging.

5.5.2.3.5 Social Pressures

Crime

There are no crime statistics available for the community of Colville Lake.

Table 205 compares how Colville Lake residents perceive their community in terms of crime in 2019, along with crime level perceptions at the RAA, regional and territorial levels³¹². A little more than half of Colville Lake residents (55.6%) believe that their community has a lower crime rate than other communities in the territory. This is higher than in the RAA (40.2%), the Sahtu Region (54.7%) and NWT residents as a whole (34.6%). About 1/3 of Colville Lake residents (36.1%) think that their community has the same rates of crime as other communities; this is more than the regional level (30.4%) but is less than either the Regional Assessment Area and NWT resident perceptions (41.0% and 43.4%, respectively). There are no data on what proportion of Colville Lake residents think that their community has higher rates of crime as other communities.

Table 205: Perceived Crime, Colville Lake, RAA, Sahtu Region and NWT, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Colville Lake	N/A	36.1%	55.6%
Regional Assessment Area	15.8%	41.0%	40.2%
Sahtu	12.9%	30.4%	54.7%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Community members have been telling the local RCMP about drug dealers who use the winter road: this has led to drug and alcohol use in the community (including Fetal Alcohol Spectrum Disorder) and the presence of bootleggers in the community³¹³.

Teen Pregnancies

In the years from 2008 to 2017, the community of Colville Lake had a total of 2 teen births: one in 2013 and one in 2014. There is no observable trend in teen births in this community³¹⁴.

5.5.2.3.6 Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018³¹⁵, of the 36 households in the community of Colville Lake, 14 households (38.7% of total households) stated that they worry about not having enough money for food; of these, 3 households (or 9.7% of total households) stated that they are “often” worried, and 10 households (or 29.0% of total households) stated that they are “sometimes” worried. These rates are higher than both the regional level and the territorial level, as detailed in **Table 206**. Data are not available for other years.

³¹² NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

³¹³ Interview with community members.

³¹⁴ NWT Bureau of Statistics. (2020i). Colville Lake – Statistical Profile.

³¹⁵ NWT Bureau of Statistics. (2018a). Households Worried Not Enough Money for Food, Northwest Territories, 2018.

Table 206: Households “Worried Not Enough Money for Food” in Colville Lake, Sahtu Region and NWT, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Colville Lake	36	14	38.7%	3	9.7%	10	29.0%
Sahtu	816	255	31.2%	56	6.9%	199	24.4%
Northwest Territories	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018a).

5.5.2.3.7 Drinking Water Quality

In 2015, 2% of Colville Lake’s treated water bacteria tests were compliant; in 2016, 13% of its treated water bacteria tests were compliant and the community was under a Boil Water Advisory³¹⁶.

5.5.2.4 Fort Good Hope

5.5.2.4.1 Population Composition and Migration

Population Trends

Table 207 provides the total population in the community of Fort Good Hope in selected years between 2002 and 2022 and the community as a percentage of the Sahtu Region’s population and NWT population, as well as the ethnic components of the community during the same period. According to the NWT Bureau of Statistics, the population of Fort Good Hope fluctuated between 537 persons (in 2012) and 628 persons (in 2022), with a trend of reducing population between 2002-2012 and increasing population between 2012 and 2022. Fort Good Hope’s population represented 23.8% of the total Sahtu Region’s population in 2002 and 23.5% of the regional population in 2022 (both the regional population and the community’s population increased overall during this period). The community’s population reduced from 1.44% of the total territorial population in 2002 to 1.23% of the total in 2012, and then increased to 1.38% of the territorial population by 2022.

Fort Good Hope is primarily an Indigenous community: its non-Indigenous population has varied from as few as 38 persons (or 7% of the total population) in 2007 to as many as 56 (or 10% of the total population) in 2017. The overall ethnic population trend over the 2002-2022 period has been an increase in non-Indigenous proportion of the population.

Table 207: Fort Good Hope Population Estimates Including Ethnic Group, 2002-2022

	2002	2007	2012	2017	2022
Total Community Population	600	566	537	570	628
Indigenous Population	554	528	483	514	576
Non-Indigenous Population	46	38	54	56	52
Total Regional (Sahtu) Population	2,522	2,583	2,451	2,624	2,669
Community as % of Regional Population	23.8%	21.9%	21.9%	21.7%	23.5%
Total NWT Population	41,699	43,372	43,648	44,891	45,605
Community as % of NWT Population	1.44%	1.30%	1.23%	1.27%	1.38%

Source: NWT Bureau of Statistics. (2023a, 2023b).

³¹⁶ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

Demographics

Table 208 breaks down the population of Fort Good Hope by age group in selected years between 2007 and 2022. According to available statistics, the population has been gradually aging; that is, the proportion of population over 25 years of age has increased over the past 20 years, while the population under 25 years of age has been, in general, decreasing. The most dramatic population reduction was for age group 15 – 24 years (reduced by 36%), while the most significant population increase was for the age group 25 – 44 years (increased by 21%). The community's age group 60+ was the same (14%) in 2007 and 2022.

Table 208: Fort Good Hope Population by Age Group, 2007-2022

	2007		2012		2017		2022	
	#	% Total	#	% Total	#	% Total	#	% Total
Total Community Population	566*	--	537*	--	570*	--	628*	--
0 to 4	45	8%	41	8%	47	8%	46	7%
5 to 9	40	7%	39	7%	43	8%	45	7%
10 to 14	40	7%	35	7%	44	8%	44	7%
15 to 24	123	22%	98	18%	86	15%	85	14%
25 to 44	158	28%	159	30%	177	31%	216	34%
45 to 59	83	15%	76	14%	100	18%	107	17%
60+	77	14%	89	17%	73	13%	85	14%

Source: NWT Bureau of Statistics. (2023a, 2023c).

*Note: Calculated as sum of age groups

5.5.2.4.2 Population Health

Self-Perceived Health

Table 209 compares self-perceived physical health in the community of Fort Good Hope in 2019, along with self-perceived health aggregated at the regional and territorial levels³¹⁷. In general, proportionately fewer Fort Good Hope residents perceive their physical health as either “very good” or “excellent” than either residents across the Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” physical health, the community exceeds the region and territory by about 2 percentage points; while in terms of “very good” self-perceived physical health status, the community is less than the Territory by about 11 percentage points and the region by over 7 percentage points. No comparable data for other years were available.

Table 209: Self-Perceived Physical Health, Fort Good Hope, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Physical Health	% with Excellent Physical Health	% with Very Good Physical Health
Fort Good Hope	38.2%	16.2%	22.0%
Sahtu	43.5%	14.3%	29.2%
Northwest Territories	48.3%	14.7%	33.6%

Source: NWT Bureau of Statistics. (2021a).

³¹⁷ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Mental Health and Well-Being

Self-perceived mental health in the community of Fort Good Hope in 2019 is compared with self-perceived mental health at the regional and territorial levels in **Table 210**³¹⁸. More Fort Good Hope residents perceive their mental health as either “very good” or “excellent” than either Sahtu Region as a whole or the NWT as a whole. In terms of “excellent” mental health, the community exceeds the region by about 6 percentage points and territory by about 8 percentage points; however, in terms of “very good” self-perceived mental health status, Fort Good Hope is almost the same as the territory and is less than the region by 0.6 percentage points. No comparable data for other years were available.

Table 210: Self-Perceived Mental Health, Fort Good Hope, Sahtu Region and NWT, 2019

	% with Excellent or Very Good Mental Health	% with Excellent Mental Health	% with Very Good Mental Health
Fort Good Hope	60.7%	28.3%	32.4%
Sahtu	55.3%	22.3%	33.0%
Northwest Territories	52.4%	20.2%	32.2%

Source: NWT Bureau of Statistics. (2021a).

Health and Wellness Plan

The community of Fort Good Hope (K’asho Got’ine Charter Community) created its community wellness plan in 2018, which was based on community feedback³¹⁹. It covers the issues of:

- Alcohol/substance abuse/bootlegging,
- Domestic violence,
- Suicide,
- Support for caregivers and escorts,
- Poor living conditions due to lack of employment,
- Poor Education and low attendance rates,
- Criticism,
- Homelessness,
- No youth counselor, and
- No youth council or support group.

5.5.2.4.3 Social Determinants of Health

Persons in Low Income

Table 211 compares the number of persons in low income (and percentage of the total population who are in low income) in the community of Fort Good Hope in the years 2015 to 2019, along with persons in low income at the RAA, regional and territorial levels³²⁰. In 2017 and 2019, Fort Good Hope had a higher proportion of its population identified as low income than at the Regional Assessment Area, Sahtu Region and NWT levels. But in other years (2015, 2016 and 2018), Fort Good Hope’s proportion of its population in low income was less than the Regional Assessment Area, but less than the NWT level. In terms of trends, all levels being compared had their highest level of low-income population in 2017; and all levels had their smallest low-income population in 2015 and/or 2016.

³¹⁸ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

³¹⁹ K’asho Got’ine Charter Community. (2018). Refreshing the Community Wellness Plan.

³²⁰ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Table 211: Persons in Low Income, Fort Good Hope, RAA, Sahtu Region and NWT, 2016-2020

	2016	2017	2018	2019	2020
Fort Good Hope	110 (20.8%)	170 (30.4%)	120(22.6%)	160 (29.6%)	80 (16.3%)
Regional Assessment Area	750 (21.9%)	780 (24.2%)	790 (23.6%)	780 (23.8%)	350 (15.2%)
Sahtu	460 (20.5%)	530 (23.5%)	470 (20.8%)	500 (22.2%)	310 (14.3%)
Northwest Territories	7,720 (18.3%)	8,080 (19.0%)	7,780 (18.3%)	7,910 (18.5%)	7,910 (18.5%)

Source: NWT Bureau of Statistics. (2021a).

Income Assistance Cases

Table 212 provides the monthly average number of income assistance cases in the community of Fort Good Hope between 2015 and 2022. According to available statistics, the community's monthly income assistance cases has varied between a low of 21 (in 2021) and a high of 35 (in 2020), with an average during this period of 26.0 cases. The number of cases in the community has no particular trend from 2015-2022 other than a peak in 2020, and the number of monthly cases in 2022 (25) is only slightly higher than the number in 2015 (23). A similar pattern occurred in Sahtu Region. When compared to the number of monthly income assistance cases in Sahtu Region, Fort Good Hope's proportion has varied between 20.8% and 24.7%, with no clear pattern. In comparison with the number of monthly income assistance cases in the NWT, Fort Good Hope has varied between 1.14% to 1.55% of the territory total, with no clear pattern.

Table 212: Monthly Income Assistance Cases, Fort Good Hope, Sahtu Region and NWT, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022
Fort Good Hope	23	26	22	29	27	35	21	25
Sahtu	102	108	106	128	123	149	85	116
% Sahtu	22.5%	24.1%	20.8%	22.7%	22.0%	23.5%	24.7%	21.6%
NWT	1,648	1,748	1,925	2,097	2,115	2,261	1,564	1,849
% NWT	1.40%	1.49%	1.14%	1.38%	1.28%	1.55%	1.34%	1.35%

Sources: Government of the Northwest Territories Department of Education Culture & Employment. (2022, 2023).

Lone Parent Families

Table 213 compares the number of lone parent families in the community of Fort Good Hope in the years 2016 to 2021, along with lone parent families at the RAA, regional and territorial levels³²¹. In most years, Fort Good Hope's proportion of lone parent families (between 30.8% and 35.7% of total) is less than the Sahtu Region (31.0% - 36.7%) but more than the NWT (23.1% - 25.7%), while the RAA had a proportion slightly higher than the community in 2017 and 2018, but slightly lower proportion in 2016, 2019 and 2021. There has been a general trend of increased lone parent families at all levels compared, with each having their lowest proportion of lone parent families in either 2016 or 2017 and the highest proportion of lone parent families in either 2019 or 2021.

³²¹ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Table 213: Lone Parent Families, Fort Good Hope, RAA, Sahtu Region and NWT, 2016-2021

	2016	2017	2018	2019	2021
Fort Good Hope	50 (33.3%)	40 (30.8%)	40 (30.8%)	50 (35.7%)	40 (33.3%)
Regional Assessment Area	110 (31.4%)	120 (31.6%)	120 (31.6%)	120 (32.4%)	200 (32.8%)
Sahtu Region	190 (31.7%)	180 (31.0%)	190 (32.8%)	220 (36.7%)	200 (35.7%)
NWT	2,620 (23.1%)	2,710 (23.7%)	2,820 (24.6%)	2,920 (25.6%)	2,910 (25.7%)

Sources: NWT Bureau of Statistics. (2021a)., Statistics Canada. (2022).

5.5.2.4.4 Community, Family and Social Ties

Satisfaction with Community

Table 214 provides a break-down of components of community satisfaction Fort Good Hope in 2019, along with community satisfaction aggregated at the regional and territorial levels³²². Based on the percentage of “satisfied” and “very satisfied” residents, Fort Good Hope residents seem to be more satisfied with two components of their community than either Sahtu Region residents in general or NWT residents in general: ‘access to social services’ and ‘sense of belonging’. However, Fort Good Hope residents are less satisfied than Sahtu Region residents in general and NWT residents in general in the three satisfaction components of ‘cost of living’, ‘employment opportunities’, and ‘variety of community & recreational activities’.

Table 214: % of Households Satisfied with Community, Fort Good Hope, Sahtu Region and NWT, 2019

	Cost of Living		Employment Opportunities		Variety of Community & Recreational Activities		Access to Social Services		Sense of Belonging	
	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied
Fort Good Hope	-*	13.1%	-*	6.6%	2.9%	19.4%	-*	51.8%	39.4%	50.4%
Sahtu	1.0%	22.3%	4.7%	31.9%	7.1%	53.5%	2.5%	47.0%	37.9%	48.1%
Northwest Territories	1.8%	19.9%	9.6%	41.9%	14.3%	48.3%	5.8%	42.5%	21.8%	53.2%

Source: NWT Bureau of Statistics. (2019e).

Community Belonging

Table 215 provides a break-down of the sense of community belonging in Fort Good Hope, the Sahtu Region and NWT in 2014³²³. The people of Fort Good Hope have a lesser proportion of people indicating they have a ‘very strong’ sense of community belonging (31.4%) than either the Sahtu Region (40.8%) or the territorial population as a whole (34.7%). Similarly, proportionately fewer of Fort Good Hope’s residents (41.1%) have a ‘somewhat strong’ sense of community compared to the region and NWT; while a relatively large proportion of the community’s residents (17.1%) feel a ‘somewhat weak’ or ‘very weak’ sense of community belonging compared to Sahtu Region (10.3%) and the NWT (13.0%). In summary, the residents of Fort Good Hope have, overall, a weak sense of community belonging.

³²² NWT Bureau of Statistics. (2019e). *Satisfaction with Community, by Community, Northwest Territories, 2019*.

³²³ NWT Bureau of Statistics. (2014b). *Sense of Community Belonging*.

Table 215: Sense of Community Belonging in Fort Good Hope, Sahtu Region and NWT, 2014

	Very Strong (%)	Somewhat Strong (%)	Somewhat Weak / Very Weak (%)
Fort Good Hope	31.4	41.1	17.1
Sahtu	40.8	44.9	10.3
Northwest Territories	34.7	43.8	13.0

Source: Northwest Territories Bureau of Statistics. (2014b).

5.5.2.4.5 Social Pressures

Crime

Table 216 details the types and rates of crime reported in the community of Fort Good Hope in selected years between 2004 and 2021. According to available statistics, the overall reported number of crimes had a peak number of reported crimes in 2009 and a lowest number of crimes in 2019, with a number in 2021 close to the number in 2004. A similar pattern exists 'property crimes' and 'other criminal code' crimes. 'Crimes of violence' and 'traffic' crimes have a different pattern, in which both had 2019 as the peak year for number of crimes and a general upward trend of crime numbers. 'Federal statutes' was the only category of crimes in Fort Good Hope that showed a dramatic and fairly consistent reduction in the number of crimes from 2004 to 2021.

Table 216: Number of Crimes Reported in Fort Good Hope, 2004 - 2022

	2004	2009	2014	2019	2021
All Incidents	597	683	669	542	576
Crimes of Violence	123	107	118	134	126
Property Crimes	260	381	389	244	295
Other Criminal Code	120	150	126	108	109
Traffic	29	38	25	49	42
Federal Statutes	65	7	11	7	4

Source: NWT Bureau of Statistics. (2019d).; Statistics Canada. (2022).

Table 217 compares how Fort Good Hope residents perceive their community in terms of crime in 2019, along with crime level perceptions at the RAA, regional and territorial levels³²⁴. Only about 14% of Fort Good Hope residents believe that their community has a lower crime rate than other communities in the territory. This is much lower than in the RAA (40.2%), the Sahtu Region (54.7%) and the NWT residents as a whole (34.6%). Nearly 2/5 of Fort Good Hope residents (38.7%) think that their community has higher crime rates than other communities: this level is much higher than at the RAA, Sahtu Region and NWT resident perceptions (which range between 15.8% to 20.6%). The largest proportion of Fort Good Hope residents (46.2%) think that their community has the same crime rate as other communities: this is about 3 percentage points higher than the territorial level, about 5 percentage points higher than the RAA, and about 16 percentage points higher than the regional level. In summary, more Fort Good Hope residents believe that their community's crime rate is the same as, or greater than, other communities, when compared to the other jurisdictions.

³²⁴ NWT Bureau of Statistics. (2021a). Customized selection of individual and community Statistics developed upon request.

Table 217: Perceived Crime, Fort Good Hope, 2019

	Think Crime is Higher Than Other Communities	Think Crime is About the Same as Other Communities	Think Crime is Lower than Other Communities
Fort Good Hope	38.7%	46.2%	13.9%
Regional Assessment Area	15.8%	41.0%	40.2%
Sahtu	12.9%	30.4%	54.7%
Northwest Territories	20.6%	43.4%	34.6%

Source: NWT Bureau of Statistics. (2021a).

Teen Pregnancies

In the years from 2008 to 2017, the community of Fort Good Hope had a total of 10 teen births. Most years had either one or two teen births; while 2008, 2009 and 2017 had no teen births. There is no observable trend in teen births: over time the rate does not seem to be either increasing or decreasing³²⁵.

5.5.2.4.6 Food Insecurity

Based on the information provided by the NWT Bureau of Statistics regarding food security in 2018³²⁶, of the 173 households in the community of Fort Good Hope, 71 households (40.9% of total households) stated that they worry about not having enough money for food; of these, 14 households (or 8.0% of total households) stated that they are “often” worried, and 57 households (or 32.8% of total households) stated that they are “sometimes” worried. These rates are higher than both the regional level and the territorial level, as detailed in **Table 218**. Data are not available for other years.

Table 218: Households “Worried Not Enough Money for Food” in Fort Good Hope, 2018

	Total No. of Households	Worried: Yes	% of Total	Worried: Often	% of Total	Worried: Sometimes	% of Total
Fort Simpson	173	71	40.9%	14	8.0%	57	32.8%
Sahtu	816	255	31.2%	56	6.9%	199	24.4%
Northwest Territories	14,760	3,407	23.1%	887	6.0%	2,520	17.1%

Source: NWT Bureau of Statistics. (2018a).

5.5.2.4.7 Drinking Water Quality

The community of Fort Good Hope has a Class I water plant that uses water from the Mackenzie River. It has no certified operator. In 2015, 65% of treated water bacteria tests were compliant; in 2016, 94% of treated water bacteria tests were compliant³²⁷.

³²⁵ NWT Bureau of Statistics. (2020j). *Fort Good Hope – Statistical Profile*.

³²⁶ NWT Bureau of Statistics. (2018a). *Households Worried Not Enough Money for Food, Northwest Territories, 2018*.

³²⁷ Government of Northwest Territories Department of Municipal and Community Affairs. (2016). *Drinking Water Report*.

5.5.3 Northwest Territories

5.5.3.1 Population Health

5.5.3.1.1 Birth Weight

Table 219 compares the birth weight of live births in the NWT and Canada during the period between 1991 and 2019³²⁸. No particular trend over time is apparent regarding baby weight in both the territory and the country. However, there is a consistent pattern in which Canada has a higher proportion of low-birth-weight babies (between 5.5% and 6.7% of live births) than the NWT (which has between 3.3% and 6.1% of live births); while the NWT has a consistently higher proportion of high birth weight babies (between 15.0% and 20.7% of live births) than Canada (which has between 9.2% and 13.6% of live births). For normal birth weight babies, Canada has a consistently higher proportion (80.8% to 84.2% of live births) than the NWT (which has between 75.0% and 79.2% of live births).

Table 219: Birth Weight in the NWT, Selected Years 1991-2019

Weight Category	Jurisdiction	1991	1996	2001	2006	2011	2016	2019
Low Birth Weight Babies (% of Live Births) ³²⁹	NWT	4.3%	5.0%	3.3%	3.8%	4.9%	6.1%	5.9%
	Canada	5.5%	5.7%	5.5%	6.1%	6.1%	6.4%	6.7%
High Birth Weight Babies (% of Live Births) ³³⁰	NWT	16.5%	19.2%	20.7%	17.9%	20.1%	18.1%	15.0%
	Canada	12.2%	12.4%	13.6%	11.6%	10.9%	10.1%	9.2%
Normal Birth Weight Babies (% of Live Births)	NWT	79.2%	75.8%	76.0%	78.3%	75.0%	75.9%	79.2%
	Canada	82.3%	81.8%	80.8%	82.3%	82.9%	83.5%	84.2%

Source: NWT Bureau of Statistics. (2020m).

Infant Mortality

Infant mortality rates in NWT have typically been higher than the national average since 2009, with the exception of the years 2010, 2012, and 2019 (see **Table 220**). The average rate of infant mortality in NWT between 2010 and 2019 is 5.3 deaths per 1000 live births, while the national average over that period is 4.7 deaths per 1000 live births. The most recent data (2019) indicate a significant reduction in the rate experienced in NWT (i.e., of over 80%) when compared to the previous year.

³²⁸ NWT Bureau of Statistics. (2020m). *Birth Weight Northwest Territories, 1981-2019*.

³²⁹ Defined as weighing less than 2,500 grams.

³³⁰ Defined as weighing more than 4,000 grams.

Table 220: Infant Deaths per 1,000 Live Births, Northwest Territories & Canada, 2009 - 2019

Year	Northwest Territories	Canada
2019	1.7	4.4
2018	9.6	4.7
2017	4.9	4.5
2016	6.2	4.5
2015	5.9	4.5
2014	6.0	4.7
2013	7.5	5.0
2012	4.4	4.8
2011	5.8	4.8
2010	1.4	5.0
2009	15.5	4.9

Source: NWT Bureau of Statistics. (2020k).

Smoking

Table 221 provides a break-down of the NWT population who currently smoke, were formerly smokers, and have never smoked cigarettes in the years 2002³³¹, 2006³³² and 2018³³³. Over time, the percentage of the population who currently smoke cigarettes has reduced by more than 12 percentage points (from 45.7% of people over 15 years of age in 2002 to 33.4% in 2018). The proportion of the population who formerly smoked cigarettes (but no longer do) has no clear pattern. The overall trend has been for a reduction in the cigarette smoking population and increase in the non-smoking population in the territory over time.

Table 221: Profile of Cigarette Smokers in NWT, 2002, 2006 & 2018

Year	Population 15 Years and Older	Currently Smoker		Former Smoker		Never Smoked	
	Persons	Persons	% of Total	Persons	% of Total	Persons	% of Total
2002	30,431	13,894	45.7	6,302	20.7	10,236	33.6
2006	31,759	12,971	40.8	7,836	24.7	10,952	34.5
2018	34,338	11,467	33.4	7,395	21.5	15,476	45.1

Sources: NWT Bureau of Statistics. (2002)., NWT Bureau of Statistics. (2006)., NWT Bureau of Statistics. (2018b).

³³¹ NWT Bureau of Statistics. (2002). 2002 NWT Alcohol Drug Survey.

³³² NWT Bureau of Statistics. (2006). 2006 NWT Addictions Survey.

³³³ NWT Bureau of Statistics. (2018b). 2018 Addictions Survey Profiles.

Physical Activity

Table 222 compares the proportion of the population in the NWT and Canada who are physically inactive in years between 2001-2014³³⁴. During this period, the NWT's physically inactive population varied between 42.3% and 54.9% of the total population aged 15 years and older; while Canada's physically inactive population had a similar, but smaller range between 44.5% and 50.4% of the total population aged 15 years and older. Of the 11 years recorded, the GNWT had a rate of physical inactivity that was greater than the national figure in 5 years, and a rate that was less than the national figure in 6 years. The difference between the NWT and Canada in a particular year has varied from 3.5 percentage points less than the national figure and 5.8 percentage points greater than the national figure. At both the territorial and national levels, there has been a general trend of lower inactivity rates from 2010 onward when compared to rates before 2010.

Table 222: % of Population 15 Years and Older Who Are Physically Inactive in NWT and Canada, 2001-2014

	2001	2003	2005	2007	2008	2009	2010	2011	2012	2013	2014
NWT	50.2	46.7	50.5	50.8	54.9	50.7	46.3	49.3	42.3	42.6	43.7
Canada	50.4	48.0	47.9	49.4	49.1	47.2	47.5	45.8	45.8	44.5	45.9

Source: NWT Bureau of Statistics. (2014a).

5.5.3.2 Social Determinants of Health

5.5.3.2.1 Hourly Wage Distribution of Employed Persons

On average, hourly wages are higher in Yellowknife than across the rest of the Territory. For example, **Table 223** indicates that although relatively few workers in NWT earned less than \$13.50/hour between 2013 and 2019; the majority of those workers were located outside of Yellowknife. The majority of workers in all regions have been earning more than \$30/hour since 2013, with a greater proportion of workers in Yellowknife in this category than is the case in the rest of the Territory.

³³⁴ NWT Bureau of Statistics. (2014a). *Health Behaviour Indicators*.

Table 223: Hourly Wage Distribution of Employed Persons by Regions, NWT, 2013 - 2019

	Total Employees (#)	% Earning between \$10.00 - \$12.49	% Earning between \$12.50 - \$13.49	% Earning between \$13.50 - \$15.99	% Earning between \$16.00 - \$19.99	% Earning between \$20.00 -\$29.99	% Earning over \$30.00
NWT 2019	19,800	--	1.5	5.1	9.1	22.7	60.6
2018	20,100	--	2.0	4.5	9.0	23.4	60.2
2017	19,700	1.0	2.0	5.1	8.1	26	57.9
2016	21,100	1.4	1.9	5.7	8.5	4	55.0
2015	20,300	2.0	2.0	6.4	10.8	26.5	54.7
2014	20,100	2.5	1.5	6.5	9.5	24.1	53.2
2013	21,400	3.3	0.9	7.0	7.5	26.9	51.4
Yellowknife 2019	11,300	--	--	5.3	7.1	21.2	62.8
2018	11,000	--	--	4.5	7.3	22.7	62.7
2017	10,600	--	--	5.7	7.5	25.5	58.5
2016	11,200	--	--	8.0	7.1	25.0	57.1
2015	11,200	--	--	8.0	9.8	21.4	58.9
2014	11,500	1.7	1.7	7.0	10.4	23.5	55.7
2013	12,200	2.5	--	9.0	7.4	27.0	53.3
Rest of Territory 2019	8,500	--	--	4.7	10.6	24.7	57.6
2018	9,100	--	2.2	4.4	11.0	24.2	58.2
2017	9,100	--	2.2	4.4	8.8	27.5	56.0
2016	9,900	2.0	3.0	4.0	10.1	28.3	53.5
2015	9,100	3.3	2.2	5.5	12.1	27.5	49.5
2014	8,600	3.5	2.3	5.8	8.1	31.4	50.0
2013	9,200	3.3	--	4.3	7.6	33.7	51.1

Source: NWT Bureau of Statistics. (2020).

5.5.3.2.2 Minimum Wage

The current minimum wage in NWT (\$13.46/hour) falls roughly in the middle of the minimum wage rates established in all provinces and territories (see **Table 224**). NWT has the second highest average hourly wage rate in the country, at \$34.54/hour, which is slightly lower than Nunavut and 17% higher than the next closest jurisdiction (at \$29.48/hour).

Table 224: Minimum Wage as a Percentage of Average Hourly Wage, Provinces and Territories, 2021

Jurisdiction	Average Hourly Wage (\$)	Minimum Wage (\$)	Minimum Wage (%)
Newfoundland & Labrador	\$26.93	\$12.50	46%
Prince Edward Island	\$22.80	\$13.00	57%
Nova Scotia	\$23.82	\$12.95	54%
New Brunswick	\$24.15	\$11.75	49%
Quebec	\$26.60	\$13.50	51%
Ontario	\$26.20	\$14.25	54%
Manitoba	\$24.74	\$11.90	48%
Saskatchewan	\$26.79	\$11.45	43%
Alberta	\$27.78	\$15.00	54%
British Columbia	\$27.01	\$15.20	56%
Yukon	\$29.48	\$13.85	47%
Northwest Territories	\$34.54	\$13.46	39%
Nunavut	\$35.96	\$16.00	45%

Source: NWT Bureau of Statistics. (2021c).

Note: Minimum wage rates are current as of June 23, 2021; Average hourly wage are for employees paid by the hour excluding overtime

5.5.3.2.3 Women and Children Admitted to Shelters

The number of admissions of women and children to shelter facilities in NWT has generally been decreasing since a peak in 2015/16 (see **Table 225**). A significant reduction in admissions occurred in 2020/21 compared to the previous year, with 54% fewer admissions overall. Shelters in the communities of Tuktoyaktuk, Hay River and Inuvik experienced the largest reduction in admissions from previous the previous year (note shelter admissions data are based on shelter location, not community of residence).

Table 225: Women & Children Admitted to Shelters, Northwest Territories, 2007/2008 - 2020/2021

Year	NWT	Inuvik	Tuktoyaktuk	Fort Smith	Hay River	Yellowknife
2020/21	246	29	47	58	37	75
2019/20	538	65	116	88	80	146
2018/19	545	96	140	80	64	165
2017/18	538	99	127	129	42	141
2016/17	565	89	108	156	41	171
2015/16	583	55	93	165	96	174
2014/15	474	46	64	153	67	144
2013/14	487	48	85	145	60	149
2012/13	495	51	66	160	56	162
2011/12	524	92	62	119	86	167
2010/11	497	75	50	88	101	183
2009/10	567	86	45	144	88	204
2008/09	513	97	..	115	89	212
2007/08	409	78	..	94	67	170

Source: NWT Bureau of Statistics. (2021d).

5.5.3.2.4 Children Receiving Social Services from the GNWT

The overall rate of children (aged 18 and under) receiving services in the NWT has remained relatively consistent since 2010, ranging between 81.0 and 86.8 children per 1,000 (see **Table 226**). Both the Sahtu and Dehcho regions had higher rates of children receiving services than the territorial average between 2010 and 2016 (2016 is the most recent year for which data are available). The Sahtu has experienced reductions in the numbers of children receiving services as reported each year since 2012, and in the Dehcho since 2014.

Table 226: Children Receiving Services Per 1,000, Children 18 Years and Under (3-year average), by Region, Northwest Territories, 2007 - 2016

Year	Northwest Territories	Beaufort-Delta	Sahtu	Dehcho	South Slave	Tłı̄chǫ	Yellowknife
2016	83.6	90.3	99.5	114.6	97.8	153.1	53.9
2015	86.8	90.8	107.6	123.7	101.4	142.8	59.1
2014	86.7	89.4	113.9	125.8	98.2	133.2	61.4
2013	82.4	87.9	122.6	125.4	93.2	102.3	59.3
2012	82.1	88.4	134.3	129.8	92.2	101.8	56.1
2011	81.0	85.3	118.4	145.8	96.8	83.0	56.4
2010	82.2	80.2	96.3	149.7	98.0	96.8	60.2
2009	78.5	80.6	73.2	135.9	96.0	88.1	60.0
2008	78.3	86.8	63.4	119.8	92.8	97.0	60.7
2007	78.3	90.2	64.6	107.7	89.3	101.5	61.6

Source: NWT Bureau of Statistics. (2017).

5.5.3.3 Community, Family and Social Ties

5.5.3.3.1 Sense of Community

Table 227 compares the proportion of the population in the NWT and Canada who have a somewhat/very strong sense of community in years between 2003-2014³³⁵. During this period, the NWT had between 71.4% and 78.9% of its population aged 15 years and older stating that they have a 'somewhat strong' or 'very strong' sense of community, while for Canada as a whole this sense of community ranged between 60.7% and 63.7%. The NWT's 'somewhat and very strong' sense of community exceeded that of Canada by 10 – 17 percentage points throughout the 2003-2014 period.

Table 227: Percentage of Population 15 Years and Older with Somewhat or Very Strong Sense of Community Belonging NWT and Canada, 2003-2014

	2003	2005	2007	2008	2009	2010	2011	2012	2013	2014
NWT	76.7%	71.4%	76.5%	77.4%	77.1%	75.0%	78.9%	78.5%	76.9%	78.0%
Canada	60.7%	61.4%	61.2%	61.6%	62.3%	62.7%	61.9%	63.1%	63.1%	63.7%

Source: NWT Bureau of Statistics. (2014b).

5.5.3.4 Social Pressures

5.5.3.4.1 Availability and Use of Drugs and Alcohol

Table 228 provides a break-down of the NWT population who drink alcohol, formerly drank alcohol, and have never drunk alcohol in the years 2002³³⁶, 2006³³⁷ and 2018³³⁸. Over time, the percentage of the population who currently drink alcohol has gradually reduced by 4 percentage points (from 78.0% of people over 15 years of age in 2002 to 74.0% in 2018). During the same time period, the percentage of the population who identify as never having drunk alcohol has more than doubled from 4.3% to 11.0% of people over 15 years of age. However, the proportion of the population who formerly drank alcohol (but no longer do) has reduced from 17.2% to 15.0% of people over age 15 years. The overall trend has been for a reduction in the drinking population and increase in the non-drinking population in the territory over time.

Table 228: Alcohol Drinkers, Former Drinkers and Non-Drinkers in NWT, 2002, 2006 & 2018

Year	Population 15 Years and Older Persons	Currently Drinking		Formerly Drinking		Never Drank	
		Persons	% of Total	Persons	% of Total	Persons	% of Total
2002	30,431	23,748	78.0	5,237	17.2	1,295	4.3
2006	31,759	24,684	77.7	5,300	16.7	1,775	5.6
2018	34,338	25,420	74.0	5,139	15.0	3,605	11.0

Sources: NWT Bureau of Statistics. (2002)., NWT Bureau of Statistics. (2006)., NWT Bureau of Statistics. (2018b).

³³⁵ NWT Bureau of Statistics. (2014b). *Sense of Community Belonging*.

³³⁶ NWT Bureau of Statistics. (2002). *2002 NWT Alcohol Drug Survey*.

³³⁷ NWT Bureau of Statistics. (2006). *2006 NWT Addictions Survey*.

³³⁸ NWT Bureau of Statistics. (2018b). *2018 Addictions Survey Profiles*.

Table 229 provides a break-down of the NWT drinking population who typically consumed five or more alcoholic drinks on one occasion (i.e., heavy drinkers) in the years 2002³³⁹, 2006³⁴⁰ and 2018³⁴¹. Overall, the number of heavy drinkers has increased in the territory from 2002 to 2018, with an increase of 5 percentage points (from 34.1% in 2002 to 39.3% in 2018). This increase in heavy drinking is reflected in the male adult population (increased by 3.5 percentage points), the female adult population (increased by 3.5 percentage points) and in the age groups 25-39 years (increased by 9.5 percentage points) and 40-59 years (increased by 13.8 percentage points). The age groups where heavy drinking reduced over this period was 15-24 years and 60 years plus (both groups reduced by nearly 6 percentage points).

Table 229: Current Drinkers Who Typically Consumed 5 or More Drinks on One Occasion, NWT, 2002, 2006 & 2018

Year	Population 15 Years and Older	Males	Females	Ages 15-24	Ages 25-39	Ages 40-59	Ages 60+
2002	34.1%	41.3%	25.8%	51.3%	32.9%	25.3%	26.3%
2006	36.2%	41.5%	29.5%	52.7%	36.9%	27.7%	22.7%
2018	39.3%	48.9%	29.3%	45.6%	42.4%	39.1%	20.5%

Sources: NWT Bureau of Statistics. (2002)., NWT Bureau of Statistics. (2006)., NWT Bureau of Statistics. (2018b).

Table 230 provides a break-down of the NWT population that have used marijuana in the years 2002³⁴², 2006³⁴³ and 2018³⁴⁴. Over time, the proportion of the territory's population who have used marijuana at sometime in their life has increased by more than 7 percentage points (from 55.7% in 2002 to 63.0% in 2018); and the proportion of the NWT population who have used marijuana in the past 12 months has increased by more than 5 percentage points (from 20.4% in 2002 to 25.8% in 2018).

Table 230: Marijuana Use in NWT, 2002, 2006 & 2018

Year	Population 15 Years and Older	Currently Smoker		Former Smoker		Never Smoked	
		Persons	% of Total	Persons	% of Total	Persons	% of Total
2002	30,431	23,748	78.0	5,237	17.2	1,295	4.3
2006	31,759	24,684	77.7	5,300	16.7	1,775	5.6
2018	34,338	25,420	74.0	5,139	15.0	3,605	11.0

Sources: NWT Bureau of Statistics. (2002)., NWT Bureau of Statistics. (2006)., NWT Bureau of Statistics. (2018b).

³³⁹ NWT Bureau of Statistics. (2002). 2002 NWT Alcohol Drug Survey.

³⁴⁰ NWT Bureau of Statistics. (2006). 2006 NWT Addictions Survey.

³⁴¹ NWT Bureau of Statistics. (2018b). 2018 Addictions Survey Profiles.

³⁴² NWT Bureau of Statistics. (2002). 2002 NWT Alcohol Drug Survey.

³⁴³ NWT Bureau of Statistics. (2006). 2006 NWT Addictions Survey.

³⁴⁴ NWT Bureau of Statistics. (2018b). 2018 Addictions Survey Profiles.

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APPENDIX 10A

Caribou and Moose Technical Data Report

Mackenzie Valley Highway Project Technical Data Report—Caribou and Moose

Prepared for:

Government of the Northwest Territories

Prepared by:

Environmental Dynamics Inc.

Rev2 August 2023

Project No.: 144903025



Limitations and Sign-off

This document entitled Mackenzie Valley Highway Project Technical Data Report—Caribou and Moose was prepared by Environmental Dynamics Inc. ("EDI") for K'alo-Stantec Limited for use by the Government of Northwest Territories (GNWT) to support the regulatory review process for its Developers Assessment Report (DAR) (the "Application") for the Mackenzie Valley Highway Project (the "Project"). In connection therewith, this document may be reviewed and used by the Department of Infrastructure (INF) for the Government of Northwest Territories participating in the review process in the normal course of its duties. Except as set forth in the previous sentence, any reliance on this document by any other party or use of it for any other purpose is strictly prohibited. The material in it reflects EDI's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between EDI and K'alo-Stantec Limited and K'alo-Stantec's contract with the GNWT. The information and conclusions in the document are based on the conditions existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, EDI did not verify information supplied to it by the GNWT or others, unless expressly stated otherwise in the document. Any use which another party makes of this document is the responsibility and risk of such party. Such party agrees that EDI shall not be responsible for costs or damages of any kind, if any, suffered by it or any other party as a result of decisions made or actions taken based on this document.

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Executive Summary

The Government of the Northwest Territories (GNWT), Department of Infrastructure (INF) is proposing the Mackenzie Valley Highway Project (the “Project”) that will extend the Mackenzie Highway (Northwest Territories Highway #1) from Wrigley to Norman Wells to replace the Mackenzie Valley Winter Road (MVWR) along this portion. The Project includes the construction of approximately 281 kilometres (km) of new all-season highway, and the construction and operation of temporary and permanent quarry and borrow sources. The project highway alignment will pass through the Dehcho Region and a portion of the Tulita District of the Sahtu Region within the Northwest Territories (NT).

The Project is subject to an environmental assessment and the requirements of Part 5 of the *Mackenzie Valley Resource Management Act*. This Technical Data Report (TDR) presents the existing conditions for caribou and moose to support the assessment of effects to the Key Line of Inquiry — Caribou, Moose and Harvesting, as required by the Mackenzie Valley Environmental Impact Review Board’s Terms of Reference for the Developer’s Assessment Report for the Mackenzie Valley Highway Project.

This TDR presents detailed information on the existing conditions for the boreal ecotype of woodland caribou (*Rangifer tarandus caribou*), hereafter referred to as boreal caribou, barren-ground caribou (*Rangifer tarandus groenlandicus*) of the Bluenose-East herd, and moose (*Alces alces*). Current harvest levels (where information was available) and regulations for caribou and moose are also described.

Boreal Caribou

Boreal caribou are designated as threatened under Schedule 1 of the federal *Species at Risk Act* and the territorial *Species at Risk (NWT) Act*. In the NT, boreal caribou have a continuous range that has not yet been subjected to anthropogenic habitat fragmentation and degradation as in other Canadian jurisdictions. It is estimated that, across their NT range, 31% of their habitat is disturbed, 24% from wildfires and 8% from anthropogenic sources. Boreal caribou do not form cohesive herds; instead, they are one continuous population of loosely distributed individuals. In 2012, based on density estimates, boreal caribou numbers in the NT were calculated between 6,000 and 7,000 animals, with an estimated 1,677 animals in the Sahtu Region and 2,318 in the Dehcho Region (note that the boundaries used to calculate this population size in the Dehcho Region correspond more closely with the Dehcho administrative region boundaries used by the GNWT). Recruitment rates calculated from composition surveys in the Dehcho Region were consistently higher than the minimum recruitment rates required for a stable population. However, annual adult female survival rates were lower than those reported for other areas in the NT. Wolves are the primary predator of boreal caribou. They can limit population growth or cause some populations to decline, with additional predation by black bears and grizzly bears, mainly on young calves.

Boreal caribou are nomadic and move around their range according to their seasonal needs (e.g., availability of lichen, or suitable calving habitat). They spend most of the year in open bog and closed canopied black spruce habitats, although there may be some seasonal migration to preferred calving and wintering areas. In some areas of their range, large rivers, burned forests, and anthropogenic developments (such as pipelines and roads) can, in some circumstances, be barriers to movement.

Based on land cover type, time since the last wildfire, distance to and density of anthropogenic disturbance features and considering the analyses of 16 years of caribou collar locations, most of the area west of the current MVWR, and the area to the east (adjacent to the road) are predicted to be a low use area. Areas farther east are likely to be selected by boreal caribou year-round.

Predator avoidance plays a prominent role in the distribution of boreal caribou during spring calving and summer. Cows disperse at low densities across the landscape during the calving and post-calving seasons (May 1 to July 12 for the Dehcho and Sahtu regions combined) and are typically found alone or occasionally in pairs. In their NT range, during calving and post-calving, cows favour treed islands surrounded by open water in peatlands, lakes, and ponds to minimize predation risks, even if these islands provide sub-optimal forage resources. Summer foraging areas consist primarily of open coniferous forests with abundant lichens, low shrub, riparian, sparsely vegetated, and recently burned habitats. They also seek open and elevated areas exposed to the wind to avoid insect harassment and heat stress. Habitat selection is more diverse during and after the fall rut, and boreal caribou use a greater variety of suitable habitats. In winter, boreal caribou prefer open coniferous forests with abundant terrestrial and arboreal lichen in areas where snow is shallow and soft. Soft snow provides favourable conditions for foraging ground lichens and travel. In winter, boreal caribou spend less time in open peatland habitats than during other seasons.

Because boreal caribou are naturally found at low densities, large areas of secure, undisturbed habitat are necessary for a healthy population because females spatially separate from each other during calving and post-calving. Fire and anthropogenic disturbances are the main factors impacting the availability of large areas of undisturbed habitat. An analysis by Environment Canada found that as of 2011, 69% of the boreal caribou range in the NT was undisturbed. In 2014 and 2015, severe fires reduced the percentage of undisturbed habitat to 66% across the NT. Regionally, the proportion of undisturbed habitat in 2015 was approximately 78% in the Sahtu Region and 51% in the Dehcho and South Slave regions combined. There is more secure unburned habitat and less fragmented habitat in the northern portion of the NT boreal caribou range compared to the southern portion.

Indigenous and resident hunters lawfully harvest boreal caribou in the NT. To date, management of boreal caribou harvest has been based on the understanding that harvest levels are low because people tend to harvest boreal caribou opportunistically; however, concerns for local overharvesting exist, particularly in the vicinity of communities, roads and waterbodies that facilitate access.

Barren-ground Caribou

Barren-ground caribou are not listed under Schedule 1 of the federal *Species at Risk Act* (SARA). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designates them as Threatened, and they are listed as Threatened under the territorial *Species at Risk (NWT) Act*. In 2020, the GNWT released a recovery strategy, and collaborative co-management plans were developed for barren-ground caribou herds in the NT, including the management plan for the Cape Bathurst, Bluenose-West, and Bluenose-East herds.

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Barren-ground caribou are migratory and often travel long distances throughout the year. Historically, Bluenose-East caribou were reported as far west as Norman Wells, with many animals wintering from Tulita to Wrigley. Their current range includes parts of the eastern NT and Nunavut where they calve and spend the summer in tundra habitats along the Arctic coast east of Kugluktuk. In the fall, the herd migrates south and winters below the treeline south, east, and northeast of Great Bear Lake. They may use an area east of the MVWR during winter, mainly in the Dehcho Region.

Habitat selection by barren-ground caribou on summer ranges is driven by the need to obtain high quality forage while reducing exposure to parasites. Habitat features that provide refuge from parasite harassment include remnant snow patches, eskers, shallow water, and coastal flats where cooler temperatures and high winds disperse biting insects. During winter, lichens are the preferred forage regardless of whether barren-ground caribou winter in forest or tundra habitats; therefore, lichen availability likely influences their distribution in winter ranges. Where lichen cover is disturbed, regeneration is very slow (50 to 100 years) and these caribou may avoid the area for several decades until lichens return. When caribou travel throughout their winter range, they tend to select more open habitats (e.g., frozen lakes and open wetlands) where wind-hardened snow facilitates easier movement, and predators are more visible.

Barren-ground caribou herds in the NT have historically experienced large population fluctuations. Their abundance naturally cycles between population highs and lows. Recent population estimates suggest herd numbers are currently at historical lows. Survey data collected between 1989 and 2016 show an 89% decrease in the size of the Bluenose-East herd. A post-calving photo survey completed in 2000 estimated 104,000 caribou. The herd experienced an annual rate of decline of 10% between 2000 and 2006, with estimates of 70,100 animals in 2005 and 66,800 in 2006. The most recent population estimate for the Bluenose-East herd was completed in 2018 and estimated 19,294 caribou in the herd, 50% less than in 2015.

Predation affects the reproduction and survival rates of barren-ground caribou in the NT, influencing caribou abundance. When caribou populations are declining or at low numbers, predation (primarily by wolves and grizzly bears) may accelerate the decline and complicate recovery efforts. Wolves are considered the primary predator of barren-ground caribou and target all sex and age classes of caribou throughout the year. To support caribou survival and recovery of the Bluenose-East and Bathurst herds by reducing wolf predation on caribou, the GNWT and the Tłı̨ch̨ Government recently prepared a joint proposal outlining a tiered approach to wolf management, including wolf harvester training, monitoring, research, and assessment, and wolf reduction actions aimed at removing 60% to 80% of wolves from the winter ranges of the Bluenose-East and Bathurst herds. In addition to wolves, predation by grizzly bears, usually occurring on newborn calves during the calving period, can be substantial for some herds.

When caribou populations are declining or at low numbers, harvest is additive to natural mortality and may accelerate a decline and hinder recovery efforts. The potential effects of hunting on herd abundance are likely not an issue where harvest restrictions have been implemented. Since 2006, non-resident and resident harvests have been closed for the Bluenose-East herd. Indigenous harvest on the Bluenose-East herd increased in 2010 following increased harvest restrictions on the Bathurst herd; however, harvest by communities was reduced after public hearings. During 2009/2010, the total reported harvest for the Bluenose-East herd (in their entire range) was 3,466; 2,918 (2010/2011), and 1,885 (2011/2012). In the

NT portion of their range, harvest on the Bluenose-East herd has been restricted to 1,800 animals, with an 80% male harvest in 2015.

Moose

Moose in the NT are not listed federally or territorially as a species at risk and are ranked as secure. Their densities in the NT are low relative to other North American jurisdictions, ranging from 0.6 moose/100 square kilometres (km²) in the Mackenzie Delta to 17 moose/100 km² in some parts of the Sahtu Region with a reported range of 32 to 54 calves per 100 cows. While moose populations are low, they are believed to be stable and mainly driven by factors such as the frequency and age of major fires, local hunting, and predation.

Moose display complex winter habitat preferences and seemingly avoid areas with high snow accumulation. This might be why winter habitats may be most critical in the Mackenzie Valley, where they are available along the Mackenzie River, on its islands and on its tributaries. The constant flooding and scouring associated with the river sustain abundant stands of early successional willow, the primary winter forage for moose, in addition to some coniferous stands. During a reconnaissance flight in October 2020, tracks were observed occasionally along the MVWR right-of-way (ROW), indicating regular use of the ROW by moose.

Recent detailed studies on moose populations in the Dehcho Region examining the prevalence of parasites, body condition and tissue contaminants concluded that moose in the Dehcho Region are minimally infected by parasites, are mostly in good condition, and their tissues contain only marginal contaminant levels. The authors concluded that the Dehcho moose population is healthy and limited population growth could be attributed to other parameters, such as habitat availability, predation, and harvest.

Studies of moose mortality found that predation by wolves was a key source of mortality. However, survival rates of calves were reported to be high compared with the findings in other regions. Harvest is believed to be moderate across the regions (averaging approximately 6% of the studied populations), but it can be higher locally where access is available (e.g., near communities, roads, and rivers).

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Abbreviations

COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DAR	Developers Assessment Report
DFN	Dehcho First Nation
DOT (now INF)	Department of Transportation
GNWT	Government of the Northwest Territories
ha	hectare
INF	Department of Infrastructure
KLOI	Key Lines of Inquiry
KM	kilometre marker
km	kilometre
km ²	square kilometre
LSA	local study area
LUP	land use plan
m	metre
m ³	cubic metre
mm	millimetre
MVH	Mackenzie Valley Highway
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	<i>Mackenzie Valley Resource Management Act</i>
MVWR	Mackenzie Valley Winter Road
NT	Northwest Territories
PDR	Project Description Report
ROW	right-of-way
RSA	regional study area
SARA	<i>Species at Risk Act</i>
SLUP	Sahtu Land Use Plan
SON	subject of note

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Abbreviations
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SRRBSahtu Renewable Resources Board
TDR technical data report
TDLC Tulita District Land Corporation
the ProjectMackenzie Valley Highway Project
TK..... Traditional knowledge
TLRUtraditional land and resource use
VCvalued component

1 Introduction

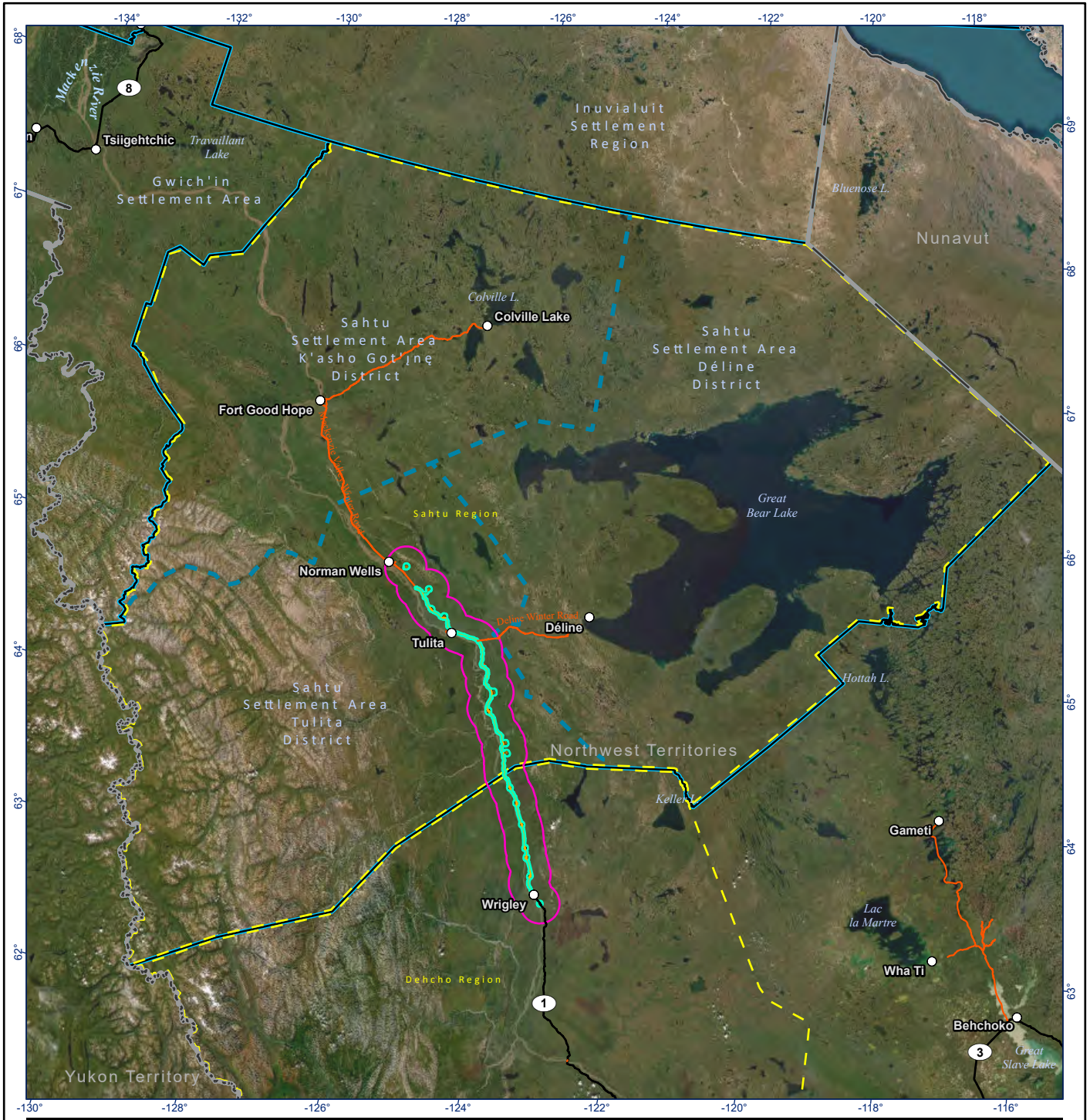
The Government of the Northwest Territories (GNWT), Department of Infrastructure (INF) is proposing the Mackenzie Valley Highway Project (the “Project”) that will extend the Mackenzie Highway (Northwest Territories Highway #1) from Wrigley to Norman Wells to replace the Mackenzie Valley Winter Road (MVWR) along this portion. The Project includes the construction of approximately 281 kilometres (km) of new all-season highway, and the construction and operation of temporary and permanent quarry and borrow sources. The project highway alignment will pass through the Dehcho Region and a portion of the Tulita District of the Sahtu Region within the Northwest Territories (NT; Figure 1.1).

The Project is subject to an environmental assessment and the requirements of Part 5 of the *Mackenzie Valley Resource Management Act* (MVRMA). This Technical Data Report (TDR) presents the existing conditions for Caribou and Moose to support the development of the Developer’s Assessment Report (DAR), as required by the Terms of Reference (Mackenzie Valley Environmental Impact Review Board [MVEIRB], 2015). As part of the environmental assessment process, the DAR will present the developer’s perspective on how the Project could affect the biophysical and socio-economic environment.

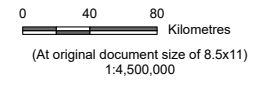
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The Terms of Reference (MVEIRB, 2015) lists a series of requirements for caribou and moose relating to Section 7 of the DAR (i.e., the assessment of environmental impacts and cumulative effects). Some of these requirements are also applicable for the baseline reporting (i.e., this TDR), including the following:

- sensitive or important areas or habitat
- wildlife movement patterns, home ranges, distribution, and abundance
- wildlife mortality due to harvesting and vehicle collisions
- population cycles
- predator-prey relationships
- contaminant levels in harvested species



- Proposed Mackenzie Valley Highway Alignment - Issued for EA 2022
- Granular Borrow / Rock Quarry Site and Access
- Local Study Area
- Regional Study Area
- Community
- All-Season Road
- Winter Road
- District Boundary
- Settlement Area Boundary
- Region Boundary
- Territorial Boundary



Project Location: Wrigley to Norman Wells, NWT
 Prepared by AT on 2023-03-07
 TR by AJ on 2023-03-07

Client/Project: 144903025-0141 REVA

Government of Northwest Territories
 Mackenzie Valley Highway Project

Figure No.
1.1

Title
MVH Project Overview

Notes
 1. Coordinate System: NAD 1983 Northwest Territories Lambert
 2. Data Sources: Centre for Geomatics Government of NWT, Government of Canada, Stantec
 3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCAN
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS

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2 Study Areas

The Project is in the Mackenzie Valley region of the NT between the current terminus of the existing all-weather highway in Wrigley (Highway #1, kilometre marker [KM] 690 of the MVWR) and Norman Wells (KM 1011 of the MVWR). The Project alignment parallels the Mackenzie River to its east and passes through the Hamlet of Tulita (KM 938 of the MVWR).

The local and regional study areas (LSA and RSA, respectively; Figure 2.1) presented in this TDR are the areas where data were collected to allow for an understanding of the environment in support of the Project-specific effects assessment and the cumulative effect assessment. Additionally, anthropogenic and natural disturbances are presented on a larger geographic scale (i.e., the Southern NWT planning range and the NT1 boreal caribou range) to estimate the Project's contribution to the existing disturbance in the boreal caribou range.

2.1 Local Study Area

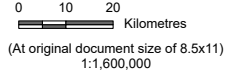
The LSA for caribou and moose is the same as the LSA for wildlife and wildlife habitat, which includes a 1 km buffer around (i.e., on each side) of the proposed highway alignment and a 2 km buffer around quarries and associated access. The LSA boundaries reflect measurable direct effects on wildlife species, including boreal and barren-ground caribou and moose. Direct effects on these species include vehicle collisions, sensory disturbance (e.g., through noise), and dust emissions which may affect habitat quality. Indirect effects include increased access to the area and the potential for increased harvesting.

2.2 Regional Study Area

The RSA for wildlife and wildlife habitat includes the area within a 15 km buffer around (i.e., on each side) of the proposed road alignment to capture potential cumulative effects on wildlife species, including boreal caribou, barren-ground caribou, moose, and their habitat. Boreal caribou occur as one continuous population across the NT, including parts of the LSA and the RSA. The range of barren-ground caribou (of the Bluenose-East herd) is generally east of the RSA, with some minimal areas of potential overlap with the RSA during the winter. Moose use the Mackenzie River, its shores, islands and surrounding habitat overlapping within the LSA and RSA.



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- Region Boundary
- Settlement Area Boundary



Project Location: Wrigley to Norman Wells, NWT
 Prepared by AT on 2023-03-07
 TR by AJ on 2023-03-07
 Client/Project: 144903025-0142 REVA

Government of Northwest Territories
 Mackenzie Valley Highway Project
 Figure No. **2.1**
 Title
Caribou and Moose Local and Regional Study Areas

Notes
 1. Coordinate System: NAD 1983 Northwest Territories Lambert
 2. Data Sources: Centre of Geomatics of Government of NWT, Government of Canada, Stantec
 3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS

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3 Review of Existing Data

The TDR was developed to address the Project Terms of Reference (MVEIRB, 2015) using a literature review of currently available information. The publicly available information and additional documentation provided by the GNWT on boreal caribou, barren-ground caribou (of the Bluenose-East herd), and moose were reviewed for developing this TDR. Two categories of information were included in the review of existing data: traditional knowledge (TK) and traditional land and resource use (TLRU), as described in Section 3.1; and scientific literature and documentation, as described in Section 3.2.

3.1 Traditional Knowledge and Traditional Land and Resource Use

Available TK and TLRU information contributed to describing existing conditions for caribou and moose and sensitive habitat features in the RSA.

3.1.1 Methods

Existing TK and TLRU information was obtained through several sources, including land use planning documents and regional research projects for the two administrative regions traversed by the Project: the Dehcho and Sahtu. An overview of the key TK and TLRU resources used to characterize the existing conditions for caribou and moose is presented below, and results are presented separately for each region.

- **Tulita Renewable Resources Council Traditional Land and Resource Use Study for Tulita District Mackenzie Highway Project 2022:** Report prepared for MVH Project to describe Traditional Land and Resource use within the Tulita District (TRRC, 2022).
- **Respect for the Land: The Dehcho Land Use Plan — Final Draft (DLUP):** A guidance document that incorporates the cultural, social, and economic factors relating to the management and conservation of natural resources related to development projects within the Dehcho Region (DLUPC, 2006).
- **Project Description Report for the Dehcho Region:** A primary screening document summarizing baseline environmental information, including wildlife and species of conservation concern, related to the proposed Project in the Dehcho Region (Dessau, 2012).
- **Sahtu Land Use Plan (SLUP):** A document guiding how natural resources will be conserved and developed in the Sahtu Region (SLUPB, 2013, updated to 2023).
- **Sahtu Harvest Study Methods Report, 1998–2005:** Report prepared for the Sahtu Renewable Resources Board to describe the Sahtu Harvest Study (Sahtu Renewable Resources Board [SRRB], 2016).

- **Sahtu Settlement Area Harvest Study — Final Report of the Sahtu Harvest Study:** A survey of Sahtu Dene and Métis hunters, reporting the number and location of wildlife harvest activities in the Sahtu Region between 1998 and 2005 (SRRB, 2021).
- **Project Description Report for the Sahtu Region:** A primary screening document summarizing baseline environmental information related to the proposed Project in the Sahtu Region (5658 NWT Ltd. and GNWT, 2011).

Additional documents summarizing TK and TLRU information:

- Draft Report on Renewable Resource Assessment of the Pehdzeh Ndeh Area of Interest (IMG-Golder Corporation, 2006)
- Traditional Knowledge Study Report Tulita, NT, Great Bear River Bridge (EBA Engineering Consultants, 2006)
- Boreal Caribou Traditional Knowledge Collection Study: The Sahtu Settlement Area (McDonald, 2010)
- Traditional Knowledge Assessment of Boreal Caribou (Mbedzih) in the Dehcho Region (Dehcho First Nation, 2011)

3.1.2 Results

Sections 3.1.2.1 and 3.1.2.2 provide the TK and TLRU results by their respective region, consistent with information summarized in the Cultural and Traditional Land Use TDR [K'alo-Stantec, 2022a]).

3.1.2.1 *Dehcho Region*

The Dehcho Land Use Plan (DLUP) developed by the Dehcho Land Use Planning Committee (DLUPC) is a tool to help protect Dene culture and traditional land use (DLUPC, 2006). The plan (which is not formally implemented) identifies proposed conservation zones (i.e., areas that have significant ecological and cultural values) and special management zones (i.e., areas in which some forms of land use are allowed to facilitate conservation and resource development). Dehcho First Nation members seek to maintain traditional land use opportunities within the region (DLUPC, 2006). The DLUP conservation zones provide habitat for moose and other wildlife species, which is also an important cultural area for the communities (Dessau, 2012).

The project highway alignment traverses approximately 102 km of the Dehcho Region, including 20,406.1 hectares (ha) of land within the LSA and 332,649.5 ha within the RSA (Figure 2.1). The alignment in the Dehcho Region primarily traverses the proposed Pehdzeh Ki Ndeh conservation zone (3.5% of the DLUP area). The alignment also traverses the proposed Mackenzie Valley Special Infrastructure Corridor approved for infrastructure development (primarily the previously proposed Mackenzie Valley Pipeline).

Boreal Caribou

Boreal caribou are year-round inhabitants of the Pehdzeh Ki Ndeh Area of Interest (centered around the community of Wrigley) and use the shores of Blackwater Lake and Fish Lake (outside the RSA) as calving areas. The McConnell Range between Wrigley and Tulita is a summering area for boreal caribou. The higher elevation areas are suspected calving areas (IMG-Golder Corporation, 2006).

Boreal caribou are common throughout the Dehcho Region, although their densities may vary (Dehcho First Nations, 2011). They appear to be in good health with no reported unusual internal parasites or evidence of disease, and animals are generally fat when harvested in the fall and winter. Even though there are several all-season and winter roads in the Dehcho Region with regular boreal caribou sightings along these roads, there are no known boreal caribou/vehicle strike incidents. However, sensory disturbance from large trucks, particularly on winter roads, may affect the animals and their movement (Dehcho First Nations, 2011).

The Dehcho region is getting warmer and wetter overall, with more rainfall in August, September, and even into October. This change creates more ice crusting along the ground, which may make it more difficult for boreal caribou to forage for ground lichens. Sudden thaws and melting during winter also create crusts on the snow, making it difficult for boreal caribou to move around and escape predators. In some instances, frost heaves that harbor lichens are diminishing or melting entirely, which reduces the availability of this particularly rich habitat site. Wetter summers and falls result in higher water levels on small rivers and streams, increasing boat access (particularly jet boat access) into boreal caribou habitat areas previously difficult to access at these times of the year. Climate change does not yet appear to be affecting ground or hanging lichens, although some monitoring of future changes to lichen due to climate change should be undertaken.

Recent climate changes are significant, including warmer temperatures, increased rain in November, milder winters and increasing summer storms. Boreal woodland caribou food sources are affected by precipitation. During colder times, food becomes less accessible because it is covered by more snow, making it harder for caribou to access it. Fall rain and freezing rain during early winter were mentioned by several of the people who were interviewed. The freezing rain causes a thicker crust to form on the ice, making it difficult for the caribou to travel (Dehcho First Nations, 2011).

Based on traditional observations of average group sizes and community harvesting levels, the boreal caribou population in the Dehcho Region is believed to be stable in most areas, with a tendency toward a slow decline in areas affected by forest fires, the introduction of bison, and/or high levels of sensory, hunting, and/or developmental pressures (Dehcho First Nations, 2011). In some areas, boreal caribou exhibit seasonal movement or migration patterns, while others remain, for the most part, in large multi-habitat areas and shift the pattern of use of those areas based on seasonal habitat preferences (Dehcho First Nations, 2011). Boreal caribou are known to spread throughout marsh and wetlands during the spring calving period. They stay close to and in areas with muskeg terrain throughout summer and move more freely in fall and early winter throughout various habitats while gathering into larger groups. They are known to overwinter in larger groups in areas with higher amounts of thick brush (black spruce and pine). Boreal caribou rely on ground and tree lichens and sedge grasses for food and remain close to

habitats where this type of food is accessible (Dehcho First Nations, 2011). This includes old growth (over 100 years) coniferous forests that exhibit extensive lichen growth on trees and the forest floor.

The DLUP provides guidance for cumulative effects indicators and thresholds for boreal caribou and identifies critical lifecycle periods (DLUPC, 2006). The threshold indicators for boreal caribou focus on the threshold density for linear developments (i.e., linear development corridor density of 1.8 km/km²) and the critical lifecycle periods for boreal caribou were identified as early October to early November (rutting season) and mid-May to mid-June (calving season) (DLUPC, 2006).

In 2005, subsistence harvest (i.e., harvest by Indigenous hunters and General Hunting Licence holders) of boreal and barren-ground caribou in the Pehdzeh Ki Ndeh Area of Interest was estimated at 50 caribou for the preceding year (IMG-Golder Corporation, 2006). Subsistence harvest numbers vary yearly, and the numbers were reported for both caribou populations with no breakdown provided.

Barren-ground Caribou

The Renewable Resource Assessment of the Pehdzeh Ki Ndeh Area of Interest (IMG-Golder Corporation, 2006) states that some barren-ground caribou of the Bathurst herd are found around the eastern boundary of Pehdzeh Ki Ndeh, and some caribou of the Bluenose-East herd are found north of Blackwater Lake and Keller Lake; all outside the RSA.

The boreal and barren-ground caribou ranges in the Wrigley area overlap in the mid-winter months (Dehcho First Nations, 2011). This was observed around the Fish Lake area (outside the RSA). It is believed that the barren-ground caribou came down from the Sahtu and had only recently returned to this area after being away for approximately 50 years (Dehcho First Nations, 2011).

In 2005, subsistence harvest of boreal and barren-ground caribou (i.e., harvest by Indigenous hunters and General Hunting Licence holders) in the Pehdzeh Ki Ndeh Area of Interest, encompassing the Project in the Dehcho Region, was estimated at 50 caribou for the preceding year (IMG-Golder Corporation, 2006). It is recognized that subsistence harvest numbers will vary yearly, and the numbers were reported for both caribou populations with no breakdown provided.

Moose

Moose are believed to occur at high densities throughout the Dehcho Region (Dehcho First Nations, 2011). They are found throughout the Pehdzeh Ki Ndeh Area of Interest year-round and are typically observed on the shores of the larger lakes and along the river valleys (IMG-Golder Corporation, 2006). Moose use post-burn vegetation communities, such as the burn area within the last 10 years in the southeast portion of the Pehdzeh Ki Ndeh Area of Interest (IMG-Golder Corporation, 2006). Year-round moose range and several moose pastures have been identified along the MVWR between KM 708 and 790 (Dessau, 2012).

Moose are acknowledged as the most important subsistence harvest species, and numerous areas in the Pehdzeh Ki Ndeh are known to be valuable moose habitats, concentrated around the shores of its many lakes (IMG-Golder Corporation, 2006). In 2005, the subsistence harvest of moose (i.e., harvest by Indigenous hunters and General Hunting Licence holders) in the Pehdzeh Ki Ndeh Area of Interest was estimated at 75 moose for the preceding year (IMG-Golder Corporation, 2006). Moose were recognized as the most important subsistence harvest species in the Dehcho Region; however, actual subsistence harvest numbers will vary yearly.

3.1.2.2 Sahtu Region

The SLUP focuses on maintaining and/or enhancing ecological and cultural integrity while increasing the community's decision-making capacity and economic self-sufficiency through the sustainable development of natural resources (SLUPB, 2013). A key component of the SLUP is protecting and conserving species of cultural, conservation, or subsistence importance.

The project highway alignment traverses approximately 179 km of the Sahtu Region and includes 40,734 ha of land within the LSA and 618,807 ha within the RSA (Figure 2.1). The alignment primarily traverses the Deh Cho (Mackenzie River plus a 5 km buffer) special management zone (SMZ) No. 63 of the SLUP (representing 2.2 % of the Sahtu Region), an area designated to protect the water quality, riparian habitat, cultural/heritage sites, and areas that are important for wildlife and wildlife harvesting (SLUPB, 2013). The SMZ provides habitat for several species, such as moose and boreal caribou. Important Wildlife Areas for several species exist in this zone, and riparian areas exhibit high moose density during the winter. In addition to acknowledging wildlife and wildlife habitat, the SMZ allows for the continued use of the areas as a riverine and territorial transportation corridor (e.g., barge traffic, winter road), with bulk water removal being the only prohibited land use. The alignment also intersects the Petinı̄zah (Bear Rock) conservation zone, an important wildlife area for moose and boreal caribou (SLUPB, 2013).

The SLUP (SLUPB, 2013) states that people harvest wildlife, including moose and barren-ground caribou, in the Norman Range Ecoregion, a small part of which is in the LSA, northwest of Tulita.

Recent TLRU information (TRRC, 2022) indicates that:

- Caribou are harvested all year round within the LSA.
- Fewer caribou sightings in the LSA have affected the ability to undertake TLRU.
- Blackwater Lake is a common breeding ground for caribou and moose due to the number of calves commonly observed in the area.
- Moose are harvested in winter along the MVWR and year-round within the LSA.
- It is common for moose to be spotted along the MVWR.
- Lakes along the MVWR are important for moose calving; many moose are in the area.
- Fewer moose sightings in the LSA have affected the ability to undertake TLRU.
- Wildlife, including moose and caribou, are still needed to undertake TLRU (e.g., food and hides for personal use).

- Moose calving areas are mossy areas, and usually by lakes and islands.
- There are more mother moose and young ones sighted on the MVWR.
- An area on the west side of Bear River contains abundant vegetation for moose.
- A mineral lick (described as a salt river) near Bear Rock attracts wildlife and interests the community.
- On average, families require four moose yearly for sustenance, shared among the community with friends and family.

Boreal Caribou

Sahtu residents consider boreal caribou to be very important. The families in the communities use the hides for clothing and meat as a food source (McDonald, 2010).

The primary food boreal caribou consumes includes willow tips, grasses, white lichen, and spruce tree moss. The caribou also actively seeks out salt licks (McDonald, 2010). The consensus of Sahtu residents interviewed for this study was that there are more caribou in the region now than in the past, as evidenced by reports of seeing more signs of caribou groups (McDonald, 2010). Those increasing caribou observations were attributed to decreased industrial activities throughout their habitat in recent years; caribou tend to avoid developed areas, including roads and seismic lines. Many tracks are observed throughout the year, and caribou are only hunted when opportunistically encountered by hunters (McDonald, 2010). Industry and general development are believed to be major factors affecting caribou. Noise and light pollution produced by these activities disturb caribou and preclude animals from taking advantage of resources in the affected areas, particularly during the calving season.

In the Sahtu Region, boreal caribou groups do not migrate very far during the year. Primary habitat has remained fairly stable in recent years due to the low incidence of disturbance by fire, and the populations have remained fairly stable (McDonald, 2010). Small boreal woodland caribou populations can be observed within the Tulita area during summer. These are located in open meadows on high ground, where they forage for mosses. They are also found near rivers and lakes during high insect infestation periods (McDonald, 2010). Boreal caribou are typically found in old-growth forest areas and stay away from winter roads because of the noise pollution. Therefore, motor vehicle collisions with boreal caribou have not been reported in the Sahtu Region (McDonald, 2010).

People from all Sahtu communities have observed an increase in wolf population in recent years, believed to be a result of a decrease in wolf trapping activities (McDonald, 2010). Other observations include a general increase in the abundance of potential prey species, including moose. An increase in prey species, such as moose, may decrease caribou predation. This effect is observed in the boreal caribou population in the region (McDonald, 2010).

Barren-ground Caribou

According to the SRRB map data, barren-ground caribou are harvested around MVWR KM 900, 930, and between KM 990 and 1030 (5658 NWT Ltd and GNWT, 2011).

Moose

People from all Sahtu communities have observed increased moose abundance (McDonald, 2010). According to a TK Study, calving areas for moose are located on the islands in the Mackenzie River to the southwest and southeast of Tulita (EBA Engineering Consultants, 2006). Moose calving areas with extensive willow growth are found on Windy Island and Four Mile Island in the Mackenzie River (EBA Engineering Consultants, 2006). Moose habitat is also located directly on the west side of the proposed Great Bear River Bridge in the Hamlet of Tulita.

The Sahtu Harvest Study (SHS) was carried out between 1998 and 2005 and surveyed Sahtu Dene and Métis harvesters across the Sahtu Region to record the number and location of wildlife harvested in the area (SRRB, 2016). Preliminary data from this summary report showed that most of the moose harvest recorded in the study occurred in the riparian areas along the Mackenzie River. Some harvest locations were also recorded along the shores of lakes in the eastern parts of the Sahtu Region and some in the Mackenzie Mountains (outside the RSA).

3.2 Literature Review

A thorough literature review was completed to describe existing conditions for boreal caribou, barren-ground caribou (Bluenose-East herd) and moose in the LSA and RSA. The review also included a harvest records review. Where possible, the literature review concentrated on the northern portion of the Dehcho Region and the Tulita District of the Sahtu Region; however, many reviewed documents included larger areas.

3.2.1 Methods

Relevant information for the literature review was obtained through several sources, including the following.

- NWT Species at Risk in the Northwest Territories: An annual publication outlining the status and distribution of provincially and federally listed Species at Risk in NWT.
- NWT Species 2016-2020 — General Status Ranks of Wild Species in Northwest Territories: An overview of the status of flora and fauna of NWT.
- GNWT Numbered File and Manuscript Reports: A searchable database containing file and manuscript reports organized by category and Master Lists of the reports (<https://www.enr.gov.nt.ca/en/resources>). Reports retrieved through this source are referenced as separate documents.
- Wildlife Management Information System (WMIS): The GNWT's online, geo-referenced wildlife database provides a central repository for storing and accessing standardized wildlife observation data in the NT.

- Mackenzie Gas Project Environmental Impact Statement submitted by Imperial Oil Resources Ventures Ltd in 2004: The Environmental Impact Statement for an originally planned (and now cancelled) 1,220-kilometre natural gas pipeline system connecting natural gas production fields in the Mackenzie Delta, running through the Mackenzie Valley to the existing pipeline grid in Alberta.
- Documents provided through a Data Sharing Agreement with the GNWT Department of Environment and Natural Resources (ENR): Various internal documents and files were provided to inform the TDR. All files are referenced following the data-sharing agreement.

No baseline studies or additional data analyses were completed for caribou or moose.

3.2.2 Results

3.2.2.1 Boreal Caribou

Two distinct woodland caribou populations are found in the NT: the forest-dwelling boreal and the mountain-dwelling northern mountain populations. Caribou of these populations are of the same subspecies but are considered distinct ecotypes based on genetics, ecology, and demographics (Environment Canada, 2012). In the NT, woodland caribou of the northern mountain population occur only in the Mackenzie Mountains; they do not interact with the proposed Project and their range does not overlap with the RSA. Therefore, only information about the forest-dwelling boreal population is presented in this TDR.

Conservation Status

Boreal caribou are designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and listed under Schedule 1 of the federal *Species at Risk Act* (SARA; Environment and Climate Change Canada, 2016). A recovery strategy for the boreal population of woodland caribou intends to achieve self-sustaining local populations in all boreal caribou ranges (Environment Canada, 2012). Environment and Climate Change Canada released a progress report on implementing the recovery strategy in 2017 (Environment and Climate Change Canada, 2017) with an amendment issued in 2020 (Environment and Climate Change Canada, 2020).

The NT Species at Risk Committee released the *Species Status Report for Boreal Caribou in the Northwest Territories* in 2012 (Species at Risk Committee, 2012). This species status report is a comprehensive report that compiles and analyzes TK and scientific information on the biological status of the boreal caribou population in the NT and was used to make a designation recommendation under the *Species at Risk (NWT) Act*. Boreal caribou were subsequently listed as a threatened species under the territorial *Species at Risk (NWT) Act* in 2014 (GNWT, 2019). A threatened species is a species that is likely to become endangered in the NT if nothing is done to reverse the factors leading to population declines. In 2017, the GNWT released a recovery strategy that recommends objectives for the conservation and recovery of boreal caribou and approaches to achieve these objectives (Conference of Management Authorities, 2017). Given that the main threat to boreal caribou in the NT is considered to be cumulative habitat disturbance and loss, which increases predation risk, the GNWT developed A *Framework for Boreal Caribou Range Planning* in 2019 to support adequate habitat across the NT to

maintain a healthy and sustainable population of boreal caribou in their range, the NT1 boreal caribou range (GNWT, 2019).

Distribution

In the NT, boreal caribou have a continuous range that has not yet been subjected to the same degree of anthropogenic habitat fragmentation and degradation that has occurred elsewhere in Canada. They inhabit an extensive area of boreal forest east of the Mackenzie Mountains and west of Great Bear Lake, Great Slave Lake, and the Little Buffalo River. Their extensive range (441,666 square kilometres [km²]) extends from northern Alberta and British Columbia to as far north as Tuktoyaktuk and northeastern Yukon. Although their range is continuous with boreal caribou in northern Alberta and British Columbia, boreal caribou in each jurisdiction are considered a different population for management purposes (Environment Canada, 2012). Boreal caribou are naturally found at low densities, either individually or in small groups. They do not form cohesive herds in the NT; they are one continuous population of loosely distributed individuals.

Boreal caribou range use may change over time as a result of variations in ecological conditions (e.g., vegetation change as a result of natural disturbances such as forest fires) and patterns of human disturbance (e.g., industrial development) affecting the landscape (Species at Risk Committee, 2012). Variation in habitat conditions, resource availability, and the amount and distribution of disturbance on the landscape influences boreal caribou range use patterns. In the NT, landscape conditions allow the boreal caribou range to function continuously, where caribou are dispersed over a large area and move more freely over long distances. This contrasts with numerous herd ranges in other regions where boreal caribou occupy discrete ranges with little immigration and emigration between ranges (Environment Canada, 2012).

Critical Habitat

The caribou herd range is the unit of analysis used to identify critical habitats and other requirements for self-sustaining local populations of boreal caribou (Environment Canada, 2012). The range is the geographic area occupied by a group of individuals subject to similar factors affecting their demography and is used to satisfy their life history processes (e.g., calving, rutting, wintering) over a defined time frame.

Under SARA, critical habitat is defined as “...*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*” (Government of Canada, 2018). For boreal caribou, critical habitat identification describes the habitat necessary to maintain or recover self-sustaining local populations throughout their distribution.

Environment Canada completed a study to develop a relationship that expresses the probability of a boreal caribou population being stable or increasing at varying levels of total range disturbance (Environment Canada, 2012). Disturbed habitats are areas that have burned within the past 40 years or are within 500 metres (m) of an anthropogenic footprint. This analysis suggested that boreal caribou require at least 65% undisturbed habitat within their range to have a 60% probability of maintaining a self-sustaining population.

The assessment of habitat conditions within the boreal caribou range in the NT estimated a combined total range disturbance at 35%, 28% from wildfires, and 9% anthropogenic (Environment and Climate Change Canada 2020). Consequently, the NT boreal caribou population was classified as self-sustaining by Environment Canada based on the habitat conditions at that time and the current understanding that boreal caribou in the NT consists of a single population occupying a continuous range (Environment and Climate Change Canada, 2020).

The GNWT (2019) also describes the current range conditions as sufficient to support a self-sustaining population, given the existing disturbance level consisting mainly of wildfire disturbance. However, severe fire seasons in 2014 and 2015 increased the total habitat disturbance in the NT boreal caribou range to approximately 34% (Conference of Management Authorities, 2017), hence the requirements for prudent caribou range planning in the NT (GNWT, 2019). Regional disturbance statistics in the Boreal Caribou Range Planning Framework (GNWT, 2019) calculated lower levels of fire disturbance than the Conference of Management Authorities (2017). The entire NT boreal caribou range (NT1) disturbance was calculated as being 31% (23.7% wildfire and 9.3% anthropogenic disturbance), and 69% of the range was assessed as being undisturbed (GNWT, 2019; for details, see Section: Threats below).

Critical habitat for boreal caribou in the NT is identified as the area within the boundary of the boreal caribou range that provides an overall ecological condition that will allow for an ongoing recruitment and retirement cycle of habitat, which maintains a perpetual state of a minimum of 65% of the area as undisturbed habitat.

Seasonal Habitat

Boreal caribou are generally nomadic and may occur year-round in all forested habitats near the Project, including in the LSA and RSA. However, they prefer mature or old-growth coniferous forests (greater than 100 years old) associated with peatland complexes, lakes, and ponds with abundant ground and arboreal lichens and few predators (Species at Risk Committee, 2012). Boreal caribou spend most of the year in open bog and closed canopied black spruce habitats, although there may be some seasonal migration to preferred calving and wintering areas. These characteristics are often associated with low-elevation peatlands intermixed with hilly upland areas in mature or old-growth coniferous forests.

Predator avoidance plays a large role in caribou distribution during spring calving and summer. Cows disperse at low densities across the landscape during the calving and post-calving seasons (May 1 to July 12 for the Dehcho and Sahtu regions combined; GNWT, 2022a) and are typically found alone or occasionally in pairs. Traditional knowledge referenced by the Species at Risk Committee (2012) indicates that during calving and post-calving, cows may favour treed islands surrounded by open water in peatlands, lakes, and ponds to minimize predation risks, even if these islands provide sub-optimal forage resources. Fidelity to calving sites appears mixed, with some females calving in the same area yearly while others do not. From a sample of 37 collared female caribou with four consecutive calving events with known locations in the Dehcho Region, 19% of cows calved within 500 m of previous locations (Larter et al., 2019). In contrast, 16% of cows had an average distance greater than 30 km between calving locations.

Technical Data Report—Caribou and Moose

Section 3: Review of Existing Data
Rev2 August 2023

Summer foraging areas consist primarily of open coniferous forests with abundant lichens, low shrub, riparian, sparsely vegetated, and recently burned habitats (Nagy et al., 2005a). They also seek out open and elevated areas exposed to the wind to avoid insect harassment and heat stress. Their summer diet consists of fresh flowering plants, sedges, grasses, lichens, mushrooms, and horsetail. Lichen is not as prominent a component of their summer diet as their winter diet.

Habitat selection is more diverse during and after the fall rut, and boreal caribou use a greater variety of suitable habitats. Based on the movement rate of satellite collared boreal caribou, the peak breeding season is from September 20 to October 4 (Nagy, 2011).

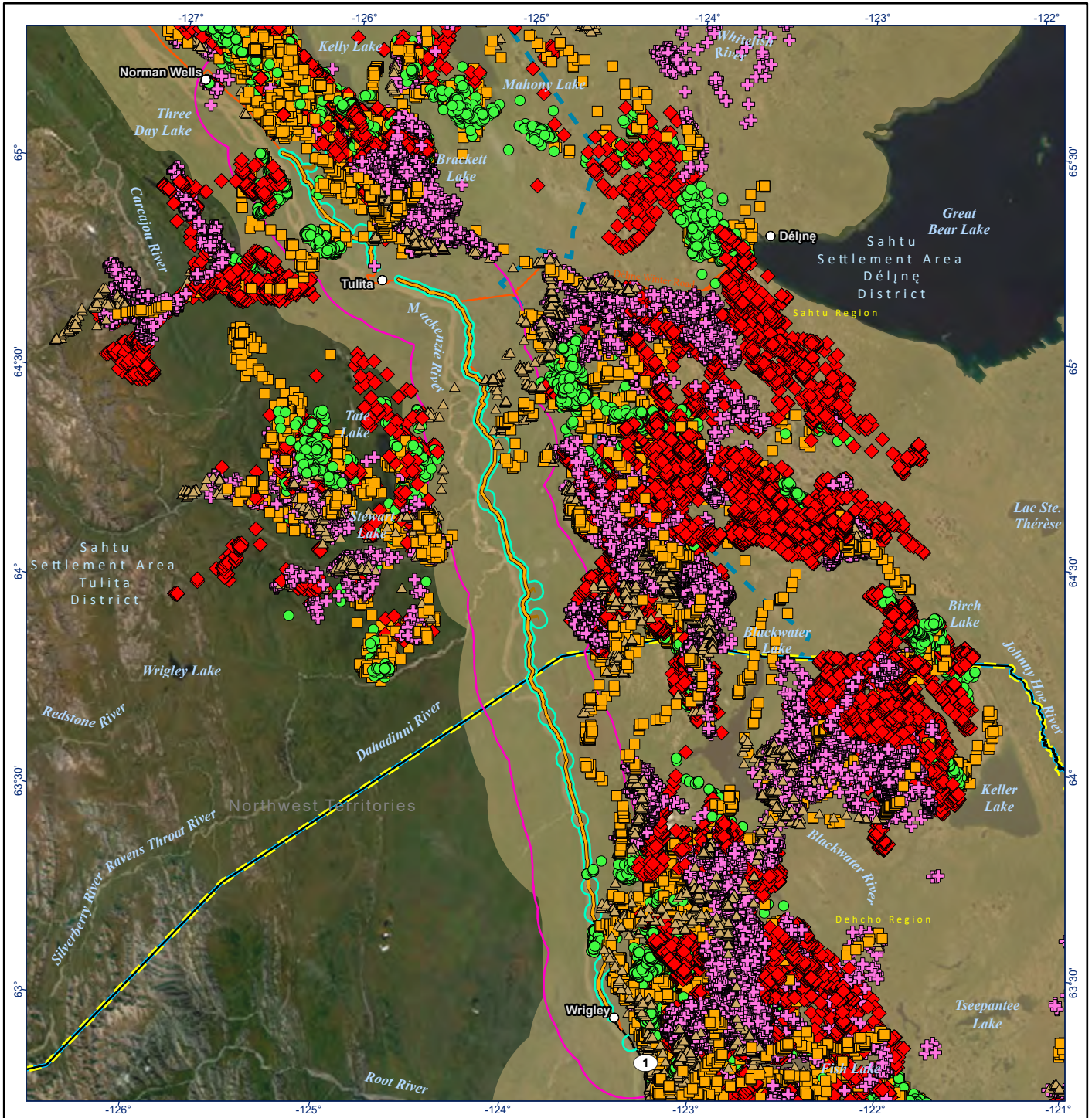
Winter habitats are an important life requisite for boreal caribou. In winter, boreal caribou favour open coniferous forests with an abundance of terrestrial and arboreal lichen, where snow is shallow and soft, with only minor use of open mixed forests and riparian areas (Species at Risk Committee, 2012). Soft snow provides favourable conditions for foraging for ground lichens and travel. In winter, boreal caribou spend less time in open peatland habitats than during other seasons. Their winter diet consists primarily of terrestrial and arboreal lichens (up to 80% of their diet) and is supplemented with evergreen shrubs, grasses, sedges, and other vascular plants.

Collared caribou locations (n = 2,604,970) collected by the GNWT between May 1, 2002 and May 4, 2023 show year-round overlap between boreal caribou and the RSA and LSA (Figure 3.1). Seasonal delineations in Figure 3.1 are as defined by DeMars et al. (2020) for boreal caribou in that study's southern monitoring region.

To identify important areas for boreal caribou in the NT based on the animals' seasonal habitat selection, ENR completed a Resource Selection Function (RSF) study across the boreal caribou NT1 range (ENR, 2020a). Collar data from 435 individual caribou (including 147 caribou in the Dehcho region and 20 caribou in the Sahtu region), with an average monitoring interval of 690 days per collar were used to create seasonal and all-year habitat resource selection function (RSF) models. Collar data ranged from 1 May 2002 to 31 March 2018. The fix rate varied among radio collars, ranging from one location per hour to one location every five days. The RSF models quantified areas caribou are more likely to select by season and all year round (DeMars et al., 2020). The all-year habitat selection is illustrated in Figure 3.2. Boreal caribou habitat selection was based on the following covariates:

- land cover type
- time since the last burn
- distance to and density of anthropogenic disturbance features (e.g., roads and seismic lines)

The study compared resources associated with locations used by collared animals to resources associated with random or unused locations within each identified land cover type (e.g., dense conifer forest). The RSF maps represent the relative likelihood (bin 1 representing the weakest selection, and bin 10 represents the strongest selection) that a given area in the landscape would be selected by an "average" adult female boreal caribou moving through the landscape based on conditions as of 2017 (i.e., including fire data up to and including 2017 and anthropogenic disturbance as measured in 2015). For the all-year model, areas rated in bins 6 and higher are selected by boreal caribou, and those in bins 5 and lower are used proportionally or less than expected by chance.



Boreal Caribou Collar Locations (2003-2023)

- Season**
- ▲ Spring Dispersal (Apr 2-30)
 - Calving (May 1-Jun 30)
 - Summer (Jul 1-Sept 12)
 - ◆ Fall (Sept 13-Nov 30)
 - ✚ Winter (Dec 1-Apr 1)
- Boreal Caribou Range
 ■ Proposed Mackenzie Valley Highway Alignment - Issued for EA 2022

- Granular Borrow / Rock Quarry Site and Access
- Local Study Area
- Regional Study Area
- Community
- All-Season Road
- Winter Road
- District Boundary
- Region Boundary
- Settlement Area Boundary

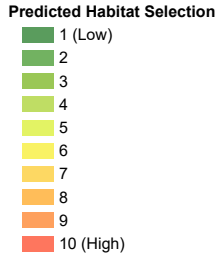
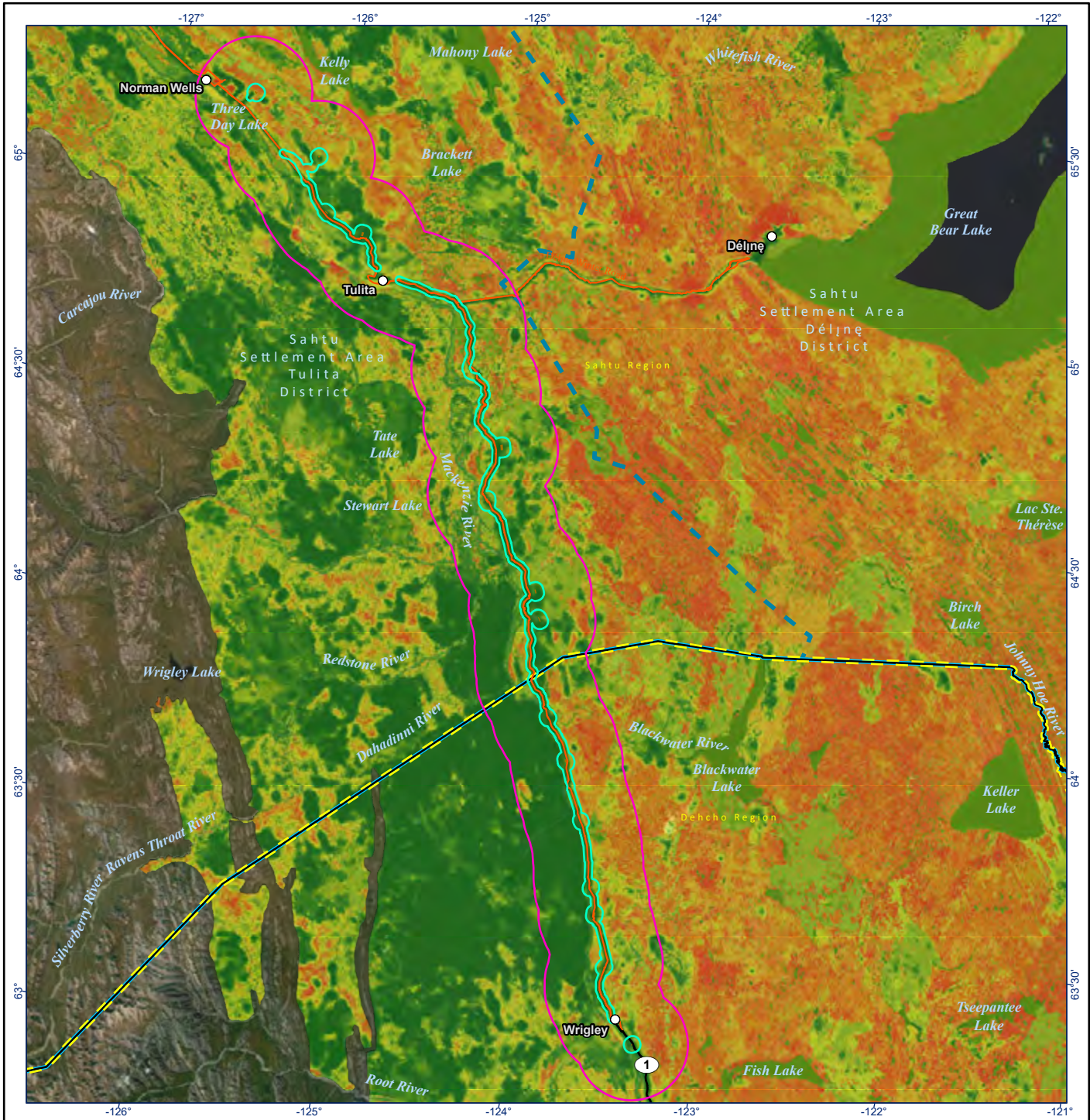
0 10 20 Kilometres
 (At original document size of 8.5x11)
 1:600,000

Project Location: Wrigley to Norman Wells, NWT
 Client/Project: 144903025-0015 REV/B

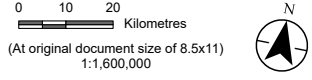
Government of Northwest Territories
 Mackenzie Valley Highway Project
 Figure No. **3.1**
 Title
Boreal Caribou Range and Collar Locations

Notes

1. Coordinate System: NAD 1983 Northwest Territories Lambert
2. Data Sources: Centre for Geomatics Government of NWT, Environment and Natural Resources Government of NWT, Government of Canada, Stantec, Environment and Climate Change, 2023. Bluenose East Collar Locations (2003-2023). NWT Wildlife Management Information System. Government of the NWT, Yellowknife, NT
3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS



- Proposed Mackenzie Valley Highway Alignment - Issued for EA 2022
- Granular Borrow / Rock Quarry Site and Access
- Local Study Area
- Regional Study Area
- Community
- All-Season Road
- Winter Road
- District Boundary
- Region Boundary
- Settlement Area Boundary



Project Location: Wrigley to Norman Wells, NWT
 Client/Project: 144903025-0017 REV'B

Government of Northwest Territories
 Mackenzie Valley Highway Project

Figure No. **3.2**
 Title
Predicted All-Year Habitat Selection by Boreal Caribou

Notes
 1. Coordinate System: NAD 1983 Northwest Territories Lambert
 2. Data Sources: Centre of Geomatics of Government of NWT, Environment and Natural Resources Government of NWT, Government of Canada, Stantec
 3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS

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During the snow-free season, caribou showed a higher preference for burns less than 10 years old and burns more than 30 years old); they appeared to avoid burns 11 to 30 years old (DeMars et al., 2020). From early to late-winter, caribou avoided burns less than 40 years old. The authors suggested that the preference for burns less than 10 years old during the snow-free season could be due to abundant higher-quality forage for lactating females. Human disturbance features also influenced caribou habitat selection, with areas farther away from major roads and disturbances, such as well pads and cutblocks being preferred by caribou (DeMars et al., 2020). During the snow-free season, caribou appeared to avoid areas with high linear feature density but preferred these areas during mid- to late winter.

Other key findings of the study were:

- The observed selection and/or avoidance patterns were not constant throughout the year.
- Stronger selection and/or avoidance patterns were observed in winter compared to calving and summer seasons.
- During winter, collared caribou avoided areas with a high proportion of deciduous habitat, while during calving, summer and fall, this land cover type was occasionally preferred.

Collared caribou avoided water during most seasons, which was less obvious during late fall to late winter (when the water was frozen).

Caribou selection for dense conifer land cover increased during mid- to late-winter. The predicted year-round habitat selection of boreal caribou in their NT range is shown in Figure 3.2 (ENR, 2020a). Most of the area west of the MVWR and some areas to the east (directly adjacent to the road) are predicted to be low-use areas. The lower habitat suitability directly adjacent to the road is partly based on the model prediction that boreal caribou avoid major roads, and the existing MVWR was included as such in the model. In the Dehcho Region, areas likely to be selected by boreal caribou are also east of the winter road, closer to the road than in the Sahtu Region. Both regions have large areas of year-round, predicted high-use areas east of the MVWR.

Population Size and Trends

Whether a range can support a self-sustaining local population depends on the amount and quality of habitat available for boreal caribou. A self-sustaining population is one that, on average, demonstrates stable or positive population growth over the short-term (less than or equal to 20 years) and is large enough to withstand stochastic events and persist over the long-term (greater than or equal to 50 years) without the need for ongoing active management intervention (Environment Canada, 2012).

Although boreal caribou are currently considered to be one continuous population across the NT, there are ongoing studies assessing whether evidence exists of sub-population structure based on genetic analyses, TK, and movements of collared individuals (Zittlau, 2005; Manseau et al., 2017; Polfus et al., 2017; Wilson et al., 2017, 2020). Boreal caribou are difficult to census because of their low population density and low detectability in areas with dense canopy cover. This limits the feasibility of measuring population size and trend based on repeated estimates. Population estimates are based on the probable caribou density in different regions derived from the community and scientific knowledge.

In 2012, there was an estimated 6,000 to 7,000 boreal caribou in the NT (GNWT, 2019). Based on density estimates at the time, population size for the Sahtu and Dehcho regions were estimated to be approximately 1,677 and 2,318 caribou, respectively. These are estimates only, and updated population estimates are needed (GNWT, 2019).

Monitoring population trends based on a sample of collared adult females across regions is an easier method to monitor the population status of boreal caribou. Population growth estimates are based on the annual survival rates of collared adult females and the calf recruitment rates calculated from late winter composition surveys. The finite rate of population increase (λ ; Lambda) is estimated annually from annual adult female survival and annual recruitment of calves into the population (Hatter and Bergerud, 1991, Latham et al., 2011a). Lambda (λ) values >1 indicate an increasing population, $\lambda=1$ indicates a stable population, and λ values of <1 indicate a decreasing population. Adult female survival and calf recruitment vary substantially from year to year. Combining these two measures can result in some years with λ values <1 and others with $\lambda>1$. Lambda values averaged over time better indicate whether the caribou population trend is increasing, stable or decreasing. Determining an overall population trend for boreal caribou in the NT is complicated by varying population trends among regions.

Traditional and community knowledge compiled in 2012 suggests that boreal caribou population trends are stable or increasing in the Sahtu Region and increasing, stable, or declining in different areas of the Dehcho Region (Species at Risk Committee, 2012). In an ongoing long-term study of 195 collared boreal caribou in the Dehcho Region, the estimated λ from 2004 to 2019 is 0.99 (Larter et al., 2019). This subpopulation is thought to be recovering from some years of poor female survival and calf recruitment earlier in the study (Larter et al., 2019). Estimates of population trends from the 2003 to 2011 collar-based population monitoring program in the Sahtu Region are unavailable (GNWT, 2019).

Demographics

Boreal caribou have a high probability of conceiving after reaching maturity at two to three years old and can produce calves late into their lifespan (Larter and Allaire, 2016). Based on the level of progesterone in blood serum of collared females in the Dehcho Boreal Caribou Study, 92% of females were pregnant, 5% were not pregnant, and pregnancy status could not be determined in the remaining 3% of the samples (Larter et al., 2019). High levels of pregnancy based on blood progesterone have been found in other boreal caribou studies (Kelly and Cox, 2013, McLoughlin et al., 2019). Cows usually produce a single calf; twinning rates are low.

Parturition can be identified by sudden and marked changes in the daily movement patterns of collared female boreal caribou (DeMars et al., 2013). Daily movement rates drop dramatically two days before calving and remain very low for about a week post-calving (Nagy, 2011). Using movement data, Larter et al. (2019) determined the potential calving events for all collared female boreal caribou (2004 to 2018), for which locations were available from May 1 to June 1 annually. Of 404 potential calving events, there were 378 births (94%), 21 events (5%) when a caribou did not give birth, and parturition was not determined for the remaining 5 cases. The peak of calving was May 15 \pm 7 days, with 49.7% of calves being born by May 14. There appears to be a decreasing trend in peak parturition of female boreal caribou from 2004 to 2018 in the Dehcho Region (Larter et al., 2019). In other words, boreal caribou appeared to calve

progressively earlier annually within that period. Calves remain with their mothers until the following spring.

Most calf mortality occurs in the first six weeks when they are most vulnerable to predators. Calf recruitment into the population is calculated from late-winter population composition surveys and, with estimates of female survival, is used to calculate the population growth rate (see Section: Population Size and Trends). It is generally assumed that calves surviving into late winter are recruited into the breeding segment of the population because most calf mortality occurs in the first months after birth. Low recruitment rates (less than 0.2 calves per cow) have been implicated in the long-term population declines of other woodland caribou herds (Schaefer et al., 1999, McLoughlin et al., 2003, Jenkins and Barten, 2005, Hervieux et al., 2013, Environment Yukon, 2016a). Based on the long-term monitoring of population trends and recruitment rates of three northern mountain caribou herds (woodland caribou but of a different ecotype than boreal caribou) in the Yukon, a minimum fall recruitment rate of 0.20 to 0.25 calves per cow is required to ensure a stable population growth rate (Environment Yukon, 2016a). Calf recruitment generally varies widely from year to year within a population. Although variable with a range of 0.23 to 0.45 calves per cow, calf recruitment in the Dehcho Region appeared consistently high, averaging 0.33 calves per cow with only 2 out of 14 years of monitoring with rates between 0.20 to 0.25 calves per cow in late winter and none below those levels (Larter et al., 2019). These figures are much higher than those reported for the South Slave Region from 2004 to 2017 (McLaren, 2017). Recruitment rates calculated from composition surveys in the Dehcho Region (Larter et al., 2019) were consistently much higher than the minimum recruitment rates required for a stable population growth rate, despite being conducted in late winter instead of the fall like the Yukon studies (i.e., over five months later), and should be indicative of an increasing population. However, the comparison with the Yukon herds can only serve as a coarse indication because of assumed differences between the study areas, including aspects such as ecosystems, predator presence and abundance, presence of other prey species, level and type of human disturbances, and wildfire history and extent of associated disturbance.

Winter snow depth is an important driver of annual variability in recruiting ungulate calves (Mech et al., 1987; Crête and Courtois, 1997). However, Larter et al. (2017), in a study conducted south of Wrigley, found no relationship between calf and yearling recruitment and snow depth. In their study, recruitment ranged from 0.23 to 0.45 calves per cow (moderate to high), and late winter snow depth also ranged from 41 cm to 85 cm (low to moderate late-winter depth). Their results are applicable in the boreal caribou range in the NT, where late-winter snow depths, caribou population densities, development activities, and wolf densities are low relative to those found in other caribou ranges.

Annual adult female survival in the Dehcho Region was estimated at 96.9% for 2018/2019 based on 32 females collared between April 1, 2018 and March 31, 2019. The long-term average survival rate (2006 to 2019) was estimated to be 81.7% (range 62% to 100%) based on a larger sample size of collared females (Larter et al., 2019). Estimated annual adult female survival rates were lower than those reported for the South Slave Region and the Gwich'in Settlement Area (Nagy, 2011; McLaren, 2017). Surprisingly, female survival rates in the Dehcho Region were also much lower on average than those reported for most herds in Alberta, where nearly all herds are declining (Hervieux et al., 2013) and northern Saskatchewan (McLoughlin et al., 2019). Few collars are deployed on males in the NT and elsewhere, and adult male survival rates cannot be reported confidently.

Predators generally limit caribou population growth and density, and populations are kept well below the carrying capacity allowed by habitat availability alone (Rettie and Messier, 1998; Bergerud and Elliott, 1998; Hegel et al., 2010). Wolves (*Canis lupus*) are the primary predator of boreal caribou in the Dehcho Region (Larter et al., 2019) and elsewhere in the range of woodland caribou and can limit population growth or cause some populations to decline (Latham et al., 2013; Hervieux et al., 2014). However, other predators, such as black bears (*Ursus americanus*) and grizzly bears (*Ursus arctos*), can also be important locally and seasonally. For instance, calves are especially vulnerable to bear predation in the first few weeks after calving. Linear developments can facilitate predator travel efficiency while also providing movement corridors between habitats, thus reducing the spatial separation between predators, especially wolves, and caribou, resulting in increased predation risk (Latham et al., 2011b; Whittington et al., 2011). Between 2004 and 2019, 81 collared boreal caribou of the Dehcho Boreal Caribou Study died (Larter et al., 2019). A cause of death was not determined for 19 caribou, and of the 61 collared caribou with a known cause of death, 79% were the result of wolf predation, 11% were harvested, 8% died of malnutrition, and 2% died from bear predation (Larter et al., 2019). The remains of 33% of caribou preyed by wolves and black bears were located less than or equal to 400 m from linear features. Most caribou mortality occurred between late March and mid-July (65%), excluding harvested caribou. The average age at death was 10.5 years, and the age range was 4 to 22 years. Only one caribou each was aged 17 years and 22 years. The latter was only the second of 42,766 caribou aged at a commercial laboratory found to be that old (Larter and Allaire, 2016). All other animals were younger than 17 years.

Home Range and Movements

There is no clear evidence for gaps in the NT distribution of boreal caribou or genetic subpopulation structure. Therefore, boreal caribou in the NT are managed as a single population with a continuous range occurring across all regions (GNWT, 2019; Figure 3.1). Boreal caribou do not undertake altitudinal migrations like the northern mountain ecotype or long-distance migrations like barren-ground caribou. However, they move around their broad range according to their seasonal needs (e.g., availability of lichen, suitable calving habitat). In some areas of their range, broad rivers, burned forests, and anthropogenic development (such as pipelines and roads) can, in some circumstances, be barriers to movement (GNWT, 2019). Nagy (2011) reported that boreal caribou in the NT use areas less than or equal to 400 m from anthropogenic linear features less frequently than in other areas, and travel faster when they encounter linear features.

Caribou movements in the Dehcho Region have been monitored as part of the ongoing Dehcho Boreal Caribou Study (Larter et al., 2019). For that study, 135 collared female caribou provided locations for greater than or equal to 12 months, and a subset of 89 females provided locations for greater than or equal to 24 months. Based on estimates from the study, the mean home range size of collared females was 3,119 km² (median 2,810 km²; range 261–14,420 km²) (Larter et al., 2019). These home range sizes are similar to those reported for females in other areas in the NT (Nagy, 2011). In addition, six collared male caribou provided locations for ≥12 months with an average home range size of 2,608 km² (median 1,507 km²; range 521 km to 9,344 km²). Male home range sizes elsewhere in the NT are unavailable for comparison (Larter et al., 2019).

To avoid predation, female boreal caribou spread out during the calving and post-calving periods (May 1 to July 12 for the Dehcho and Sahtu regions combined; GNWT, 2022a). Daily movement rates drop dramatically from 6 km/day two days before calving to 0.2 km/day on the day of calving and remain at 1 km/day for about a week post-calving (Nagy, 2011). An analysis of daily movement patterns of collared female caribou is a reliable, non-invasive way to determine when and where a female boreal caribou calved (Nagy, 2011; DeMars et al., 2013).

Threats

Wildfire is the main source of boreal caribou habitat disturbance in the NT (DeMars et al., 2020). Historically, when a forest fire occurred, boreal caribou would move to a different part of their range with more suitable habitat. However, as human-caused disturbance in their range increases, there are fewer suitable areas into which boreal caribou can move (Environment Canada, 2012). Habitat disturbance has led to boreal caribou declines in neighbouring British Columbia and Alberta, and the reasons for the declines involve the relationship between habitat disturbance, predators, and prey.

Seismic lines and other linear disturbances can cause habitat fragmentation and provide travel and sight corridors for wolves and human hunters. This can provide easier access to caribou where they may once have found refuge. Linear disturbance, therefore, may increase the chances of predators encountering caribou, resulting in higher predation rates (Latham et al., 2013; Hervieux et al., 2014).

Anthropogenic disturbances stemming from land-use activities such as forestry, oil and gas exploration and development, mining and mineral exploration and development, hydro-electric development, and tourism have been identified to negatively affect local populations of boreal caribou (Environment and Climate Change Canada, 2020). These activities may affect boreal caribou through habitat loss, decreased habitat quality (i.e., habitat degradation), and the development of linear features such as roads and seismic lines as part of the industrial activity (resulting in habitat fragmentation).

Fire and anthropogenic disturbances (e.g., seismic activity, pipelines, roads, and logging) are the main factors impacting the availability of large areas of undisturbed habitat. An analysis by Environment Canada found that as of 2011, 69% of the boreal caribou range in the NT was undisturbed, using the definition of disturbance in the national recovery strategy (Environment Canada, 2012). In 2014 and 2015, severe fires in the NT resulted in approximately 2.3 million hectares of boreal caribou range burned throughout the NT. It is estimated that the 2014 and 2015 fires reduced the percentage of undisturbed habitats from 69% to 66% in the NT (Conference of Management Authorities, 2017). Regionally, the percentage of undisturbed habitat, as of fall 2015, was approximately 78% in the Sahtu Region and 51% in the Dehcho and South Slave regions combined (Conference of Management Authorities, 2017). From 1960 to 2019, fires within the LSA burned 4,956.7 ha (18.5%) of land cover in the Dehcho Region and 36,521.7 ha (75.2%) in the Sahtu Region. Forest fire prevalence within the RSA has been similar in the Dehcho Region (50.8%) and Sahtu Region (52.8%) (Wildlife and Wildlife Habitat TDR [K'alo-Stantec, 2022b]).

Technical Data Report—Caribou and Moose

Section 3: Review of Existing Data
Rev2 August 2023

A slightly different analysis of NT data found that, as of 2010, approximately 62% of the boreal caribou range in the NT was secure, unburned habitat (land over 400 m away from seismic lines and undisturbed by fire in the last 45 years) (Species at Risk Committee, 2012). Large patches (greater than 500 km²) of secure, unburned habitat covered approximately 43% of the boreal caribou range. There was more secure, unburned habitat and less fragmented habitat in the northern portion of the NT boreal caribou range compared to the southern portion of the range.

Regional disturbance statistics in the Boreal Caribou Range Planning Framework (GNWT, 2019) calculated lower levels of fire disturbance (and consequently total disturbance) than Environment Canada (2012), based on more precise fire polygons to measure fire disturbance. The RSA covers parts of two (of a total of five) range planning areas in the NT1 boreal caribou range: the Southern NWT and the Sahtu planning areas (GNWT, 2019). Based on wildfire data reported through 2017, total disturbance in the Southern NWT range was estimated at 46.7% (33.4% wildfire and 16.1% anthropogenic disturbance), with 53.3% undisturbed landscape in this planning area. Less disturbance was calculated for the Sahtu planning area, with 20.9% being assessed as disturbed landscape (16.6% wildfire and 6.9% anthropogenic disturbance), and a total of 79.1% were identified as undisturbed habitat in this planning area (GNWT, 2019). The entire NT boreal caribou range (NT1) disturbance was calculated as being 31% (23.7% wildfire and 9.3% anthropogenic disturbance), and 69% of the range was assessed as being undisturbed (GNWT, 2019).

Health

A study of boreal caribou conducted from 2003 to 2006 south of Wrigley found a low prevalence of most parasites and disease antibodies (Johnson et al., 2010). Blood was collected from 104 female caribou. Serum antibodies were found in Bovine herpesvirus 1 (BHV-1), *Toxoplasma gondii*, and *Mycobacterium avium paratuberculosis* in 37.5%, 2.9%, and 1.3% of boreal caribou, respectively. The prevalence of antibodies to BHV-1 in caribou from the NT is lower than that of boreal caribou in British Columbia (63%) (Schwantje et al., 2016), Saskatchewan (55%) (Jordan et al., 2003), and Alberta (52%) (Tessaro et al., 2005). Bovine viral diarrhoea virus (BVD), Bovine parainfluenza virus 3 (PI3), and *Brucella* sp. were not detected. *Trypanosoma* sp., a common protozoon found in caribou with low pathogenicity, was detected in the blood of 72.1% of boreal caribou. Fecal samples were also collected from 149 boreal caribou. Trichostrongyle-type egg cells (ova) were detected in 61.7% of samples. In contrast, dorsal-spined nematode larvae, *Eimeria* sp. oocysts, *Moniezia* sp. ova, *Giardia* sp. cysts, *Cryptosporidium* sp. oocysts were all detected in less than 5% of samples. *Eimeria* sp., *Cryptosporidium* sp., and *Giardia* sp. were not previously reported in boreal caribou. Annual sampling of caribou fecal samples as part of the Dehcho Boreal Caribou Study since 2011 continue to show a low incidence of diseases and parasites common in boreal caribou, and there is no cause for concern (Larter et al., 2019).

However, studies of boreal caribou populations in northeastern British Columbia from 2012 to 2015 reported the presence of a pathogenic bacterium, *Erysipelothrix rhusiopathiae*, which has the potential to adversely affect caribou survival and reproduction (Schwantje et al., 2016). This bacterium has been reported to cause mortality in free-ranging ungulates across Canada (Campbell et al., 1994; Kutz et al., 2015; Forde et al., 2016). To determine if *E. rhusiopathiae* is present in boreal caribou in the Dehcho Region, ENR submitted serum samples from caribou captured in 2010 and 2012 to 2018 for testing (Larter and Allaire, 2018; Larter et al., 2019). Of the 115 samples submitted, 15.7% indicated exposure to

the bacterium (Larter et al., 2019). Caribou that showed exposure to the bacterium were located throughout the study area. Prevalence of the bacterium appears lower than levels found in northeastern British Columbia caribou herds, although it appeared variable between herds (21% in 2012/2013, n=159; 36% in 2013/2014, n=39; 15% in 2014/2015, n=20) (Schwantje et al., 2016). Results from British Columbia suggest that non-predatory mortality may have been associated with the bacterium.

Winter ticks (*Dermacentor albipictus*) were first documented on captured boreal caribou from the NT in the Hay River Lowlands in March 2013 (Larter and Allaire, 2014) and in the Dehcho and South Slave regions in 2015 (Larter et al., 2019). The prevalence of ticks increased annually from 2016 to 2018 (Larter et al., 2019). However, winter ticks were not detected on any caribou captured in the Dehcho Region in 2019, and no hair loss was observed during capture operations and demographic composition surveys (Larter et al., 2019). The authors noted that 2019 was the first winter in several years with temperatures below -40°C for an extended period.

Information on contaminant levels (e.g., metals, organochlorines) in NT boreal caribou was unavailable for this TDR.

Mortality

Harvest

Indigenous people and resident hunters can harvest boreal caribou in the NT. To date, the management of boreal caribou harvest has been based on the understanding that harvest levels are low because people tend to harvest boreal caribou opportunistically. Traditional and community knowledge holders and NT biologists have raised concerns about factors that may increase harvest levels and lead to overharvesting (Species at Risk Committee, 2012). With increasing restrictions on harvest of other large game species (such as barren-ground caribou), more harvesters are moving to boreal caribou areas to hunt. Facilitated harvest through increased access to boreal caribou habitat via rivers, seismic lines, roads and other developments has increased concerns about overharvesting (Environment Canada, 2012).

Harvest Regulations

In the NT, the boreal caribou harvest is regulated. As outlined in the 2020–2021 NWT Hunting and Trapping Regulations, resident hunters can hunt one male caribou between July 15 and December 15 annually (GNWT, 2020a). Non-resident hunters cannot harvest boreal caribou in the NT. Indigenous hunters can hunt boreal caribou without restrictions all year, and General Hunting Licence holders (“an Aboriginal [i.e., Indigenous] person that is a member or eligible to be a member of an NWT organization listed in the regulations”) can hunt male caribou only (with a tag) between July 15 and December 15.

The Hunting Areas through which the Project is routed include areas D (Dehcho Region) and S (Sahtu Region). Both areas have the same restrictions (outlined above). To collect information on hunting effort and harvest in the NT, the NWT Resident Hunter Harvest Survey is sent each fall to all resident hunters who, in the previous season, had purchased a resident big or small game hunting licence (GNWT, 2020a).

GNWT Resident Hunter Survey

ENR summarized the resident hunter harvest of woodland caribou in the NT (from the annual Resident Hunter Surveys) between 1983/1984 and 2018/2019 (ENR, 2020b). The data were pooled into larger regions (based on the residence of the hunter reporting the harvest), with Fort Smith incorporating the Dehcho, South Slave and North Slave regions except Yellowknife; Inuvik incorporating the Inuvialuit, Gwich'in, and Sahtu settlement regions/areas; and Yellowknife representing harvest from hunters residing in the Yellowknife region. Table 3.1 provides the average numbers of the resident hunter woodland caribou harvest in the Fort Smith, Inuvik, and Yellowknife regions between 1983 and 2019 (ENR, 2020b). These numbers include both the boreal and northern mountain populations. However, most of the woodland caribou harvest across the NT are of the mountain ecotype. ENR has estimated that the annual average resident NT boreal caribou harvest is 19 and mountain caribou is 29 (ENR, 2021, pers. comm.).

Overall, there seemed to be a decline in the boreal caribou harvest for the two regions during the reported timeframe. However, these pooled numbers only include resident hunter harvest. Information on harvest by Indigenous hunters and General Hunting Licence holders is not included here, and numbers are unavailable. In addition, between 1992/1993 and 2018/2019, the boreal caribou harvest from hunters residing in the Yellowknife region was consistently higher than that from the Inuvik and Fort Smith regions. It also did not decrease during these years, as observed for the other regions but fluctuated in numbers between 3 and 63 animals per year (ENR, 2020b). It should be noted that the GNWT resident hunter survey covers a large area and cannot be used to characterize the harvesting of woodland caribou in the RSA.

Table 3.1 Annual Average Reported Resident Hunter Woodland Caribou Harvest in the Fort Smith, Inuvik, and Yellowknife Regions Between 1983 and 2019

Region	Average Harvest (1983–2019)	Maximum Harvest	Year of Maximum Harvest	Minimum Harvest	Year of Minimum Harvest
Fort Smith (includes Dehcho Region)	19	66	1983/1984	0	2016/2017
Inuvik (includes SSA)	11	54	1991/1992	2	2013/2014
Yellowknife (southeast of the RSA; included for reference purposes)	25	63	2015/2016	3	1985/1986

Vehicle Collisions

Currently, there are no data on wildlife-vehicle collisions along the MVWR (Armstrong, 2021, pers. comm.). ENR maintains an informal database for wildlife-vehicle collisions. The database was created mostly for collisions with wood bison (*Bison bison athabasca*) but has been expanded to include other wildlife species. Between 2009 and 2016, five vehicle collisions with boreal and/or barren-ground caribou were recorded in the Dehcho and South Slave regions (Armstrong, 2021, pers. comm.). Vehicle collisions are not considered a major threat to boreal caribou (Environment and Climate Change Canada, 2020).

Potential Limiting Factors

Although snow depth does not appear to influence calf survival of boreal caribou in the NT (Larter et al., 2017), habitat conditions that allow females and their calves to avoid predators during calving, post-calving (most mortality occurs within the first six weeks after birth), and winter are critical to population sustainability. Because boreal caribou are naturally found at low densities, large areas of secure, undisturbed habitat are necessary for a healthy population because females spatially separate from each other during calving and post-calving.

Another consideration is the potential energy loss in caribou stemming from disturbances, such as noise and light disturbance, that may result in short-term behavioural and physiological responses of individual boreal caribou (Environment and Climate Change Canada, 2020). Typical responses displayed by individual boreal caribou include a startle response, elevated heart rate, and the production of glucocorticoids. Continued or repeated disturbance events can result in the avoidance of specific areas and, subsequently, the reduction in the use of suitable habitats (Environment and Climate Change Canada, 2020).

Disturbance from petroleum exploration (measured as frequent loud noise events) was modelled for woodland caribou in northeastern Alberta (Bradshaw et al., 1998), which demonstrated an effect on individual energy loss during winter at certain exploration intensities (Bradshaw et al., 1998). A single encounter with disturbance (i.e., loud noise) was considered unlikely to cause additional energy consumption in individual caribou. The study found five circumstances between 1988 and 1993 in which cumulative encounters (on average 27 to 89 encounters) with loud noise events may have resulted in woodland caribou losing 15% to 20% of their autumn body mass.

3.2.2.2 Barren-ground Caribou

Barren-ground caribou (*Rangifer tarandus groenlandicus*) from the Bluenose-East herd are known to periodically use eastern areas within the Sahtu Region during the fall/post-rut (November 1 to 30), winter (December 1 to March 31), and spring (April 1 to May 31) (Nagy et al., 2005b). Historically, Bluenose-East caribou were reported as far west as Norman Wells in the early 1950s, with many animals wintering from Tulita to Wrigley (Species at Risk Committee, 2017). Caribou were reported near Wrigley in winter 2002 after not being observed near that community for 20 years (Species at Risk Committee, 2017). A field program was carried out in September 2010 along the project highway corridor, and no caribou or sign of caribou (e.g., antler sheds) were observed during the field program (5658 NWT Ltd. and GNWT, 2011).

The generation time (i.e., the average time between two consecutive generations in a population) for barren-ground caribou is eight to nine years, based on fecundity and adult survival (Species at Risk Committee, 2017). Male caribou typically reach sexual maturity between the ages of two and four years; however, breeding is dominated by the largest males, which are often older (Conference of Management Authorities, 2020a). Female caribou typically first breed between two to three years old and will normally produce one calf per year (twins are rare) unless breeding is paused due to poor body condition (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Breeding during the fall rut in October and calving in the following spring are highly synchronized within a herd (Species at Risk

Committee, 2017; Conference of Management Authorities, 2020a). Calving occurs over a few days in late May or early June after the spring pre-calving migration northwards to the tundra (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Data collected from satellite-collared females between 1993 and 2009 estimated a mean calving date of June 7 for the Bluenose-East herd (Species at Risk Committee, 2017). The growth rate of calves depends on female milk production, which is influenced by female protein reserves, with underweight calves having a lower probability of survival (Species at Risk Committee, 2017). Weaning usually occurs in the fall (Species at Risk Committee, 2017).

Barren-ground caribou are generalist foragers; they consume a variety of plant species (e.g., shrubs, grasses, sedges, lichens, mushrooms), with selection being more driven by the stage of plant growth and corresponding nutrient content rather than the species of plant (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Caribou time their spring migration to correspond with the nutritional peak of plants (i.e., when leaf and flower buds start to open) to meet their energy requirements (Species at Risk Committee, 2017). Lichens are the preferred caribou forage during winter, regardless of whether they winter in forest or tundra habitats (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). As such, lichen availability likely influences caribou distribution on winter ranges. Lichens are rich in digestible carbohydrates but low in protein. To offset low protein levels, caribou recycle nitrogen and supplement their diet with evergreen leaves, sedges, dried leaves, and twigs of shrubs containing protein, which subsequently promotes the digestion of lichen (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Where lichen coverage is disturbed, regeneration is very slow (50 to 100 years), and caribou may avoid the area for several decades until lichens return (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a).

Conservation Status

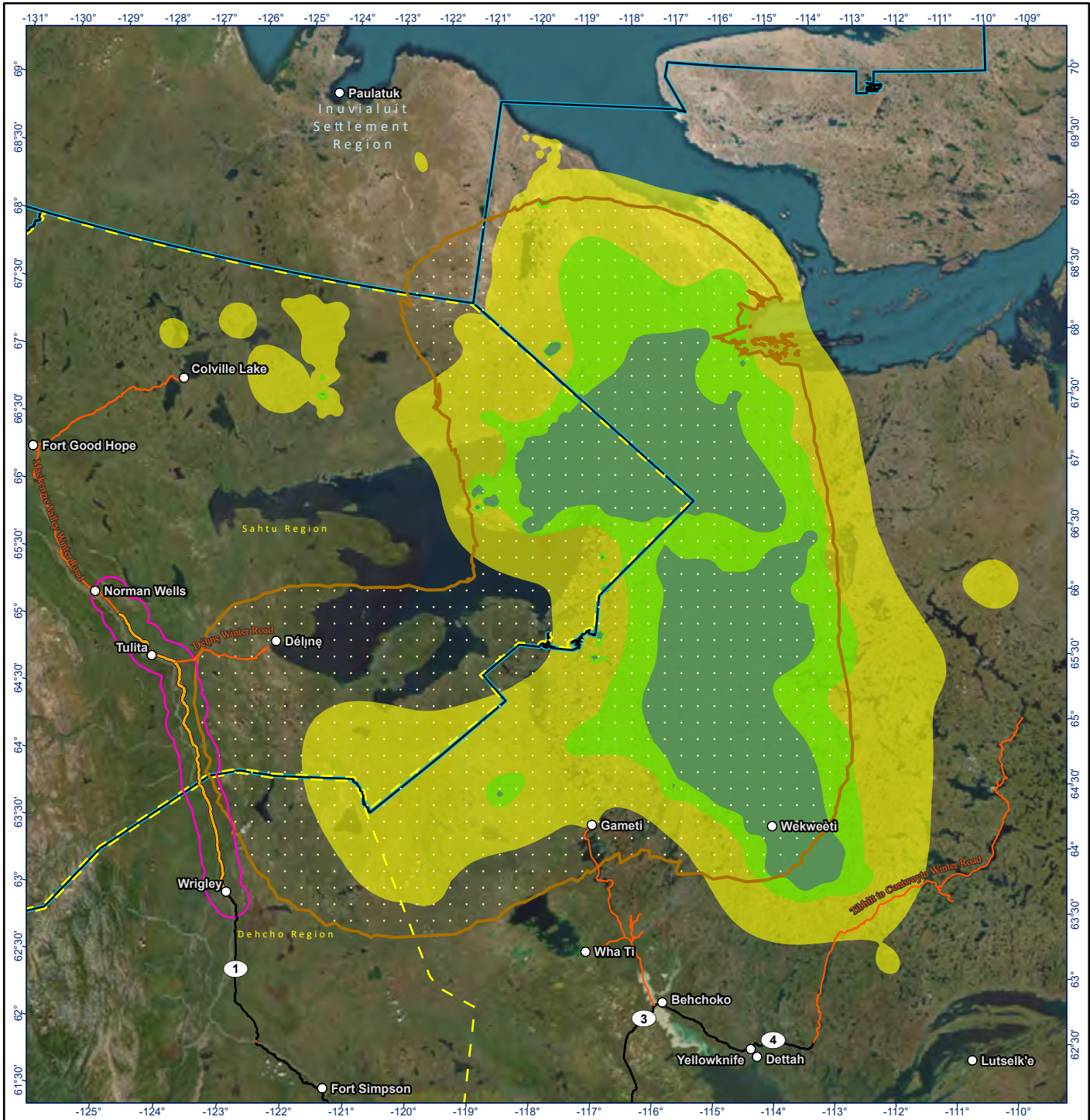
Barren-ground caribou are designated as threatened by COSEWIC but are not currently listed under Schedule 1 of the federal SARA (Government of Canada, 2019). In the NT, barren-ground caribou are listed as threatened under the territorial *Species at Risk (NWT) Act* (Conference of Management Authorities, 2020b). A threatened species is a species that is likely to become endangered in the NT if nothing is done to reverse the factors leading to population declines. In 2020, the GNWT released a recovery strategy that recommends objectives for the conservation and recovery of barren-ground caribou and approaches to achieve these objectives (Conference of Management Authorities, 2020a).

Collaborative co-management plans have been developed for barren-ground caribou herds in the NT, including the management plan for the Cape Bathurst, Bluenose-West, and Bluenose-East herds (Advisory Committee for Cooperation on Wildlife Management, 2014) and the Délı̄ne Got'ı̄ne Plan of Action (Délı̄ne Got'ı̄ne Community, 2015). This management plan was developed in response to population declines in the three herds to address long-term caribou management and stewardship (Advisory Committee for Cooperation on Wildlife Management, 2014). The management plan's goals are to "...maintain herds within the known natural range of variation, conserve and manage caribou habitat, and ensure that harvesting is respectful and sustainable" (Advisory Committee for Cooperation on Wildlife Management, 2014). The management plan is considered a working document that will be used to develop specific management tools for the Cape Bathurst, Bluenose-West, and Bluenose-East herds,

such as herd-specific action plans that will be regularly reviewed and updated as new information becomes available (Advisory Committee for Cooperation on Wildlife Management, 2014). A 2020–2021 action plan is currently available for the Bluenose-East herd (Advisory Committee for Cooperation on Wildlife Management, 2020). This action plan outlines recommended actions based on the herd’s status, responsibilities for the actions, and when and how the actions should be implemented (Advisory Committee for Cooperation on Wildlife Management, 2014, 2020). Management actions identified in the 2020-2021 action plan fall into six categories: education, habitat, land use activities, predators, harvest management, and monitoring.

Distribution

Barren-ground caribou are migratory and are found in Canada across the Yukon, NT, and Nunavut, with some herds wintering in northern Manitoba and Saskatchewan (Species at Risk Committee, 2017). The current range of the Bluenose-East herd includes parts of the eastern NT and Nunavut (Species at Risk Committee, 2017). Figure 3.3 depicts the Bluenose-East herd annual (historical) range and the more recent range use (2012–2022). The 2012-2022 annual range was estimated by combining the utilization distributions (UDs) of 607 caribou-year combinations. The UD expresses the probability distribution of caribou space use on the landscape. To derive individual-level UD, a fixed-kernel density estimator was used with a scaled reference bandwidth (Worton 1989, Nagy et al. 2011). Each UD grid was equivalent in extent to cover the area surrounding all GPS locations and was calculated at a 500 m x 500 m resolution. Once estimated, the 607 UD were combined (i.e., cells summed across the 607 grids and normalized) and isopleths (95%, 75% and 50%) were calculated. The isopleths delineate the probability of caribou occurrence. For example, the 95% isopleth identifies the boundaries within which there is a 95% probability of caribou occurrence in the broader annual range. In contrast, the 50% isopleth identifies the ‘core’ range, where space use is most frequent. Although the annual range of the Bluenose-East herd historically overlapped with the eastern portion of the RSA (Figure 3.3), the current range calculated from the most recent telemetry data (2012 to 2022) shows no overlap with the RSA or LSA.



- Barren-ground Caribou Annual (Current) Range (2012-2022)**
- 95%
 - 75%
 - 50%
- Barren-ground Caribou Annual (Historical) Range**
- Proposed Mackenzie Valley Highway Project Route
- Caribou and Moose Local Assessment Area**
- Community
 - Northwest Territories Highway
 - Winter Road
 - Region Boundary
 - Settlement Area Boundary

0 50 100 Kilometres
(At original document size of 8.5x11)
1:600,000

Kilo-Stantec EDI

Project Location: Wrigley to Norman Wells, NWT
Prepared by DS on 8/15/2023
TR by AJ on 8/15/2023

Client/Project: 144903025-0013 REV C

Government of the Northwest Territories
Mackenzie Valley Highway Project

Figure No. **3.3**

Title
Annual Range and Current Distribution of Barren-ground Caribou (Bluenose-East Herd)

Notes

1. Coordinate System: NAD 1983 Northwest Territories Lambert

2. Data Sources: GNWT (Government of the Northwest Territories) Centre for Geomatics, n.d. Inventory of Landscape Change Map Viewer; GNWT, Centre for Geomatics, n.d. Open Data, MVLWB, n.d. Public Registry, Sahtu Land and Water Board, n.d. Public Registry, Environment and Natural Resources GNWT, Government of Canada, Stantec, Wilson and Haas 2012, and Caslys Consulting Ltd. 2015-2016, Nagy et al. 2011 (Historical Range), Environment and Climate Change, 2023. Bluenose East Collar Locations (2012-2022), NWT Wildlife Management Information System. Government of the NWT, Yellowknife, NT.

3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCAN World Imagery: Earthstar Geographics World Hillshade: Esri, USGS. Imagery date: 2021

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Seasonal Habitat

Barren-ground caribou require large annual ranges where they undertake seasonal migrations to meet their life requirements (Species at Risk Committee, 2017). Seasonal habitat use for caribou is a balance between obtaining sufficient nutrients to support reproduction and survival and minimizing predation risk and parasite harassment. Bluenose-East caribou calve and summer in tundra habitats along the Arctic coast east of Kugluktuk in Nunavut (Species at Risk Committee, 2017; Nagy et al., 2005b). In the fall, the herd migrates south and winters below the treeline south, east, and northeast of Great Bear Lake in parts of the NT and Nunavut (Species at Risk Committee, 2017; Nagy et al., 2005b). They may use an area east of the RSA during winter, mainly in the Dehcho Region. With the arrival of spring, the herd migrates northwards back to their calving grounds at the coast (Species at Risk Committee, 2017; Nagy et al., 2005b).

The harsh Arctic winters are hard on barren-ground caribou energy reserves, especially for pregnant females (Species at Risk Committee, 2017). To meet their high nutritional requirements, in spring/early summer, barren-ground caribou migrate northwards to their calving grounds, timing their arrival to correspond with the nutritional peak of plants (when leaf and flower buds start to open) (Species at Risk Committee, 2017). This is especially critical for pregnant females under increased energy demands during lactation. Travel conditions influence the timing of arrival on the calving grounds (e.g., snow depth and hardness) and body condition (Species at Risk Committee, 2017). Adverse weather conditions may alter habitat suitability on the calving grounds by delaying snowmelt and timing of spring green-up, which impacts calf survival (Species at Risk Committee, 2017). Newborn calves are vulnerable to predation on the calving grounds; to minimize predation risk, female caribou sacrifice higher forage quality and abundance and select habitat cover that will more effectively camouflage their young from potential predators (Species at Risk Committee, 2017). Male and juvenile caribou that do not migrate north to the calving grounds with the females will eventually overlap in distribution with the females and calves later during the summer (Species at Risk Committee, 2017).

Habitat selection by barren-ground caribou on summer ranges is driven by the need to obtain high-quality forage while reducing exposure to parasite harassment (e.g., warble flies and mosquitoes) (Species at Risk Committee, 2017). Habitat features that provide refuge from parasite harassment include remnant snow patches, eskers, shallow water, and coastal flats where cooler temperatures and increased winds discourage insects (Species at Risk Committee, 2017).

During the fall, habitat selection by barren-ground caribou has not been described in the NT. Most barren-ground caribou migrate south during the fall towards their winter range where sufficient forage and shelter are available to survive the harsh Arctic winters (Species at Risk Committee, 2017). Although winter is considered a critical period for barren-ground caribou, few studies have been completed for herds in the NT to identify critical attributes of the winter range (Species at Risk Committee, 2017). Winter habitat selection is generally driven by stand age, forage availability (particularly lichens), snow depth, and predator abundance (Species at Risk Committee, 2017). Caribou select more mature forest stands that offer higher quality and abundance of forage, more favourable snow conditions for movement, and better protection from potential predators. When caribou travel throughout their winter range, they select more open habitats (e.g., frozen lakes and open wetlands) where wind-hardened snow facilitates easier movement, and predators are more visible (Species at Risk Committee, 2017).

Population Size and Trends

Barren-ground caribou herds in the NT have historically experienced large population fluctuations, with their abundance naturally cycling between highs and lows (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Recent substantial declines and population estimates suggest herd numbers are currently at historic lows (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Survey data collected between 1989 and 2016 (equivalent to three caribou generations) show an 89% decrease in the size of the Bluenose-East herd during that timeframe (Species at Risk Committee, 2017). A post-calving photo survey completed in 2000 estimated 104,000 caribou in the Bluenose-East herd. The herd then experienced an annual rate of decline of 10% between 2000 and 2006 according to data collected during post-calving photo surveys in 2005 and 2006 (i.e., estimates of 70,100 and 66,800 caribou, respectively). A post-calving photo survey completed in 2010 estimated 122,697 caribou in the Bluenose-East herd, which indicated the herd was increasing (Species at Risk Committee, 2017). However, the author of the 2010 survey report suggested the results of the 2005 and 2006 surveys may have underestimated herd size due to poor aggregation behaviour during the surveys. Another suggestion was that high calf survival and reduced winter harvest due to a change in winter distribution was responsible for the population increase between 2006 and 2010 (Species at Risk Committee, 2017). More recent data collected between 2010 and 2018 during calving photo surveys indicated the Bluenose-East herd declined at an estimated annual rate of 20% (Boulanger et al., 2019), but possibly stabilized by 2021 (Boulanger et al. 2022). The population estimate from 2013 (i.e., 68,295 caribou; Boulanger et al., 2014) was 44% less than the population estimate from 2010. Similarly, the population estimate from 2015 (i.e., 38,592 caribou; Boulanger et al., 2016) was 43% less than the population estimate from 2013. A population estimate for the Bluenose-East herd in 2018 estimated 19,294 caribou, 50% less than the population estimate from 2015 (Boulanger et al., 2019). A survey in June 2021 estimated 23,202 adult caribou, with no significant difference in adult females, suggesting that the herd stabilized between 2018 and 2021 (Boulanger et al. 2022).

Population Density and Productivity

Photographic surveys completed on the Bluenose-East calving grounds between 2013 and 2018 suggest that herd density is declining (Boulanger et al., 2014, 2016, 2019). Visual surveys completed in low and moderate density strata showed a decline from 1.51 and 1.83 caribou/km² in 2013 and 2015, respectively, to 0.62 caribou/km² in 2018 (Boulanger et al., 2014, 2016, 2019). Photo surveys completed in high density strata showed a decline from 8.93 and 6.8 caribou/km² in 2013 and 2015, respectively, to 0.87 caribou/km² in 2018.

The calving ground surveys completed for the Bluenose-East herd between 2010 and 2018 suggest that herd productivity was declining (Boulanger et al., 2014, 2016, 2019) but might have stabilized from 2018 to 2021 (Boulanger et al. 2022). The number of adult females and breeding females declined by approximately 20% each year between 2010 and 2018 (Boulanger et al., 2016, 2019) but stabilized from 2018 through 2021 (Boulanger et al. 2022). Based on fall composition surveys, cow-calf ratios (i.e., calves per 100 females) declined from approximately 0.45 in 2009 to 0.35 in 2013 and 2015 to 0.26 in 2018 but increased to 0.52 in October 2020 (Boulanger et al. 2022). It is speculated that low adult female survival rates (0.71 to 0.73) combined with low calf productivity, as indicated by decreasing calf survival rates and pregnancy rates, contributed to the population decline (Boulanger et al., 2014, 2016, 2019).

Population model analyses indicated that the stability in numbers from 2018 through the 2021 surveys was due to increased calf productivity. However, adult female survival rates are still lower than that required for herd recovery (Boulanger et al. 2022). Barren-ground caribou are susceptible to population declines when adult female survival rates drop below 0.80 to 0.85 (Boulanger et al., 2014, 2016, 2019). Given the range of productivity levels documented for the Bluenose-East herd in recent years, Boulanger et al. (2019) speculated that higher adult female survival rates of 0.84 to 0.92 are needed to achieve population stability for the herd. The authors suggest that low survival rates may be caused by wolf and bear predation.

Threats

Several barren-ground caribou herds are facing unprecedented cumulative effects from multiple interacting threats, which may make it difficult for herds to recover, especially for herds that are currently at historic population lows like the Bluenose-East herd (Species at Risk Committee, 2017). Threats to barren-ground caribou include industrial development activities, harvest, predation, wildfires, parasites and disease, and climate change (further details provided below).

Contaminants are not currently considered a threat to barren-ground caribou (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Over 20 years of monitoring, completed under the Northern Contaminants Program, suggests that contaminant levels in barren-ground caribou tissue across the Yukon, NT, and Nunavut are generally low and stable (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a).

Land use activities—such as the development of roads, trails and seismic lines—have the potential to increase access for harvesters and predators (Conference of Management Authorities, 2020a) and may create energetically costly disturbances (through increased stress and advance behaviour), and/or create barriers to barren-ground caribou movement and, with that, may alter migration routes. Cumulative effects from various anthropogenic disturbances are poorly understood; associated thresholds at which predictable effects on individuals and herds may occur have not been established (Conference of Management Authorities, 2020a). Land use in the Bluenose-East caribou range is relatively low compared to other Canadian ranges, which have experienced more substantial land use activities related to mining and oil and gas. Since 2008, exploration and development activity has been declining in the NT. However, there has been some recent increase in prospecting and mineral claims in support of diamond, gold, base metal, rare earth element, and uranium exploration in the North, which may result in future increased pressure on barren-ground caribou herds across their range (Conference of Management Authorities, 2020a).

When caribou populations are already declining or at low numbers, harvest is additive to natural mortality and may accelerate a decline and hinder recovery efforts (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Changes in hunting practices from traditional harvest methods (e.g., use of trucks and powerful snow machines) and increased road developments that facilitate easier hunter access into caribou ranges may exacerbate population decline and further impede recovery efforts (Conference of Management Authorities, 2020a). The potential effects of hunting on herd abundance are likely not an issue where harvest restrictions have been implemented (Species at Risk Committee, 2017). In the NT, non-resident and resident harvest has been closed for the Bluenose-East herd since 2006

(Species at Risk Committee, 2017). Indigenous harvest on the Bluenose-East herd increased in 2010 following a decrease in the Bathurst herd harvest; however, community harvest was reduced after public hearings in the Sahtu Region and other regions (Species at Risk Committee, 2017).

Wildfires are a regular occurrence in the boreal forest and are necessary for stand renewal (Conference of Management Authorities, 2020a). Other than large lakes and rivers, wildfire is the most prominent natural factor driving habitat fragmentation and change in the boreal forest, which in turn influences habitat use by barren-ground caribou on forested winter ranges (Species at Risk Committee, 2017). Although wildfires may change forage availability on winter ranges, particularly for slow-growing lichens, caribou respond by shifting into unburned older forests rich in lichen (Conference of Management Authorities, 2020a). Regeneration can be very slow (50 to 100 years) for disturbed lichen-supporting forests and caribou may avoid severely burned areas for several decades until lichens return (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). If the wildfire cycle is shorter than the regeneration time for lichen-supporting stands, the affected forest will be held at an earlier seral stage and winter range extent and habitat quality for barren-ground caribou will be negatively affected (Species at Risk Committee, 2017). The western Taiga Shield and Taiga Plains, where the Bluenose-East herd occurs, have higher annual burn rates and wildfire severity than other NT areas (Species at Risk Committee, 2017). Large wildfires have been prevalent in the southern and western portions of the Bluenose-East herd range; however, it is unknown whether these burns have restricted the extent of available winter range (Species at Risk Committee, 2017).

The effects of climate change on barren-ground caribou are complex and poorly understood. Climate change interacts with other threats and may involve a series of changes that affect caribou, such as shifts in the timing of spring green-up, lower summer forage quality, and increased insect harassment, which could result in reduced body condition, pregnancy rates, and calf production, ultimately contributing to population declines (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Longer growing seasons may occur because of climate change, facilitating increased shrub growth across the caribou range and displacing important forage species such as lichens (Species at Risk Committee, 2017). More frequent, intense, and/or longer-lasting wildfires may also occur because of climate change, which may affect forage availability (i.e., loss of older, lichen-rich forests) and caribou movement patterns (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Climate change may also facilitate an influx of previously uncommon diseases, parasites, and invasive species into the NT, and climate change may create more favourable conditions for disease outbreaks, parasitism, and invasive species (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a).

Health

A study in 2002 analyzed liver and kidney tissues from caribou collected south and west of Deline in the Sahtu Region for 22 metals and naturally occurring radionuclides and cesium-137 (Northern Environmental Consulting, 2002). Most metals were detected at very low concentrations (including cadmium and mercury) or were not detected (i.e., if they were present, they were below detection levels). While several natural radionuclides occurred in the tissues, their concentration was within the range found in northern caribou. The authors suggested no evidence of contamination of metals or radionuclides in

the caribou of the Bluenose-East herd and that there were no concerns with meat consumption (Northern Environmental Consulting, 2002).

Barren-ground caribou are host to a variety of diseases and parasites including warble flies (*Hypoderma tarandi*), gastro-intestinal nematodes and tapeworms, muscle and lung worms, and blood parasites; however, the role of these diseases and parasites at the population level is not well understood (Species at Risk Committee, 2017). Research conducted between 2007 and 2010 suggests that occurrences of diseases and parasites in barren-ground caribou are relatively low (Species at Risk Committee, 2017). Parasites such as warble flies and gastro-intestinal nematodes can influence the host body condition and may result in lower pregnancy rates and calf production and ultimately negatively affect survival (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a; Boulanger et al., 2019). Harassment by warble flies and mosquitoes can result in reduced foraging time and increased stress levels when caribou alter their behaviour in an attempt to find refuge, which can also influence body condition and may increase mortality risk in extreme cases due to heat exhaustion (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). The observed northward movement of species (e.g., wood bison, moose, white-tailed deer) may facilitate an influx of previously uncommon diseases and parasites into barren-ground caribou range (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Diseases of concern include chronic wasting disease, anthrax, Johne's disease (*Mycobacterium avium paratuberculosis*), brucellosis, and foot rot (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Further details on diseases and parasites are provided below in Section: Health.

Mortality

Predation

Predation affects the reproduction and survival rates of barren-ground caribou in the NT, influencing caribou abundance (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Although predation rates are not well understood for most herds, it is recognized that predation can be substantial and disproportionately affect calves on calving grounds (Species at Risk Committee, 2017). When caribou populations are declining or at low numbers, predation (mostly by wolves and grizzly bears) may accelerate the decline and complicate recovery efforts (Species at Risk Committee, 2017).

Wolves are considered the primary predator of barren-ground caribou (Conference of Management Authorities, 2020a; GNWT, 2020b). Wolves target all sex and age classes of caribou and are effective predators throughout the year (Conference of Management Authorities, 2020a). Wolf harvest numbers and wolf sightings during aerial surveys are the primary sources of information used to assess the potential effect of wolf predation on barren-ground caribou (Species at Risk Committee, 2017). While increasing wolf populations have been reported within the ranges of some barren-ground caribou herds, other areas show recent declines in both wolf numbers and active den sites (Species at Risk Committee, 2017).

The GNWT and the Tłı̨ch̨ Government recently prepared a five-year (2020 to 2025) joint proposal to support the recovery of caribou in the Bluenose-East and Bathurst herds (GNWT, 2020b). Caribou numbers are still declining despite reduced harvest pressure on these herds in recent years (GNWT,

2020b). Caribou co-management partners, harvesters, and residents have indicated that increased wolf management and ongoing caribou harvest restrictions are necessary for herd recovery. The joint proposal outlines a tiered approach to wolf management: (1) wolf harvester training; (2) monitoring, research, and assessment; and (3) wolf reduction actions (GNWT, 2020b). The joint proposal aims to support caribou survival and herd recovery by reducing wolf predation on caribou using the tiered approach and adaptive management (GNWT, 2020b). The GNWT and the Tłı̨ch̨ Government are proposing to remove 60% to 80% of wolves from the winter ranges of the Bluenose-East and Bathurst herds. Based on the tiered approach, government support for community-based wolf harvesting will be the initial approach used to reduce wolf numbers. If community-based wolf harvesting alone cannot achieve wolf removal targets, aerial removal of wolves will be considered (GNWT, 2020b).

Predation by grizzly bears usually occurs on newborn calves during the calving period; predation rates on calves can be substantial for some herds, possibly higher than wolves (Conference of Management Authorities, 2020a). Grizzly bear sightings have increased in some areas of the NT over the past two decades, including within the Bluenose-East herd range (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a).

Public Predation by wolverines, lynx, and golden eagles typically occurs during calving (Conference of Management Authorities, 2020a). Wolverine and lynx occasionally prey on adult caribou (Species at Risk Committee, 2017).

Harvest

When caribou populations are already declining or at low numbers, harvest is additive to natural mortality and may accelerate a decline and hinder recovery efforts (Species at Risk Committee, 2017; Conference of Management Authorities, 2020a). Changes in hunting practices from traditional harvest methods (e.g., use of trucks and powerful snow machines) and increased road developments that facilitate easier hunter access into caribou ranges may exacerbate population decline and impede recovery efforts (Conference of Management Authorities, 2020a).

The potential effects of hunting on herd abundance are likely not an issue where harvest restrictions have been implemented (Species at Risk Committee, 2017). There are three general categories of General Hunting Licence holders in the NT (i.e., Indigenous, resident, and non-resident), each targeting different sex and age categories of caribou (Species at Risk Committee, 2017, GNWT, 2020c). However, non-resident and resident harvest have been closed for the Bluenose-East herd since 2006 (Species at Risk Committee, 2017, GNWT, 2020c). Indigenous harvest on the Bluenose-East herd increased in 2010 following increased harvest restrictions on the Bathurst herd; however, harvest by communities was reduced after public hearings in the Sahtu Region (Species at Risk Committee, 2017).

Obtaining Indigenous harvest numbers for individual caribou herds is difficult because harvesters come from multiple communities spread across different land claim areas and regional areas in NT and NU (Species at Risk Committee, 2017). Winter range overlap between herds, such as the Bluenose-East and Bathurst herds, combined with low numbers of collared caribou, further complicate the estimation of Indigenous harvest numbers (Species at Risk Committee, 2017). During 2009/2010, the total reported harvest for the Bluenose-East herd (in their entire range) was 3,466; during 2010/2011 it was 2,918; and

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during 2011/2012 it was 1,885. In the NT portion of their range, harvest on the Bluenose-East herd has been restricted to 1,800 animals with an 80% male harvest (Species at Risk Committee, 2017).

In the NT, the barren-ground caribou harvest is strictly regulated. As outlined in the NWT Hunting and Trapping regulations (July 1, 2020 - June 30, 2021), resident hunters (“a Canadian citizen or landed immigrant who has been living in the NT for 12 continuous months”), non-resident hunters (“a Canadian citizen or landed immigrant who lives outside the NWT or has not resided in the NT for 12 months”) and non-resident alien hunters (“an individual who is neither an NT resident nor a non-resident”) cannot harvest barren-ground caribou in the Hunting Areas through which the Project is routed (GNWT, 2020c). Indigenous hunters and General Hunting Licence holders (“an Aboriginal [i.e., Indigenous] person that is a member or eligible to be a member of an NWT organization listed in the regulations”) can hunt barren-ground caribou unrestricted (with a tag) between July 1 and June 30 in Hunting Area S/BC/01 which encompasses the northern section of the Sahtu Region east of the Mackenzie River. They also can hunt barren-ground caribou unrestricted (with a tag and have to report their harvest to the local ENR office) between July 1 and June 30 in Hunting Areas S/BC/03 (south and east of S/BC/01) and D (Dehcho Region; GNWT, 2020c).

To collect information on hunting effort and harvests in the NT, each fall, the NWT Resident Hunter Harvest Survey is sent to all resident hunters who, in the previous season, had purchased a resident big or small game hunting licence (GNWT, 2020c).

GNWT Resident Hunter Survey

ENR summarized resident hunter harvest of barren-ground caribou in the NT (from the annual Resident Hunter Surveys, based on the hunter's residence reporting the harvest) between 1983/1984 and 2018/2019 (ENR, 2020c). The data were pooled into larger regions, with Fort Smith incorporating the Dehcho, South Slave and North Slave except Yellowknife; Inuvik incorporating the Inuvialuit, Gwich'in, and Sahtu Settlement regions/areas; and Yellowknife representing harvest by hunters residing in the Yellowknife region. Table 3.2 provides the average numbers of the resident hunter barren-ground caribou harvest in the Fort Smith, Inuvik, and Yellowknife regions between 1983 and 2019 (ENR, 2020c). These numbers include all barren-ground herds in the NT (including the Bluenose-East herd).

There was a steep decline in caribou harvest for the three regions as of 2006/2007 when resident hunter harvest restrictions were implemented, with the number of tags per resident hunter reduced from five to two and the harvest restricted to males only (Species at Risk Committee, 2017) and the Bluenose-East harvest was closed to resident hunters. A zero harvest was reported for many years after 2006/2007 (ENR, 2020c). These pooled numbers only include resident hunter harvest. Information on harvest by Indigenous hunters and General Hunting Licence holders is not included here.

Between 1983/1984 and 2006/2007, the barren-ground caribou harvest from the Yellowknife region was considerably higher than that from the Inuvik and Fort Smith regions (ENR, 2020c) but dropped after 2006/2007. Before 2006/2007, it was assumed that hunters harvested Bluenose-East caribou from the Inuvik and the Fort Smith regions. It should be noted that the GNWT resident hunter survey covers a large area and cannot be used to characterize the harvesting of barren-ground caribou in the RSA.

Table 3.2 Annual Average Reported Resident Hunter Barren-ground Caribou Harvest in the Fort Smith, Inuvik, and Yellowknife Regions Between 1983 and 2019

Region	Average Harvest (1983-2019)	Maximum Harvest	Year of Maximum Harvest	Minimum Harvest	Year of Minimum Harvest
Fort Smith (includes Dehcho Region)	115	385	1992/1993	0	As of 2009/2010
Inuvik (includes SSA)	70	270	1992/1993	0	As of 2017/2018
Yellowknife (southeast of the RSA; included for reference purposes)	654	1,921	1992/1993	0	2010/2011 to 2012/2013 and 2015/2016 to 2017/2018

Vehicle Collisions

Currently, there are no data on wildlife-vehicle collisions along the Mackenzie Valley Winter Road (Armstrong, 2021, pers. comm.). ENR maintains an informal database for wildlife-vehicle collisions. The database was created mostly for collisions with wood bison but has been expanded to include other wildlife species. Between 2009 and 2016, five vehicle collisions with boreal and/or barren-ground caribou were recorded in the Dehcho and South Slave regions (Armstrong, 2021, pers. comm.).

3.2.2.3 Moose

Moose in the NT are not listed federally or territorially as a species at risk and are assigned a secure status rank (Working Group on General Status of NWT Species, 2016, GNWT, 2022b). This NT ranking was based on their wide distribution, relatively stable populations, and few threats to the individual populations in the NT. Moose have not been assessed federally due to generally stable populations throughout Canada (Government of Canada, 2019).

The NWT Species Monitoring Infobase is a continually updated searchable record of NWT species information (GNWT, 2016), including habitat, distribution, population, threats, and status. The infobase includes species at risk and species with exotic/alien, secure, sensitive, and undetermined designations.

The age at maturity for female moose is, on average, 16 months. Under good conditions, they reproduce yearly and may live up to 20 years (GNWT, 2022c). The calving and post-calving periods (May 15 to July 15) are believed to be the most sensitive periods for moose, particularly for females and their calves (Rausch et al., 2008; Government of British Columbia, 2009; British Columbia Ministry of Forests, Lands and Natural Resource Operations, 2014; Environment Yukon, 2016b). This timing window includes birth and the first month of the calves' life. When giving birth, females are typically in poorer physical condition due to harsh weather conditions and limited food availability during the preceding winter months. After their calves are born in the spring, females face additional energy demands from lactation. Therefore, female moose generally reach their poorest body condition during the post-calving period. Disturbance during the calving/post-calving period (i.e., May 15 to July 15) can cause fleeing responses, increased movement of young associated with increased nutritional demands, decreased body condition and, subsequently, increased susceptibility to predation. Typically, after their first year, juvenile moose

disperse short distances after being abandoned by their mothers. This behaviour is believed to limit resource competition, resource depletion, and predation pressure. It also increases the chances for the cow to mate again (Hoffman et al., 2006).

Moose are solitary and do not form permanent groups except for the social bond between mother and calf. Moose may temporarily group (or yard) together during winter when snow is very deep, which often restricts their movements to small areas which become well-packed and heavily used. Their population size across the NT is estimated at 25,000 to 40,000 animals with an overall density of 1 to 7 moose per 100 km² (low-density areas with 1 to 4 moose and high-density areas with 4 to 7 moose per 100 km²) (GNWT, 2020d). Identified threats to the NT moose population include disease, predation, and potential localized over-hunting (e.g., along roads, waterways and near communities) (GNWT, 2022b, 2022c).

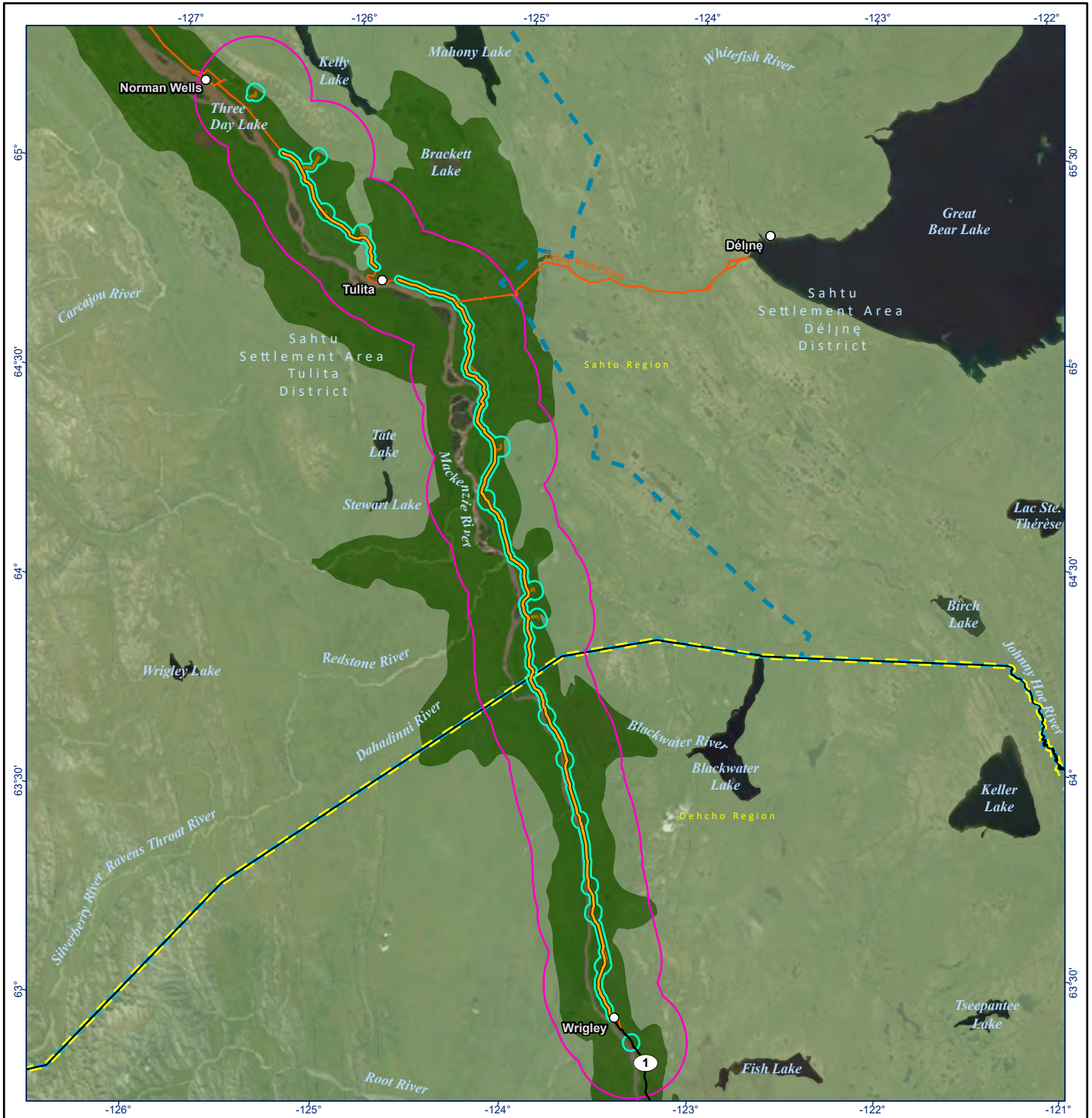
The home range size of female moose varies in the NT by season. Stenhouse et al. (1995) carried out a radio-telemetry study with 30 female moose near Norman Wells and they recorded annual home range sizes of between 40 km² to 942 km², with a mean value of 174 km². They found that seasonal home ranges overlapped in most cases and that home ranges used by individual female moose during fall were larger than during winter and summer. No studies were completed to assess male home range sizes, but research in other regions has shown that male moose occupy larger home ranges than females (Stenhouse et al., 1995).

During a geotechnical reconnaissance for the Project in October 2020, local wildlife monitors observed moose tracks along several sections of the MVWR right-of-way (ROW), indicating that moose are travelling regularly along this corridor (Bonhomme, 2020, pers. comm.).

Moose are included as a Key Line of Inquiry (KLOI) because they are vital to the nutrition, economy, and culture of residents of the Mackenzie Valley (MVEIRB, 2015). Moose are important to the people of the Mackenzie Valley because they are a source of fresh meat and materials for a traditional lifestyle (GNWT Department of Transportation, 2004).

Habitat Requirements, Habitat Use and Distribution

Moose mostly occupy areas south of the treeline in the NT. However, during summer, they have also been observed and harvested in tundra habitats where suitable deciduous forage is locally available (GNWT, 2022c). Across the NT, they are most common along the Mackenzie River (Figure 3.4). Habitat suitability modelling (Imperial Oil, 2004) indicated that 52% of the South Taiga Plains Ecological Zone (a former classification approximately corresponding with the area through which the Project is routed) provides effective moose habitat.



- Moose Distribution**
- Common
 - Transient, Localised
 - Proposed Mackenzie Valley Highway Alignment - Issued for EA 2022
 - Granular Borrow / Rock Quarry Site and Access
 - Local Study Area
- Regional Study Area
 - Community
 - All-Season Road
 - Winter Road
 - District Boundary
 - Region Boundary
 - Settlement Area Boundary



Project Location: Wrigley to Norman Wells, NWT
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Government of Northwest Territories
 Mackenzie Valley Highway Project
 Figure No. **3.4**
 Title
Moose Distribution Relative to the RSA

Notes
 1. Coordinate System: NAD 1983 Northwest Territories Lambert
 2. Data Sources: Centre of Geomatics of Government of NWT, Environment and Natural Resources Government of NWT, Government of Canada, Stantec
 3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS

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Moose often use areas with early successional vegetation along the Mackenzie River and are generally non-migratory. They prefer areas with semi-open, early successional forest cover, with willow (*Salix spp.*) and aspen (*Populus spp.*) stands near lakes, rivers, floodplains, wetlands, stream banks and sand bars (Stenhouse et al., 1995; GNWT, 2020d). Moose frequently use aquatic habitats (such as lakes, ponds, and rivers) during ice-free months, but mostly during late June to early August, when aquatic plants offer the highest nutrition values (EBA Engineering Consultants, 2003). Insects are also at their highest abundance during this period. Being in the water may reduce exposure to insects. Moose also commonly use areas of regenerating burns (approximately 15 to 30 years following the fire) and other regenerating disturbance areas. Fire intensity also plays a role in moose use of burned areas. More severely burned areas may have sparse vegetation growth for up to five years following the burn (Gasaway et al., 1989). Veitch et al. (1995) reported that during their November 1995 survey, 30.7% of all moose observed were seen in areas that had burned in the previous 25 years, although this habitat was only 7% of their habitat.

River valleys and floodplains provide the best year-round habitat and are particularly important in winter (Latour, 1992). Moose were reported to use the islands in the Mackenzie River, where frequent flooding and ice scouring support abundant stands of willows. Conifer stands are an important habitat requirement in winter, providing thermal cover and snow interception because deep snow can limit moose movements (Bertram and Vivion, 2002). Preferred winter forage shrub species must be tall enough to be accessible to moose, and the snowpack should not cover the shrubs.

In spring, moose frequently occupy low elevation areas, usually wetlands, muskegs, and river floodplains; this is typically where the first green-up occurs. Forests, stands of dense, tall shrubs, shorelines and islands are also considered to provide security cover for moose to reduce detection from bears (*Ursus spp.*) and wolves (*Canis lupus*), their primary predators. During the calving season from mid-May to mid-June (Rausch et al., 2008; Government of British Columbia, 2009; Environment Yukon, 2016b), shorelines and islands are used frequently by female moose. Tributary stream valleys are used as travel corridors by moose moving between inland summer ranges to winter ranges on the islands and floodplains of the Mackenzie River (Latour, 1992).

Imperial Oil (2004) summarized site-specific habitat studies conducted in the 1970s during pipeline development assessments and concluded that the availability of suitable winter habitats was a critical factor for moose populations in the Mackenzie Valley. Suitable winter habitat was found to be restricted to riparian areas in major river valleys and to burns on upland sites that had slopes with limited snow cover. Alluvial floodplains along drainages provide preferred winter browse species, and, in addition, snow conditions in these areas are less restrictive to movement and foraging.

Treseder and Graf (1985) described browse surveys conducted throughout the Mackenzie Valley in the 1970s, which found that 90% of the moose diet consisted of successional species such as willow, balsam poplar (*Populus balsamifera*) and red osier dogwood (*Cornus stolonifera*). Based on their surveys, Treseder and Graf (1985) classified the Mackenzie River from Fort Providence to Fort McPherson (including an approximately 30 km area around the river) as an area of important moose habitat. This includes most of the current MVWR ROW from Wrigley to Fort Good Hope. This area experiences frequent forest fires resulting in early successional vegetation, preferred by moose. Decker and Mackenzie (1980) found that areas of abundant moose forage included recent burns (sites burned in the past 10 years), wetland complexes and flood plains subject to periodic disturbance. Winter track surveys

by Imperial Oil (2004) observed high moose use in recent burn areas in mixed woodland and shrub habitats in the South Taiga Plains Ecological Zone.

In 2012, Wilson and Haas presented known Important Wildlife Areas based on the best available knowledge, discussions with communities, co-management boards, GNWT staff, and others, and a review of available reports. They identified three Important Wildlife Areas for moose in the LSA and RSA, described in the following (and depicted in Figure 3.5).

Sahtu Rivers (Area ID: 29)

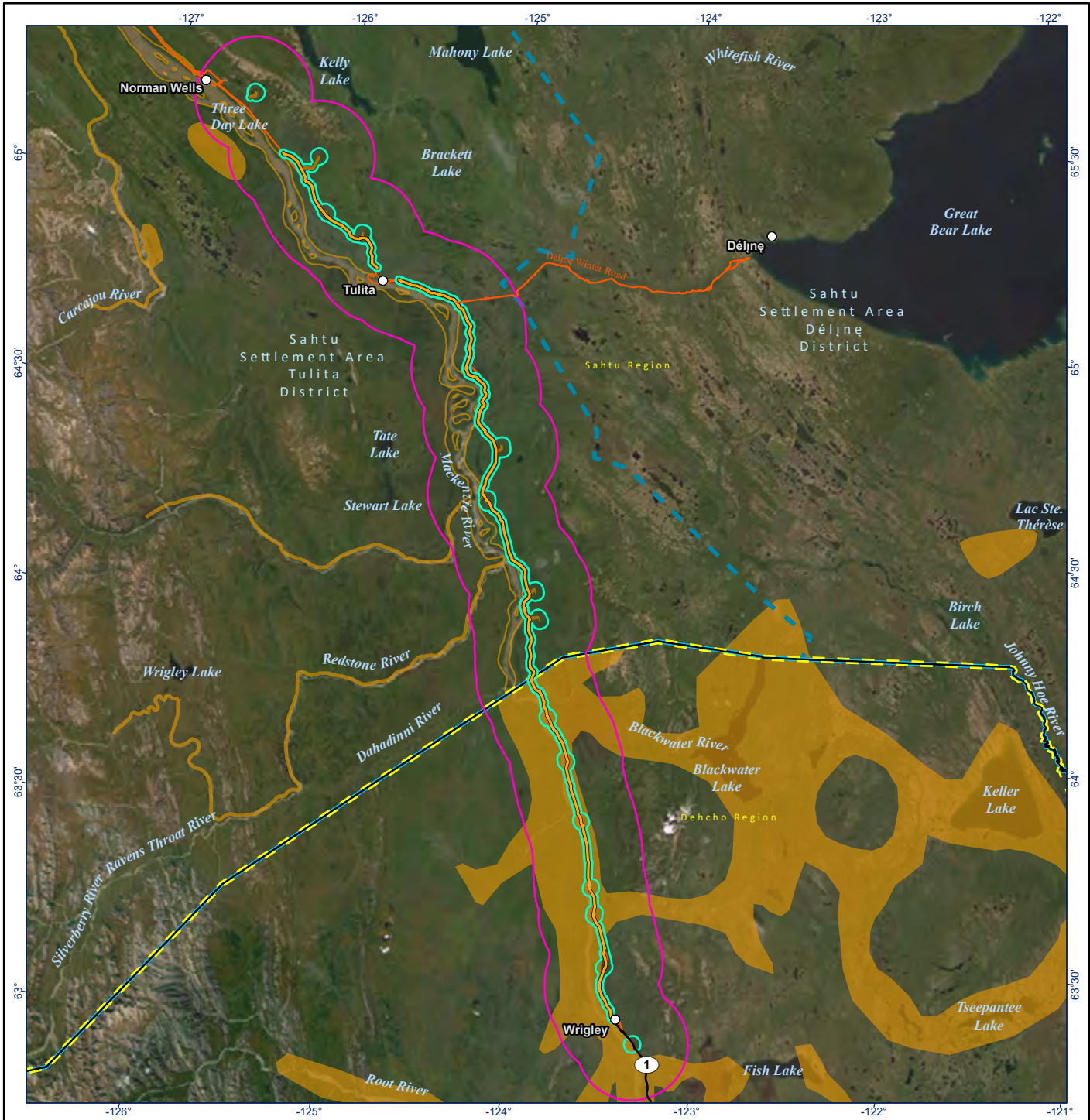
These are riparian areas along the Mackenzie River and its tributaries, including islands in the Mackenzie River with consistently high moose densities and known as important moose hunting areas. The area includes portions of the RSA west of the MVWR ROW in the Sahtu Region. It comprises parts of the Mackenzie, Mountain, Carcajou, Ramparts, Ontaratue, Hume, Hare Indian, Keele, and Redstone rivers, up to the edge of the Mackenzie Mountains, as well as 500 metres (m) to either side of each river (Wilson and Haas, 2012). The riparian areas offer valuable moose habitat, and ice and flood action along the river drainages keep the vegetation in an early successional stage consisting of willow and alder, two important food species for moose. In addition, moose are believed to use the tributary river valleys as movement corridors to the surrounding uplands (Wilson and Haas, 2012).

Three Day Lake (Area ID: 33)

Three Day Lake (southwest of Norman Wells in the northwest corner of the RSA) is known for having some of the highest moose densities in the Sahtu Region. Moose use the area in summer and fall, but high snowdrifts deter the animals during winter. This is a popular moose hunting area for residents of Norman Wells (Wilson and Haas, 2012)

Dehcho Winter Use (Area ID: 37)

Based on surveys and local TK, high moose densities are found in the winter. Surveys identified portions with high moose densities, including the Liard Valley, Martin River area, Manners Creek and Goodall Lake area, Mackenzie River, islands in the Mackenzie River around Camsell Bend, Blackwater Lake, the area north and northwest of Fort Simpson, the southern escarpment of the Horn Plateau, the Rabbitskin River area, the gradually sloping northwestern portion of the Horn Plateau, and the Willowlake River. For other, not previously surveyed portions of the area, TK confirmed their importance as moose habitat (Wilson and Haas, 2012). These areas include the entire LSA and most of the RSA in the Dehcho Region.



- Important Moose Area
- Proposed Mackenzie Valley Highway Alignment - Issued for EA 2022
- Granular Borrow / Rock Quarry Site and Access
- Local Study Area
- Regional Study Area
- Community
- All-Season Road
- Winter Road
- District Boundary
- Region Boundary
- Settlement Area Boundary



Project Location: Wrigley to Norman Wells, NWT
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 Client/Project: 144903025-0022 REV B

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 Mackenzie Valley Highway Project

Figure No. **3.5**
 Title **Important Areas for Moose**

Notes
 1. Coordinate System: NAD 1983 Northwest Territories Lambert
 2. Data Sources: Centre of Geomatics of Government of NWT, Environment and Natural Resources Government of NWT, Government of Canada, Stantec, Wilson and Haas 2012
 3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS

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Population Density and Productivity

Information on moose densities across the NT is sporadic, and variations in population size are apparent where it is available. Available survey results indicate relatively low moose densities in the NT (compared to other North American jurisdictions), ranging between 0.6 moose/100 km² to 17 moose/100 km²; Imperial Oil, 2004; EBA, 2003) and assessed by the GNWT (2020d) to be on average 3 moose/100 km² to 4 moose/100 km² across the entire NT. In areas across Alaska and most Canadian provinces (i.e., south of the 60th parallel), moose densities can reach between 15 animals/100 km² and 432 animals/100 km² (Jensen et al., 2018).

Aerial moose surveys conducted in different areas of the Mackenzie Valley between 1953 and 1984 were described by Treseder and Graf (1985). During these surveys, the highest moose densities were recorded between Tulita and Fort McPherson, averaging between 5 moose/100 km² and 17 moose/100 km². Lower moose densities were observed in the southern NT, in the Fort Simpson area, with an average of 3 moose/100 km² and the lowest moose densities were recorded in the most northern extent of moose in the NT, the Mackenzie Delta, which had an average of 0.6 moose/100 km².

Incidental moose observation logs, spanning the past one to two decades, were provided by the GNWT (ENR, 2020d, 2020e); these moose locations are depicted in Figure 3.6. The logs include observations made during other surveys and as part of ongoing environmental monitoring programs. While some observations identified cows, bulls and calves, most of the locations in the provided files are of unknown sex and age. Therefore, Figure 3.6 does not differentiate between sex and age classes. Based on the observations, moose extensively use the Mackenzie River, its islands and shores, and the surrounding area.

Sahtu Region

While moose densities were not assessed for the RSA, surveys were completed for the Mackenzie Valley, including the RSA. Past surveys in the Mackenzie Valley have shown that some of the best moose habitats are in the Sahtu Region. Brackett et al. (1985) conducted systematic moose surveys in 1980 and observed densities along the Mackenzie Valley from Birch Island in the south to Point Separation in the north between 4 moose/100 km² and 27 moose/100 km², with the highest densities recorded between Little Chicago and Point Separation in the northern area of the Sahtu Region. Detailed monitoring of moose populations was carried out on the west side of the Mackenzie River (west of Norman Wells) between 1984 and 1995 by Jingfors et al. (1987), Stenhouse et al. (1995), Latour (1992) and Veitch et al. (1995). Over this period, the density remained relatively stable at 15 moose/100 km² to 17 moose/100 km².

Early winter moose surveys conducted by McLean (1994) in the Kelly Lake area and the Keele and Redstone River areas of the Sahtu Region recorded average moose densities of 8 moose/100 km², ranging from 6 (in low quality habitat) to 19 moose (in high quality habitat)/100 km².



- ▲ Moose Survey (1984-2020)
- Random Observation (incl. Environmental Monitoring, 1999-2016)
- Community
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- Granular Borrow / Rock Quarry Site and Access
- Local Study Area
- Regional Study Area
- All-Season Road
- Winter Road
- District Boundary
- Region Boundary
- Settlement Area Boundary

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Project Location: Wrigley to Norman Wells, NWT
 Prepared by AT on 8/15/2023
 TR by AJ on 8/15/2023

Client/Project: 144903025-0023 REV B

Government of Northwest Territories
 Mackenzie Valley Highway Project

Figure No. **3.6**

Title
Survey and Observation Locations for Moose

Notes

1. Coordinate System: NAD 1983 Northwest Territories Lambert
2. Data Sources: Centre of Geomatics of Government of NWT, Environment and Natural Resources Government of NWT, Government of Canada, Stantec
3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan

World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS

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In November 1995, Veitch et al. (1995) completed aerial moose surveys in an area west of Norman Wells (outside the RSA). They recorded the moose density at 17 moose/100 km² and 56 calves per 100 females (10% of females with calves had twins), and 96 males per 100 females. Based on these results and earlier moose surveys completed in the Norman Wells area in 1987 and 1989, which both recorded a density of 15 moose/100 km², the authors suggested that the Norman Wells area moose population appeared stable with continued high productivity. The authors suggested that a lack of large tracts of forest in early successional stages may limit the future growth potential of the population (Veitch et al., 1995).

Swallow et al. (2003) observed moose densities in the Tulita area of 8 moose/100 km² in 1993 and 11 moose/100 km² in 1999. Sixty percent of moose observed during their 1999 survey were bulls, and they estimated there were 44 calves per 100 females.

The 2002 Mackenzie Gas Pipeline corridor surveys found densities of 10 moose/100 km² in the Sahtu Region (Imperial Oil, 2004). These moose surveys recorded higher moose densities within the riparian areas along the Mackenzie River and its tributaries.

Most recently, in March 2020, an aerial moose survey conducted by ENR in the southern portion of the Sahtu Region recorded an average density of approximately 1.4 moose/100 km² for a total area of 55,228 km² (Chan, 2020). A previous survey in the area in 1997 covered 55,818 km² and estimated a density of 0.5 moose/100 km². Unfortunately, these surveys cannot be compared mainly due to the different methods used. Surveys in the 1990s used the Gasaway block kriging method (Gasaway et al. 1986), while the 2020 surveys used a distance sampling method. Comparisons are currently being conducted, but a discrepancy with these methods has not been accounted for yet. Unlike previous early winter surveys, these surveys occurred in March and comparing densities between different times of the year may not be feasible.

Dehcho Region

There is limited information on moose densities in the Dehcho Region. Surveys in the 1970s and early 1980s in the Wrigley and Fort Simpson areas indicated that moose densities ranged from 1 moose/100 km² to 5 moose/100 km² (Jingfors et al., 1987). The 2002 Mackenzie Gas Pipeline corridor surveys found densities of 1 moose/100 km² in the Dehcho Region while the 2003 surveys in the area recorded higher densities at 6 moose/100 km² (Imperial Oil, 2004).

In November 2003 and February 2004, two aerial surveys were carried out to collect information on resident moose in the Dehcho Region (Larter, 2009). Two survey areas were included: 1) the Mackenzie River valley in the north (from the Blackwater River in the north to Jean Marie River in the south; surveyed in November 2003) and 2) the Liard River valley in the south (from Poplar River in the north and the British Columbia-NT boundary in the south; surveyed in February 2004). In November 2003, the resulting density estimates were 4.4 moose/100 km² and 32.1 calves per 100 adult females. The February 2004 survey resulted in density estimates of 4.9 moose/100 km² and 44.6 calves per 100 adult females. The author concluded that these estimates provide evidence for a productive moose population in the Dehcho Region. Similarly, data from a 2011 survey of the Dehcho population resulted in a density estimate of 4.9 moose/100 km² and a calf-to-cow ratio of 54 calves per 100 adult females (Larter et al., 2018a).

Table 3.3 summarizes examples of estimated moose densities in the Dehcho and Sahtu regions reported between 1994 and 2018.

Table 3.3 Examples of Reported Moose Densities and Cow-to-Calf Ratios

Author (year)	Region	Density (moose/100 km ²)	Calves per 100 Cows
McLean (1994)	Sahtu Settlement Area / Kelly Lake, Keele and Redstone river areas	8 (range: 6 to 19)	N/A
Veitch et al. (1995)	Sahtu Settlement Area / west of Norman Wells	15 (1987)	N/A
Veitch et al. (1995)	Sahtu Settlement Area / west of Norman Wells	15 (1989)	N/A
Veitch et al. (1995)	Sahtu Settlement Area / west of Norman Wells	17 (in 1995)	56
Swallow et al. (2003)	Sahtu Settlement Area / Tulita area	8 (in 1993)	N/A
Swallow et al. (2003)	Sahtu Settlement Area / Tulita area	11 (in 1999)	44
Imperial Oil (2004)	Sahtu Settlement Area / Mackenzie Gas Pipeline corridor	10	N/A
Chan (2020)	Sahtu Settlement Area / southern area	1.4	N/A
Imperial Oil (2004)	Dehcho Region / Mackenzie Gas Pipeline corridor	1 (in 2002)	N/A
Imperial Oil (2004)	Dehcho Region / Mackenzie Gas Pipeline corridor	6 (in 2003)	N/A
Larter (2009)	Dehcho Region / Mackenzie River Valley	4.4 (in 2003)	32.1
Larter (2009)	Dehcho Region / Liard River Valley	4.9 (in 2004)	44.6
Larter (2018a)	Dehcho Region	4.9	54

Movement Patterns

Moose in the NT have been reported to move or shift seasonally between winter ranges in the Mackenzie River region floodplains or major tributary valleys and adjacent upland summer ranges (Imperial Oil, 2004). In the Beaufort Delta, moose (at low densities) occupy suitable foraging habitats on the tundra and outer delta in summer but move south in winter (GNWT, 2020d). The movement to winter ranges is believed to be primarily triggered by snow accumulation and limited access to forage. Stenhouse et al. (1995) conducted a detailed study of moose movements in the Mackenzie Valley by radio-tracking 30 female moose over three years near Norman Wells (see Sections: Overview, Habitat Requirements, Habitat Use and Distribution). The study found the use of seasonal home ranges that frequently overlapped, indicating the moose were nonmigratory.

As described above, moose have been recorded to use tributary river valleys as movement corridors between the Mackenzie River valley (used during winter) and surrounding uplands in the summer (Jingfors et al., 1987).

Threats

Moose are known to avoid used roads, pipeline corridors and seismic lines (AMEC Americas Ltd., 2005). In studies for central Alberta, between November and January, moose were located farther from roads than expected, and they avoided well-travelled roads more often than less-travelled roads. In addition, while seismic operations were underway, moose were less likely to be found within 1 km of seismic lines than in areas farther away. Some studies suggest that the same level of disturbance in the winter or during calving could have stronger effects on moose than during other seasons. Moose are also believed to adapt to regular, continuous disturbance over time as long as it is not associated with human hunting activities (AMEC Americas Ltd.).

Neumann et al. (2011) studied behavioral effects of human-induced disturbances on moose in a Swedish population where harvest was the main source of mortality. In a controlled field experiment, 29 adult collared female moose were exposed to off-trail hiking and snowmobiling to evaluate individual response to non-lethal disturbances (Neumann et al., 2011). The authors observed a significant increase in movement rates for one to two hours following the disturbance. They concluded that moose response to human-induced disturbances, occurring at moderate frequencies, was short and likely resulted in negligible effect on the overall energy budget of moose in good condition.

Health

Dehcho Region

Moose are an important traditional food source for residents of the Dehcho Region. Local concerns over potential negative effects from increased access to and within the Dehcho Region, resource use and development in the area have resulted in a cooperative program between the GNWT and Indigenous harvesters. The program was initiated in 2003 to collect baseline information on resident moose in the Dehcho Region (Larter, 2009). ENR biologists conducted aerial surveys, while Indigenous harvesters, guides and local outfitters collected and provided fecal, bone, and tissue samples from harvested moose. Based on studies of fecal samples, there was a low presence of disease and parasites. The bone marrow analysis of harvested moose showed that moose were in good body condition. There were also no reports of winter ticks or papillomas on any harvested moose. The levels of cadmium found in the kidneys of harvested moose was considered low and similar to those reported in other North American regions and Scandinavia. In summary, low occurrence of diseases and parasites, low levels of cadmium in organ tissue, and fat indices indicated that moose were in good body condition (Larter, 2009).

Between 2005 and 2016, Larter et al. (2018a) analyzed 35 elements, including cadmium and mercury, in kidney, liver and muscle tissues collected from moose harvested in the Dehcho Region. Additional kidney fat and bone marrow analysis confirmed that most of the moose from this study were in good or excellent body condition. To examine limited changes in tissue contaminant concentrations over time, tissues were analyzed in two phases: 2005 to 2007 and 2011 to 2016. In the NT, the primary source of cadmium in the environment is from natural erosion and weathering processes through which plants can absorb the element and pass it on in the food chain. Larter et al. (2018a) found mean cadmium concentrations for all kidney samples from harvested moose lower than for moose in Alaska, Yukon, and the southern Mackenzie Mountains in the NT. For mercury, natural sources (e.g., geological mercury deposits and

forest fires) and anthropogenic sources (e.g., coal and wood-burning activities) are known to accumulate in the environment. Moose potentially ingest mercury through aquatic macrophytes that can absorb mercury from surface water. Total mercury concentration in kidney and liver tissues from harvested moose in the Dehcho Region was lower than in other large mammals in the NT (Larter et al., 2018a). No significant changes over time (between the two phases) were detected. The study concluded that there is no immediate concern for the concentrations of elements in this studied moose population in the Dehcho Region, and the authors suggest that the monitoring of moose tissues should continue due to possible accumulation of metals in wildlife tissues, associated wildlife diseases, and the potential impacts on human health (Larter et al., 2018a). However, compared to marine organisms, moose consumption is considered a minor source of mercury to consumers.

Elevated cadmium levels have been identified in moose tissues in some areas of the NT, Yukon, and Alaska (Larter et al., 2018b). Cadmium has documented adverse health effects in terrestrial wildlife. In the NT, studies found elevated cadmium levels in moose tissues harvested from the southern Mackenzie Mountains compared to those harvested in the Mackenzie Valley. In April 2017, the GNWT issued a bulletin recommending that Dehcho residents should limit the consumption of liver and kidneys from moose harvested in the southern Mackenzie Mountains (outside and west of the RSA) due to high cadmium levels. The GNWT found a substantial difference in cadmium levels between the moose sampled in the southern Mackenzie Mountains and those collected from the other regions in the NT and only issued the warning for the Mackenzie Mountains (GNWT Health and Social Services, 2017).

It was suggested that the elevated cadmium levels in moose kidneys were caused by natural mineralization of soils and subsequent uptake by plants in the moose diet. Larter et al. (2018b) analyzed potential effects of cadmium on kidney tissue by comparing kidney tissues of moose harvested in the Mackenzie Valley with those harvested in the southern Mackenzie Mountains (i.e., with elevated cadmium levels). In that study, most observed changes in kidney tissues were mild to moderate. There were more tissue changes in kidneys of Mackenzie Mountain than Mackenzie Valley moose. There is little evidence of cadmium toxicity in the renal tissues from harvested moose even with the elevated levels of cadmium. Moose kidneys were generally healthy with few pathological changes in renal tissue and were described as a healthy food choice.

Mortality

Moose densities in the NT are relatively low compared to other North American jurisdictions (see Section: Population Density and Productivity). Based on the relatively good health of the resident moose populations (see Section: Health), the two key mortality factors for moose in the NT are predation and harvest. They are discussed in the following sections.

Predation

Wolves are believed to be the main predators of moose in the NT. In addition, calf predation by grizzly and black bears may also affect moose populations (Stenhouse et al., 1995; Swallow et al., 2003). Low density moose populations have been observed in areas where wolves, grizzly bears and black bears occur, and harvest levels are moderate (Gasaway et al., 1992). Wolverines (*Gulo gulo*) also prey on moose calves occasionally (COSEWIC, 2014).

During winter, snow conditions can facilitate predation and, thus, negatively affect moose populations. Moose are known to yard together in deep snow conditions to easier access forage, but by doing so, they are more accessible to wolves (Imperial Oil, 2004). In addition to deep snow, a crusted snow surface can injure their legs and hooves, increasing predation risk.

Gasaway et al. (1992) suggested that the effects of severe winter conditions, predation, and hunting on moose mortality had to be considered additive in Alaska. The authors suggest that moose population declines caused by deep snow conditions will lower moose/wolf ratios and, therefore, increase the predation rate on the population, causing further declines or extended periods at low densities. In addition to winter predation, Gasaway et al. (1992) reported that predation by wolves and bears removed up to 31% of the post-calving moose population annually in Alaska and Yukon populations. They concluded that moose populations might remain at low densities for long periods in those regions.

Stenhouse et al. (1995) studied 30 radio-collared female moose near Norman Wells and found that, although predation by wolves accounted for almost 50% of the known moose mortality in that study, the mean annual survival rate of females (85%) and a calf survival rate of 80% to 93% over the first eight weeks were an indication of a growing moose population. In comparison, Gasaway et al. (1992) described rates for expanding and declining populations as follows: calf mortality rates in the first five months following birth averaging 55% (which equals a survival rate of 45%) are indicative of an expanding moose population; and mortality of 89% (11% survival rate) are indicative of a declining population.

Harvest

Hunting pressure is believed to be high near roads, waterways and many communities. Several studies have suggested that moose harvest in those accessible areas might exceed the population recruitment rate (Brackett et al., 1985; Treseder and Graf, 1985). However, Stenhouse et al. (1995) reported that the annual moose harvest in the upper- and mid-Mackenzie Valley region (northwest and southwest of Norman Wells, including a small portion of the RSA) was low, at 4% to 5% of the total moose population, due to low human occupation in the area and limited access. Swallow et al. (2003) estimated, based on survey results in 1993 and 1999, that approximately 6% of the moose population in the Tulita area were harvested annually, compared to the previous estimate of 17% (in 1993). In 1999, the sustainable harvest level for moose in the Tulita area was considered to be 8% (Swallow et al., 2003). Veitch et al. (1995) reported that in 1993/94 and 1994/95, the minimum estimated harvest of moose by resident and General Hunting Licence holders from a population in the Norman Wells area was 27 and 30 moose, respectively, which was estimated to be at least 6% of the total population. They suggested that this harvest rate appears to be within sustainable limits.

Harvest Regulations

In the NT, the moose hunting season is a measure to regulate the harvest for resident and non-resident hunters (GNWT, 2020e). As outlined in the NWT Hunting and Trapping Regulations (July 1, 2020 – June 30, 2021), resident hunters (“a Canadian citizen or landed immigrant who has been living in the NT for 12 continuous months”) can hunt one moose between September 1 and January 31 (GNWT, 2020e). Non-resident hunters (“a Canadian citizen or landed immigrant who lives outside the NT or has not resided in the NT for 12 months”) can only hunt one moose with outfitting guides between September 1

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and October 31. Indigenous hunters and General Hunting Licence holders (“An Aboriginal [i.e., Indigenous] person that is a member or eligible to be a member of an NWT organization listed in the regulations”) can hunt during any season without a bag limit.

The Hunting Areas through which the Project is routed include areas D (Dehcho Region) and S (Sahtu Region). Special Harvesting Areas within the western portion of both Hunting Areas close for resident and non-resident hunters on October 31 and November 30, respectively. Non-resident alien hunters (“an individual who is neither an NWT resident nor a non-resident”) can hunt with outfitting guides in those areas from September 1 to October 31. All islands in the Mackenzie River are closed to moose hunting from December 1 to January 31 (GNWT, 2020e). To collect information on hunting efforts and harvests in the NT, each fall, the NWT Resident Hunter Harvest Survey is sent to all resident hunters who, in the previous season, had purchased a resident big or small game hunting licence (GNWT, 2020e).

GNWT Resident Hunter Survey

ENR summarized resident hunter harvest of moose in the NT (from the annual Resident Hunter Surveys, based on the hunter’s residence reporting the harvest) between 1983/1984 and 2018/2019 (ENR, 2020f). The data were pooled into larger regions, with Fort Smith incorporating the Dehcho, South Slave and North Slave regions except Yellowknife; Inuvik incorporating the Inuvialuit, Gwich’in, and Sahtu settlement regions/areas; and Yellowknife representing the harvest from hunters residing in the Yellowknife region. Table 3.4 summarizes the annual average resident hunter moose harvest in the Fort Smith, Inuvik, and Yellowknife regions between 1983 and 2019 (ENR, 2020f).

Overall, there seemed to be a decline in the moose harvest for the two regions during the reported timeframe. These pooled numbers only include resident hunter harvest. Information on non-resident hunter harvest and the likely much higher (and unrestricted) harvest by Indigenous hunters and General Hunting Licence holders is not included here and annual numbers are unavailable. In addition, between 1990/1991 and 2018/2019, the moose harvest from the Yellowknife region was consistently higher than that from the Inuvik and Fort Smith regions. It did not decrease during these years as observed for the other regions but fluctuated between 72 and 151 animals per year (ENR, 2020f). The GNWT resident hunter survey covers a large area and cannot be used to characterize moose harvest in the RSA.

Table 3.4 Annual Average Reported Resident Hunter Moose Harvest in the Fort Smith, Inuvik, and Yellowknife Regions Between 1983 and 2019

Region	Average Harvest (1983–2019)	Maximum Harvest	Year of Maximum Harvest	Minimum Harvest	Year of Minimum Harvest
Fort Smith (includes Dehcho Region)	61	170	1983/1984	12	2018/2019
Inuvik (includes SSA)	23	40	1985/1986	6	2000/2001
Yellowknife (southeast of the RSA; included for reference purposes)	96	151	1994/1995	16	1986/1987

Vehicle Collisions

There are currently no data on wildlife-vehicle collisions along the Mackenzie Valley Winter Road (Armstrong, 2021, pers. comm.). ENR maintains an informal database for wildlife-vehicle collisions. The database was created mostly for collisions with wood bison but has been expanded to include other wildlife species. Between 2011 and 2019, seven vehicle collisions with moose were recorded on Dehcho highways 1 and 7 (Armstrong, 2021, pers. comm.).

4 Key Results and Findings

4.1 Boreal Caribou

Boreal caribou are threatened under SARA's Schedule 1 and the Territorial *Species at Risk (NWT) Act*. Approximately 31% of their habitat is disturbed across their range. Regionally, the percentage of undisturbed habitat in 2015 was about 78% in the Sahtu Region and 51% in the Dehcho and South Slave regions combined. Fire and anthropogenic disturbances are the main factors impacting the availability of large areas of undisturbed habitat. Based on density estimates, in 2012, NT boreal caribou numbers were estimated at 6,000 to 7,000 animals, with 1,677 animals calculated in the Sahtu Region and 2,318 in the Dehcho Region. Based on several years of radio collar information, most of the area west of the current MVWR ROW (i.e., the western portions of the LSA and RSA), and the area directly adjacent to the road in the east (i.e., parts of the eastern portion of the LSA) were ranked as low use areas. Areas further east were ranked as preferred habitat by boreal caribou year-round.

Wolves are the primary predators of adult boreal caribou, with additional predation by black bears and grizzly bears mainly on calves. Linear developments can facilitate predator travel resulting in increased predation. Predator avoidance affects the distribution of boreal caribou through spring calving and summer. Cows disperse at low densities during the calving and post-calving seasons (May 1 to July 12 for the Dehcho and Sahtu regions combined) and favour treed islands surrounded by open water in peatlands, lakes, and ponds to minimize predation risks. Summer foraging areas consist primarily of open coniferous forests with abundant lichens, low shrub, riparian, sparsely vegetated, and recently burned habitats. They also seek out open and elevated areas exposed to the wind to avoid insect harassment and heat stress. During and after the fall rut, boreal caribou use a greater variety of suitable habitats. In winter, they prefer open coniferous forests with terrestrial and arboreal lichen in areas where snow is shallow and soft, and they spend less time in open peatland habitats than during all other seasons. Studies found that habitat conditions that allow females and their calves to avoid predators during calving, post-calving, and winter are critical to population sustainability.

Indigenous and resident hunters lawfully harvest boreal caribou in the NT. While overall boreal caribou harvest is low, there are concerns for local overharvesting, particularly in the vicinity of communities, roads, and waterbodies that may facilitate access.

4.2 Barren-ground Caribou (Bluenose-East Herd)

Barren-ground caribou are not currently listed under SARA's Schedule 1 but are listed as threatened under the Territorial *Species at Risk (NWT) Act*. Historically, Bluenose-East caribou were reported as far west as Norman Wells, but their current range includes parts of the eastern NT and Nunavut, where they calve and spend the summer in tundra habitats along the Arctic coast. In the fall, the herd migrates south where it winters below the treeline. In the winter, they may use an area east of the MVWR route, mainly in the Dehcho Region.

Barren-ground caribou herds in the NT have historically experienced large population fluctuations and recent substantial declines. Population estimates suggest that herd numbers are currently at historic lows. Survey data collected between 1989 and 2016 show an 89% decrease in the size of the Bluenose-East herd. However, the most recent population estimate for the Bluenose-East herd (completed in 2021) estimated 23,202 adult caribou, suggesting numbers have stabilized since the 2018 estimate.

Habitat selection by barren-ground caribou on summer ranges at the Arctic coast is driven by the need to obtain high-quality forage while reducing exposure to parasites. The caribou prefer lichen in forest or tundra habitats during winter, which likely influences caribou distribution in winter ranges. When caribou travel throughout their winter range, they select more open habitats (e.g., frozen lakes and open wetlands) where wind-hardened snow facilitates easier movement and predators are more visible. Where lichen cover is disturbed, regeneration is slow, and caribou may avoid the area for several decades until lichens return.

Predation affects the reproduction and survival rates of barren-ground caribou in the NT, influencing caribou abundance. While grizzly bears usually prey on newborn calves during the calving period, wolves are considered the primary predator of barren-ground caribou and target all sex and age classes throughout the year. To support caribou survival and recovery of the Bluenose-East and Bathurst herds by reducing wolf predation on caribou, the GNWT and Tłıchǫ Government recently prepared a joint proposal aimed at removing 60 to 80% of wolves from the winter ranges of the Bluenose-East and Bathurst herds.

When barren-ground caribou populations are declining or at low numbers, harvest is additive to natural mortality and may accelerate a decline and hinder recovery efforts. Since 2006, non-resident and resident harvest have been closed for the Bluenose-East herd while Indigenous harvest on the Bluenose-East herd is ongoing. During 2009/2010, the total reported harvest for the Bluenose-East herd (in the NT and Nunavut range) was 3,466 animals, during 2010/2011 it was 2,918, and during 2011/2012 it was 1,885. To support recovery efforts, since 2015, in the NT portion of their range, harvest on the Bluenose-East herd has been restricted to 1,800 animals with an 80% male harvest.

4.3 Moose

Moose in the NT are not listed federally or territorially as a species at risk and are ranked as secure. They occur across the entire NT, including the RSA, but densities are low compared to other North American jurisdictions. Density estimates are unavailable for the RSA, but moose densities were estimated to be highest (with 17 moose/100 km²) in some parts of the Sahtu Region, including portions of the RSA. While moose populations are generally low, they are believed to be stable and mainly driven by the frequency and age of major fires, local hunting, and predation. Recent detailed studies concluded that the Dehcho moose population is healthy. The observed limited growth of the population could be attributed to habitat availability, predation and harvest.

Moose display complex winter habitat preferences that account for avoiding areas with snow accumulation, which might be why winter habitats may be most critical in the Mackenzie Valley. During winter, moose use areas along the Mackenzie River, on its islands and tributaries. During a reconnaissance flight in October 2020, tracks were observed along the MVWR ROW, indicating regular use of the ROW by moose.

Studies of moose mortality found that predation by wolves was a key source of mortality, however, survival rates of calves were reported to be high compared with the findings in other regions.

Harvest is considered moderate across the regions (averaging approximately 6% of the studied populations) but can be higher locally where access is available (e.g., near communities, roads, and rivers).

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APPENDIX 11A

MVH Extension Project: Technical Data Report - Cultural and Traditional Land Use

Mackenzie Valley Highway Project Technical Data Report—Cultural and Traditional Land Use

Prepared for:

Government of the Northwest Territories

Prepared by:

K'alo-Stantec Limited

December 2022

Project No.: 1232210301



K'alo-Stantec

Limitations and Sign-off

This document entitled Mackenzie Valley Highway Project Technical Data Report—Cultural and Traditional Land Use was prepared by K’alo-Stantec Limited (“K’alo-Stantec”) for the account of Government of the Northwest Territories (the “Client”) to support the regulatory review process for its Developers Assessment Report (DAR) (the “Application”) for the Mackenzie Valley Highway Project (the “Project”). In connection therewith, this document may be reviewed and used by the Department of Infrastructure (INF) for the Government of the Northwest Territories participating in the review process in the normal course of its duties. Except as set forth in the previous sentence, any reliance on this document by any other party or use of it for any other purpose is strictly prohibited. The material in it reflects K’alo-Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between K’alo-Stantec and the Client. The information and conclusions in the document are based on the conditions existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, K’alo-Stantec did not verify information supplied to it by the Client or others, unless expressly stated otherwise in the document. Any use that another party makes of this document is the responsibility and risk of such party. Such party agrees that K’alo-Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other party as a result of decisions made or actions taken based on this document.

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Laura Nuttall, Laura

Prepared by _____

(signature)

Laura Nuttall, on behalf of
Kathrin Janssen
Traditional Knowledge Facilitator

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Laura Nuttall, Laura

Reviewed by _____

(signature)

Laura Nuttall
Traditional Knowledge Facilitator

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Colin Buchanan, Ph.D., Principal
Principal, Indigenous Services Technical Lead

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Erica Bonhomme M.Sc., P.Geo.
Principal, Environmental Services

Executive Summary

The Government of the Northwest Territories (GNWT), Department of Infrastructure (INF) is proposing the Mackenzie Valley Highway Project (the Project) that will extend the Mackenzie Valley Highway (MVH) from Wrigley to Norman Wells. The Project consists of a 321 km all-season highway that largely follows the route of the existing Mackenzie Valley Winter Road, and the construction and operation of temporary and permanent borrow sources. The project highway alignment will pass through the Dehcho Territory and a portion of the Tulita District of the Sahtu Settlement Area (SSA) within the Northwest Territories (NT).

This technical data report (TDR) presents a review of relevant traditional land use information summarized from publicly available sources for consideration in the baseline reporting and Developers Assessment Report (DAR). This TDR is presented in the Indigenous Knowledge (IK) Baseline Table, which is a tabular summary that provides information on existing conditions and potential project effects, as identified by Indigenous groups in the source documents

Major themes emerging from the source documents include:

- The Mackenzie River and its basin provide important wildlife habitat for a number of species, such as moose, boreal woodland caribou, and furbearers.
- Traditionally harvested species such as woodland and barren ground caribou, moose, furbearers, waterfowl (including geese, swan, and ducks), and fish (including lake whitefish, lake trout, inconnu and northern pike) are found throughout the region.
- The boreal caribou population is reported to be relatively stable in most areas.
- Boreal caribou are particularly sensitive to sensory disturbance; noise and light disturbance were identified as major factors that impacts boreal woodland caribou.
- Linear disturbances can lead to an increase in predation of boreal caribou and other game animals.
- Major habitat changes that have occurred in the Dehcho region have been due to oil and gas development, introduction of bison, and forest fires.
- Habitat in the Dehcho Region remains relatively pristine.
- Petiniæah (Bear Rock) Conservation Zone is an important wildlife area for moose, furbearer habitat, boreal woodland caribou, bears, waterfowl, and migratory birds. Bear Rock is an important heritage resource and has significant cultural values for local Sahtu Dene.
- Subsistence harvesting remains important for Indigenous residents; activities such as hunting, fishing, fuel wood harvesting, and berry picking all contribute to subsistence.
- Subsistence harvesting continues to be relied on to off-set the cost of imported foods.
- Fort Good Hope-Colville Lake Group Trapping Area was identified as an important area not only for trapping but for providing control over land and resource management in the area.

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Technical Data Report—Cultural and Traditional Land Use**

Executive Summary
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- Moose are identified as the most important species for subsistence harvest; at least five moose pasture areas have been identified that are found along the project highway alignment.
- Fishing is a commonly practiced subsistence activity in the region.
- Historical cabins are located along the Mackenzie River both north and south of Wrigley; cabins, rare features, historic sites and archaeological sites are known to exist throughout the MVH Project Area.
- The MVH will allow local residents and visitors to access the harvesting areas or heritage value areas year-round. Increased harvesting may be an indirect effect of the Project.
- Concerns were expressed regarding impacts to the cultural value of the areas, resulting in a diminished historical and social identity for PKFN community.
- Concerns were expressed about the potential number of people involved in the construction of the Great Bear River Bridge and the proximity of the work camps to the community.
- Dehcho First Nations are particularly concerned about the immediate and cumulative impacts of development in the region. Seismic lines, sensory disturbance from oil and gas exploration activities, oil and contaminant spills, and use of seismic wire.
- The Dehcho region is reported to be getting warmer and wetter overall, with more rainfall in August and September and even into October.

Additional IK information obtained through the engagement program for the Project may identify further cultural and traditional use activities and practices.

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Abbreviations

%	percent
~	approximately
>	greater than
3D	three-dimensional
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
DAR	Developers Assessment Report
DLUPC	Dehcho Land Use Planning Committee
GNWT	Government of the Northwest Territories
GTA	Group Trapping Area
IBA	Important Bird Area
IK	Indigenous Knowledge
INF	Department of Infrastructure
km	kilometre
KM	kilometre marker
km ²	square kilometre
LSA	Local Study Area
m	metre
MVH	Mackenzie Valley Highway
MVRMA	<i>Mackenzie Valley Resource Management Act</i>
NT/NWT	Northwest Territories
NW	northwest
PDA	Project Development Area
PDR	Project Description Report
PKFN	Pehdzeh Ki First Nation
RCMP	Royal Canadian Mounted Police
RSA	Regional Study Area
SDMCLCA	Sahtu Dene and Métis Comprehensive Land Claim Agreement

**Mackenzie Valley Highway Project
Technical Data Report—Cultural and Traditional Land Use**

Abbreviations
December 2022

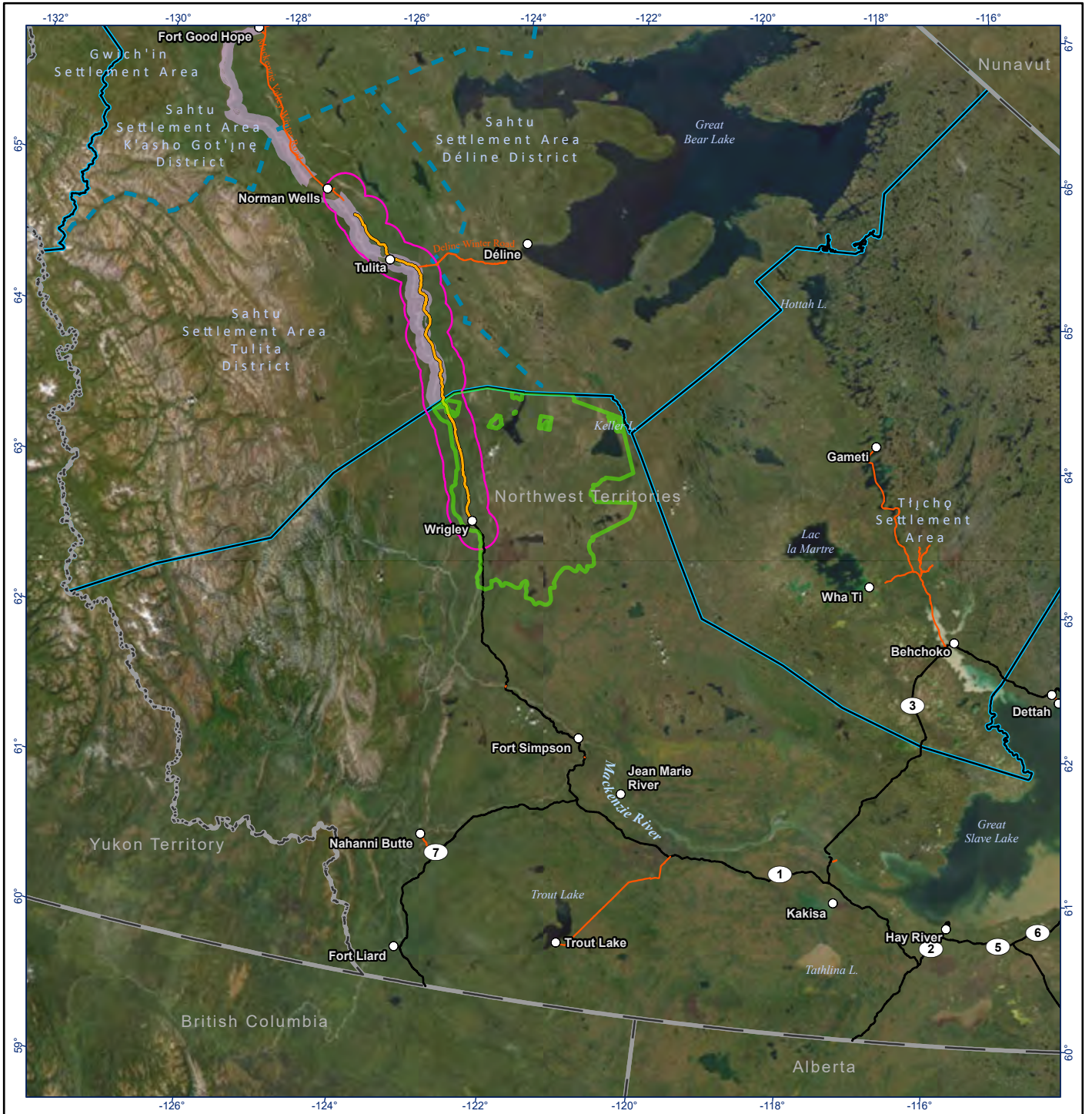
SLUP Sahtu Land Use Plan
SLUPB..... Sahtu Land Use Planning Board
SMZ..... Special Management Zone
SSA Sahtu Settlement Area
TDR Technical Data Report
TEK traditional ecological knowledge
the Project Mackenzie Valley Highway Project
TK..... traditional knowledge
TLU..... traditional land use
ToR..... Terms of Reference

1 Introduction

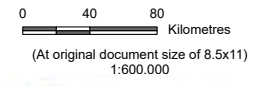
The Government of the Northwest Territories (GNWT), Department of Infrastructure (INF) is proposing the Mackenzie Valley Highway Project (the Project) that will extend the Mackenzie Valley Highway (MVH) from Wrigley to Norman Wells. The Project consists of a 321 kilometres (km) all-season highway that largely follows the route of the existing Mackenzie Valley Winter Road, and the construction and operation of temporary and permanent borrow sources. The project highway alignment will pass through the Dehcho Territory and a portion of the Tulita District of the Sahtu Settlement Area (SSA) within the Northwest Territories (NT; Figure 1.1).

The Project is subject to an environmental assessment and the requirements of Part 5 of the *Mackenzie Valley Resource Management Act* (MVRMA). This technical data report (TDR) presents the existing conditions for the cultural and traditional land use to support the Developer's Assessment Report (DAR), as required by the Terms of Reference (ToR; MVEIRB, 2015).

The TDR for cultural and traditional land use presents a tabular summary that categorizes applicable Indigenous Knowledge (IK) and Traditional Land Use (TLU) information within relevant valued component categories to identify the most relevant IK and TLU information so that it may be more effectively considered in the baseline reporting and DAR. The IK Baseline Table summarizes relevant IK information obtained from a review of publicly available source documents for Indigenous groups engaged on the Project. The IK Baseline Table was developed to facilitate the inclusion of IK and TLU throughout the development of the DAR, including the methodology, characterization of existing conditions, assessment of potential effects, identification of thresholds and limits, proposed mitigation measures and monitoring, and consideration of cumulative effects. This Table provides information on existing conditions and potential project effects, as identified by Indigenous groups in the source documents.



- Deh Cho Special Management Area
- Pehdzeh Ki Ndeh Area Of Interest
- Mackenzie Valley Highway Project
- Regional Study Area
- Community
- All-Season Road
- Winter Road
- District Boundary
- Region Boundary
- Settlement Area Boundary
- Territorial Boundary



Project Location: Wrigley to Norman Wells, NWT
 Prepared by DS on 2023-03-08
 TR by CS on 2023-03-08

Client/Project: 144903025-0051 REVA

Government of Northwest Territories
 Mackenzie Valley Highway

Figure No. **1.1**

Title: **MVH Project Area and Study Areas**

Notes
 1. Coordinate System: NAD 1983 Northwest Territories Lambert
 2. Data Sources: Centre for Geomatics Government of NWT, Government of Canada, Stantec
 3. Background: World Topographic Map: Esri, FAO, NOAA, USGS, NRCan
 World Imagery: Earthstar Geographics
 World Hillshade: Esri, USGS. Imagery date: 2021

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

1.1 Types of Information

The IK contained in this report is primarily qualitative, based on personal experience, oral traditions, and cultural identity and values and reflects the comments, observations, and experience of the study participants in the source documents. Indigenous knowledge is typically shared orally, passing from one generation to the next. Current observations about the natural environment are often rooted in knowledge and experience that extends far into the past. For the purposes of this TDR, IK may be understood to represent an Indigenous group's collective body of knowledge and understanding of a particular natural and cultural environment, accumulated and transmitted through generations of living on the land within a traditional territory or land use area. IK is cumulative and dynamic and adapts to social, economic, environmental, spiritual, and political change. The concept denotes a holistic perspective encompassing many aspects of a people's worldview and traditional ways of living. The knowledge is comprised of, but not limited to, knowledge about the environment including its use and management, values about the environment, and knowledge about traditional social, cultural, and socio-economic phenomena, both past and current.

Further, IK may be understood to be comprised of two distinct but interrelated components, traditional ecological knowledge (TEK) and TLU:

- TEK represents Indigenous knowledge about the natural and cultural environment, accumulated over generations of living on the land. TEK reflects knowledge about the environment, including management of the environment and related values. Specific forms of TEK can include knowledge about resource distribution, populations and movement patterns, schedules for resource harvesting, and species-specific habitat and behaviour. TEK also includes information on aspects of environment, including weather patterns, flood and fire cycles, effects of snowfall on travel, hunting, and other activities; information about landmarks, navigability of trails, rivers, and waterbodies; as well as general environmental conditions.
- TLU represents Indigenous knowledge about the activities, practices and places, locations and areas related to use of traditional resources, such as collection of plants and organic materials; and practices including hunting, trapping, and fishing. TLU also refers to any travel that occurs to engage in such harvesting practices. TLU includes information about how and where resources are harvested; identification of harvested species and information regarding harvesting practices (such as seasonality); information about travel and trails, or places of habitation and settlement such as cabins or campsites; as well as information about sacred areas such as burials or ceremonial sites. TLU also includes information regarding the context of use; for example, the social regulation of who hunts and when, how harvested resources are distributed within the community, and restrictions on hunting. Additional contextual information related to TLU may include temporal information (e.g., when certain sites are used or harvesting occurs, whether use occurred in the past or present) or information regarding the uses of harvested plants or animals (e.g., subsistence, medicinal, ceremonial).

Also, relevant socio-economic information contained in the source documents for Indigenous groups engaged on the Project has been included in the IK Baseline Table. This includes information about Indigenous employment and livelihood, infrastructure and services, human health, and community health and wellbeing.

Available IK information has been categorized in the IK Baseline Table according to the valued components for the DAR, including the identified key lines of inquiry (moose, caribou, and harvesting).

1.2 Limitations

IK information was obtained from publicly available sources. A lack of IK for a specific area or activity does not necessarily represent a lack of cultural and traditional use for that location or activity, especially where no Project-specific IK is available.

Additional IK information obtained through the engagement process for the Project may serve to confirm the IK information obtained through publicly available sources and provide more specific information about cultural and traditional use sites, area, practices, and activities.

2 Study Area

The MVH Project is located in the Mackenzie Valley region of the NT between the current terminus of the existing all-weather highway in Wrigley (Highway #1, kilometre marker [KM] 690) and Norman Wells (KM 1011). The project highway alignment parallels the Mackenzie River to its east and passes through the community of Tulita (KM 938). The Project is located within the Sahtu Settlement Region and is subject to the *Sahtu Dene and Métis Land Claim Settlement Act, 1994*.

The local and regional study areas presented in this TDR are the areas where data was compiled/collected to allow for an understanding of the environment in support of the Project-specific effects assessment and the cumulative effects assessment. The spatial boundaries for cultural and traditional land use are consistent with those for wildlife and wildlife habitat because there are demonstrable links between wildlife and wildlife habitat and traditional hunting and concern for caribou populations. Descriptions of study areas are provided below and are shown in Figure 1.1.

2.1 Project Development Area

The Project Development Area (PDA) is the area to be utilized by the Project and includes the alignment of the MVH between Wrigley and Norman Wells and a 100 metres (m) buffer on either side.

2.2 Local Study Area

The Local Study Area (LSA) for cultural and traditional land use is consistent with that for wildlife and wildlife habitat and is a 1 km buffer around the project highway alignment. The size of the LSA is based on measurable effects to traditionally harvested species, while also considering recommended setback distances for wildlife and wildlife habitat features. The size of the LSA is also consistent with guidance provided by Environment and Climate Change Canada (Dufour, 2020, pers. comm.).

2.3 Regional Study Area

The Regional Study Area (RSA) for cultural and traditional land use is consistent with that for wildlife and wildlife habitat and is a 15 km buffer around the project highway alignment that is used to capture a wide-range of wildlife species and wildlife habitats that could potentially be affected cumulatively by the Project and other past, present, and reasonably foreseeable projects. This is consistent with other highway projects in the NT (e.g., Inuvik to Tuktoyaktuk Highway [Kiggiak - EBA Consulting Ltd., 2011]) and follows recommendations from Environment and Climate Change Canada (Dufour, 2020, pers. comm.).

3 Review of Existing Data

The IK Baseline Table (Section 4) provides a review of relevant publicly available sources of IK information for Indigenous groups engaged on the Project to deepen the understanding of current use by these Indigenous groups. Sources consulted are listed below.

1. 5658 NWT Ltd. and GNWT (5658 NWT Ltd. and Government of Northwest Territories). 2011. Project Description Report for Construction of the Mackenzie Valley Highway Tulita District, Sahtu Settlement Area.

The Project Description Report (PDR) serves as the initial guiding document for the proposed expansion of the MVH through the Tulita District in the SSA, and it is based on nearly five decades of initiatives, studies, strategies, consultations and reports. TLU information was gathered from a series of public consultation meetings as well as from the draft *Sahtu Land Use Plan (SLUP)* (SLUPB, 2013), *Rakekee Gok'e Godi: Places We Take Care Of* (Sahtu Heritage Places and Sites Joint Working Group, 2000), *Spirit of the Mountains: Shuhtagot'ine Nene and Naats'ihch'oh Traditional Knowledge Study* (SENES, 2009), and *Traditional Knowledge Study Report: Great Bear River Bridge* (EBA, 2006).

2. Dehcho First Nations. 2011. Traditional Knowledge Assessment of Boreal Caribou (Mbedzih) in the Dehcho Region. Prepared by Dehcho First Nations for the Canadian Wildlife Service. Published by the Dehcho First Nations Fort Simpson, Northwest Territories.

Environment Canada, through the Canadian Wildlife Service (CWS), commissioned this study to gather traditional knowledge (TK) to help guide and inform the development of the boreal caribou National Recovery Strategy and Action Plan. A series of harvester meetings were held in Dehcho communities to gather TK information on boreal caribou in the Dehcho region. A total of 49 harvesters participated. Community summaries were developed using information shared at community meetings, recorded on topographic maps, and information compiled from previous studies. Community summaries were provided to each community for review and verification. Individual community summaries and maps detailing TK about caribou habitat, harvesting locations and movement were produced as confidential appendices to the study. Information about these types of locations is presented in narrative within the main body of the report.

3. Dessau. 2012. Mackenzie Valley Highway Extension Pehdzeh Ki Ndeh – Dehcho Region. Project Description Report. Prepared for Government of the Northwest Territories, Department of Transport.

The PDR identifies, analyses, and collates pertinent and available information for the MVH Project to meet the Preliminary Screening requirements of the process administered by the Mackenzie Valley Land and Water Board. There is a body of information from past studies and reports, mostly from the period 1973 to 2005, which were used to prepare the PDR for the section of the MVH alignment that occurs in the Dehcho region. This information, supplemented by input received through consultations in 2010 and 2011, have been used to characterize the biophysical and human environments and to

predict environmental impacts, gaps in information, and subsequent assessment needs for the MVH Project in the Pehdzeh Ki Ndeh - Dehcho Region.

4. EBA (EBA Engineering Consultants). 2006 Traditional Knowledge Study Report Tulita, NT, Great Bear River Bridge

The TK study was conducted between Feb 18-24, 2006 and included visits to the site of the Great Bear River Bridge with interested community members, attendance and presentation by representative of Tulita Yamoria Community at Community Leaders Meeting, group meetings with community elders/fisher/trappers and one-on-one discussions with local community members. A total of eleven participants, including elders, hunters, fishermen and others who frequent the area regularly were part of the TK study.

5. Golder. 2015. Central Mackenzie Surface Water and Groundwater Baseline Assessment. Report 1: Technical State of Knowledge. Report Number: 1401835 Final Report 1. May 21, 2015.

The report provides a compilation of surface and groundwater scientific data and Indigenous knowledge in the Sahtu Region, providing a baseline assessment of available traditional and local knowledge about permafrost, surface water, groundwater, and climate in the Central Mackenzie Valley. Information was compiled through a review of publicly available secondary sources, largely reflecting a broad-based review of traditional land use practices at a regional level. These documents were reviewed for information about traditional use and knowledge of water systems throughout the K'asho Got'ine and Tulita regions.

6. GNWT (Government of the Northwest Territories). 2018. NWT Community Survey. NWT Bureau of Statistics.

The report contains statistics compiled every 5 years reporting on Indigenous participation in traditional activities, frequency of hunting and fishing, by community.

7. IMG-Golder (IMG-Golder Corporation). 2006. Draft Report on Renewable Resource Assessment of the Pehdeh Ndeh Area of Interest. Prepared for the Canadian Parks and Wilderness Society, Northwest Territories Chapter. Yellowknife.

The report was prepared for the Canadian Parks and Wilderness Society was intended to conduct a draft assessment of the status of renewable resource and assist in the determination of the social and economic implications of the renewable resources and their uses within the Pehdzeh Ki Ndeh area of interest. The Pehdzeh Ki Ndeh is defined as an estimated 17,053 square kilometres (km²) tract of land centered at approximately 123°W and 63°50'N, a 25 km buffer around the area and the community of Wrigley. Renewable resources assessed include wildlife, fish, trees, plants, art and craft materials, wilderness, and renewable energy. Subsistence harvesting, commercial harvesting, socio-economic, and environmental components were considered for each renewable resource. Although the report relies largely on scientific publications and other ecology and resource assessment, traditional knowledge is included through interviews with Wrigley residents, Band Office representatives, and other knowledgeable persons.

8. SLUPB (Sahtu Land Use Planning Board). 2013. Sahtu Land Use Plan. Government of Northwest Territories. Good Hope.

The Sahtu Land Use Plan (SLUPB, 2013) is the mechanism by which Sahtu Dene and Métis exercise their rights under the Sahtu Dene and Métis Comprehensive Land Claim Agreement (SDMCLCA) to participate in decision making concerning the use, management, and conservation of land, water and resources. This is done by providing broad direction to community organizations, governments, regulators and applicants about how land (including water and other resources) is to be conserved, developed, and used within the SSA; it outlines appropriate land use activities, as well as where and under what conditions they can be conducted. Objectives of the land use plan are to recognize and encourage the Sahtu way of life, encourage self-sufficiency of the Sahtu, enable the Sahtu to participate fully in all aspects of the economy, integrate management of wildlife and wildlife habitat with management of all land and water use to protect and conserve wildlife and environment of the settlement area for present and future generations (SLUPB, 2013:10).

9. Sahtu Heritage Places and Sites Joint Working Group. 2000. Rakekée Gok'é Godi: Places We Take Care Of.

The Sahtu Heritage Places and Sites Joint Working Group was created pursuant to the Sahtu Dene and Métis Comprehensive Land Claim Agreement (1993). The Joint Working Group's responsibility is to make recommendations to the appropriate Minister and the Sahtu Tribal Council on heritage places and sites. This report looks at 40 places and sites that are of importance to the Sahtu Dene and makes recommendations regarding their protection.

10. McDonald, Rhea. 2010. Boreal Caribou Traditional Knowledge Collection Study: The Sahtu Settlement Area. Edited by Andrea Hrynkiw and Glen Guthrie and McDonald. For the Canadian Wildlife Service, Environment Canada.

For the study, 14 Elders, harvesters, and knowledge holders from Sahtu communities were interviewed regarding boreal woodland caribou in the Sahtu Settlement area. The participants were asked a series of questions to gain knowledge about the boreal woodland caribou and its habitat. Maps were also available for participants to identify important areas related to caribou distribution. This study provides traditional knowledge about caribou population, health, distribution, habitat, and the cultural importance to Sahtu communities. The study contains one map that describes caribou habitat and harvesting sites. The work was governed by the Dehcho First Nations' Traditional Knowledge Research Protocol (2004).

11. Tulita Renewable Resource Council. 2019. Traditional Knowledge Study for the Great Bear River Bridge Project. Prepared by Tulita Renewable Resource Council.

The Traditional Land Use Study was conducted February 18-19th, 2019 by looking at the TLU data surrounding the proposed Great Bear River Bridge. Ten harvesters were interviewed as a part of the study using a survey form format.

4 Traditional Land Use Baseline Table

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Valued Component					
Air Quality					
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> • More dust <p>Contaminates hauled through the land, more pollution on the road</p>			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 130	
<p><u>Existing Conditions</u> Boreal caribou are particularly sensitive to sensory disturbance and have been affected by sensory disturbance from oil and gas exploration in the past (and currently in the Cameron Hills). The potential impact of pending and future development remains a major concern.</p>	Cameron Hills is outside the RSA (~466 km from the PDA)		Dehcho First Nations	Dehcho First Nations, 2011:14	
Noise					
<p><u>Existing Conditions</u> Boreal caribou are particularly sensitive to sensory disturbance and have been affected by sensory disturbance from oil and gas exploration in the past (and currently in the Cameron Hills). The potential impact of pending and future development remains a major concern.</p>	Cameron Hills is outside the RSA (~466 km from the PDA)		Dehcho First Nations	Dehcho First Nations, 2011:14	
Harvesters note that boreal caribou are sensitive to other localized disturbances, including increased use of skidoos, increased use of motorized boats, heavy truck traffic, and low flying aircraft.		Finding means to reduce sensory disturbances would therefore benefit boreal caribou populations, especially reducing sensory disturbances at critical periods, such as during calving and over-wintering periods, needs to be a priority	Dehcho First Nations	Dehcho First Nations, 2011:14	
Even though there are a number of all season and winter roads crisscrossing the Dehcho region, and a reasonable number of boreal caribou sightings along these roads, there are no known incidences of boreal caribou being struck by vehicles. Sensory disturbance from large trucks, particularly on winter roads, is more of a concern	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:15	
<p><u>Potential Effects</u> Noise is given as a major factor that impacts boreal woodland caribou. These disturbances include drilling, seismic cut-line activities, slashing, and machines including helicopters and All-terrain vehicles that conduct work during the summer. Caribou prefer old growth areas and have a tendency to stay away from winter roads because of noise pollution. Weather also plays a significant role in the health and well-being of boreal woodland caribou. Increasing extremes in annual temperatures and flooding negatively impact herds.</p>			Sahtu	McDonald, 2010:5	
<p><u>Potential Effects</u> Industry and general development are major factors that affect caribou. Noise pollution produced by these activities precludes animals from taking advantage of resources in these areas.</p>			Sahtu	McDonald, 2010:5	
<p><u>Potential Effects</u> Noise and lights disturb caribou. Any development should not occur during the calving season or near caribou habitat.</p>			Sahtu	McDonald, 2010:5	
<p><u>Existing Conditions</u> Boreal woodland caribou are typically found in old growth forested areas and stay away from winter roads because of the noise pollution. Therefore, motor vehicle collisions with boreal woodland caribou do not occur in the SSA.</p>			Sahtu	McDonald, 2010:6	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Hydrogeology					
No information regarding hydrogeology was identified in review of available sources					
<p><u>Existing Conditions</u> Springs, mostly underground, from Tłegóhtú (Norman Wells) to the Sahtu Deh (Great Bear River) have been mapped. Springs that flow year-round have been investigated in several locations near Prohibition Creek, Vermilion Creek, and Nota Creek. Under frozen conditions, these streams produce a layered ice feature known as aufeis deposits.</p>	Tłegóhtú (Norman Wells) to the Sahtu Deh (Great Bear River) intersects portions of the PDA Prohibition Creek, Nota Creek, and Vermilion Creek intersect the PDA.			Golder, 2015: 2-37	
<p><u>Existing Conditions</u> A spring location in Kweten?íá or Peten?íá (Bear Rock) was identified by community members.</p>	The PDA intersects Bear Rock Conservation Zone.		Sahtu	Golder, 2015: 2-38	
<p><u>Concerns</u> During 2003 community meetings, residents expressed concerns about potential groundwater changes, patterns of surface water flow, and the amount of runoff.</p>		During a community meeting, mitigations to address residents' concerns were developed including water withdraw and release should adhere to regulatory guidelines and retain natural drainage or implement drainage diversions.		Golder, 2015: 2-40	
Surface Water Quality and Quantity					
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters <i>ice breaks</i> are very powerful during the spring break around the area of the proposed Great Bear River Bridge</p>	Great Bear River is a tributary to the Mackenzie and intersects the PDA	A Sahtu harvester requested to put markers in water to alert bridge footings. (Great Bear River Bridge)	Sahtu	Tulita Renewable Resource Council, 2019: 4,23	
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the participants identified concerns around the environment regarding the construction of the MVH. Impacts to water in general and the Mackenzie in particular are mentioned as concerns.</p>			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 129	
<p>During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> Willowlake River is contaminated; we need to protect the Blackwater area 	Willowlake River is a tributary to the Mackenzie south of Wrigley and outside the RSA (~62 km from the PDA) The Blackwater River intersects the PDA The Blackwater River southeast of Blackwater Lake is outside the RSA (~47 km from PDA)		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 130	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Surface Water Quality and Quantity (cont'd)					
<p><u>Existing Conditions</u> Water levels throughout Sahtu become very low around October, typically freezing in October and November.</p>			Sahtu Elders and land users	Golder, 2015: 2-18	
<p><u>Existing Conditions</u> The Mackenzie River water drops from time to time, creating conditions that can be dangerous in that ice thickness cannot be determined through the water.</p>			Sahtu Elders and land users	Golder, 2015: 2-18	
<p><u>Existing Conditions</u> Paddling on Moose Lake is no longer possible as the lake has dried. Elders have linked decreasing water levels to reduced fish and wildlife habitat, and it affects land users' travel and fishing.</p>	Unable to determine location of Moose Lake		Sahtu	Golder, 2015: 2-21	
<p><u>Existing Conditions</u> In the spring, Big Smith Creek has high flows, draining out in fall. Parts of the creek are open water over winter, with water running under the surface ice.</p>	Big Smith Creek is within the PDA.			Golder, 2015: 2-26	
<p><u>Existing Conditions</u> Community members have expressed concern that development may impact water quality through increased sediment from vegetation clearing along waterbodies; impacts of blasting; impacts from melting permafrost (erosion, flooding, scouring, reduced land subsistence); and impacts on fish and wildlife, and their habitats,</p>			Elders and land users in the Sahtu region	Golder, 2015: 2-16	
<p><u>Concern</u> During a workshop held in 2015, residents expressed concern about impacts to Tłegqhtł (Norman Wells) water quality; given the speed at which surface and ground water flows through this system (the karst system) concerns about contamination by development could be far reaching. Concerns for water and groundwater quality, muskeg damage from equipment, subsidence of land leading to flooding were also raised.</p>	Tłegqhtł (Norman Wells) area intersects portions of the PDA	During community meetings, mitigation measures to address concerns were developed, including water withdraw and release adhere to regulatory guidelines, disturbance of springs and aquifers be reduced, install diversion ditches on sidehill slopes so sediment from potential subsidence doesn't enter streams, implement waste and spill mitigations, retain shore and wetlands plants.		Golder, 2015: 2-38	
<p><u>Concern</u> Community members expressed the importance of maintaining all stream flows during and after project development to provide fish habitat and access to spawning areas.</p>		Maintain stream flows through natural drainage or drainage diversions.	Sahtu Elders and land users	Golder, 2015: 2-20	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Terrain, Soils and Permafrost					
<p><u>Existing Conditions</u> Warmer temperatures, melting permafrost and other environmental changes create concerns related to the environment.</p>			Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-36	
<p><u>Existing Conditions</u> Forest fires are known to damage boreal caribou habitat, particularly deep burning fires that destroy lichen cover. Once a fire has damaged a habitat area, boreal caribou generally do not go back into the area for foraging purposes, and it can take decades for the land to recover. However, boreal caribou may use burned areas as travel corridors and have been observed foraging on fresh growth. Boreal caribou do not frequent burned areas in the mid to late winter, even as travel corridors.</p>			Dehcho First Nations	Dehcho First Nations, 2011:10	
<p>The Dehcho region is clearly getting warmer and wetter overall, with more rainfall in August and September and even into October. This change is creating more incidences of ice crusting along the ground which may make it more difficult for boreal caribou to forage for ground lichens. Sudden thaws and melting during winter months also create crusts on the snow that make it difficult for boreal caribou to move around and escape predators. In some instances, frost heaves that harbor lichens are diminishing or melting entirely which reduces availability of this particularly rich habitat site. Wetter summers and falls are resulting in higher water levels on smaller rivers and streams, increasing boat access (particularly jet boat access) into boreal caribou habitat areas previously difficult to access at these times of year.</p>	The PDA is located within the Dehcho Region	Climate change does not yet appear to be affecting ground or hanging lichens, although some monitoring of future changes to lichen due to climate change should be undertaken.	Dehcho First Nations	Dehcho First Nations, 2011:15	
<p><u>Existing Conditions</u> Permafrost has traditionally been used for meat storage.</p>				Golder, 2015: 2-15	
<p><u>Existing Conditions</u> According to Elders, muskeg and lakes south of Tulita freeze over during October and November; access to the lower bench portion of Little Bear River may have soft spots from areas of muskeg.</p>	The area south of Tulita falls within the RSA (~ 3 km from PDA). Little Bear River is a tributary to the Mackenzie River and is within the RSA. (~9 km from PDA)			Golder, 2015:2-16	
<p><u>Potential Effects</u> Permafrost throughout the Little Bear River area can cause frost boils which can develop into sinkholes. Melting permafrost can cause landslides and water pooling on the land. Water storage, particularly when stored water cannot drain in spring, can destabilize permafrost. Even small disturbances to permafrost can create large environmental effects.</p>	Little Bear River is a tributary to the Mackenzie River and is within the RSA. (~9 km from PDA)	According to interviews Elders and land users in the K'ásho Got'íne and Tullí'ta regions, constructing drainage ditches away from roads and drilling holes at strategic locations in the frozen surface will improve drainage and erosion concerns. It is recommended that permafrost not be disturbed.	Elders and land users in the K'ásho Got'íne and Tullí'ta regions	Golder, 2015: 2-14	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Terrain, Soils and Permafrost (cont'd)					
<p><u>Existing Conditions</u> Land clearing for seismic operations is associated with fast-melting permafrost, leading to problems with vegetation re-establishment and erosion and slumping on the banks of the Sahtu waterbodies. Islands in K'áalq Túé (Willow Lake/ Brackett Lake) have experienced slumping, cabins in K'áalq Túé (Willow Lake/ Brackett Lake) have had to relocate due to eroding banks, and erosion is suspected to be affecting fish passage between K'áalq Túé (Willow Lake/ Brackett Lake) and Kelly Lake. Permafrost melt from development has also been linked to erosion in Sahtu Deh (Great Bear River) and other waterbodies in the area.</p>	<p>K'áalq Túé (Willow Lake/ Brackett Lake) is outside the RSA (~26 km from the PDA) Sahtu Deh (Great Bear River) is a tributary to the Mackenzie River and intersects the PDA</p>	<p>Limit project footprints and avoid uncommon landforms and steep slopes to the extent practical. Include adequate protection of permafrost under disturbed areas in closure and reclamation plans. Engage local landowners in permafrost monitoring to best assess the effects.</p>	<p>Elders in the K'ásho Got'jne and Tullít'a regions</p>	<p>Golder, 2015: 2-15</p>	
Vegetation					
<p><u>Existing Conditions</u> According to the map data collected during consultation with Pehdzeh Ki First Nation (PKFN), there is a rare plant location west of the proposed highway at KM 724 near the Mackenzie River.</p>	<p>The rare plant location at KM 724 is in the LSA</p>		<p>Pehdzeh Ki/Dehcho First Nations</p>	<p>Dessau, 2012: App 1, Map Sheet 7-P</p>	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN, there is a rare plant location observed to the east of the existing winter road around KM 782.</p>	<p>The rare plant location at KM 782 is in the LSA</p>		<p>Pehdzeh Ki/Dehcho First Nations</p>	<p>Dessau, 2012 : App 1, Map Sheet 17-P</p>	
<p>During the Wrigley Community Consultation (January 25-26th, 2012) the participants identified concerns around the environment regarding the construction of the MVH. Concerns revolved around impacts to the land and forest. Reforestation was important to the participants.</p>			<p>Pehdzeh Ki/Dehcho First Nations</p>	<p>Dessau, 2012: 129</p>	
<p><u>Existing Conditions</u> Forest fires are known to damage boreal caribou habitat, particularly deep burning fires that destroy lichen cover. Once a fire has damaged a habitat area, boreal caribou generally do not go back into the area for foraging purposes, and it can take decades for the land to recover. However, there is evidence that boreal caribou may use burned areas as travel corridors and that some foraging on fresh growth does occur. Boreal caribou do not frequent burned areas in the mid to late winter, even as travel corridors.</p>	<p>The PDA is located within the Dehcho Region</p>		<p>Dehcho First Nations</p>	<p>Dehcho First Nations, 2011:10</p>	
<p><u>Potential Project Effects</u> During consultations in 2004 and 2005, community members expressed concern that development may affect human health through water and air quality; and the health of the region's wildlife, fish and vegetation.</p>		<p>Improved and more frequent communication with communities regarding water quality and fish health were recommended.</p>	<p>Elders and land users in the Sahtu region</p>	<p>Golder, 2015: 2-17</p>	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Wildlife and Wildlife Habitat					
<p><u>Existing Conditions</u> The Sahtu Land Use plan states that the Deh Cho is identified as a Special Management Zone to protect the water quality, riparian habitat, cultural/heritage sites, areas that are important for wildlife and wildlife harvesting. The Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the Sahtu Settlement Area. The Sahtu Land Use Plan was approved August 2013.</p>	The PDA is within the Deh Cho Special Management Zone		Sahtu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.
<p><u>Existing Conditions</u> Wildlife is assessed as being a key renewable resource in the Pehdzeh Ki Ndeh. Subsistence harvesting is an important resource use among Study Area residents and provides a fairly high amount of meat to families. Moose are acknowledge as being the most important subsistence harvest species and there are numerous areas in the Pehdzeh Ki Ndeh known to be valuable moose habitat, concentrated around the shores of its many lakes.</p>	The PDA is located within the Pehdzeh Ki Ndeh		Pehdzeh Ki First Nation; Dehcho First Nations	IMG-Golder, 2006: 2-3	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions:</u> The Sahtu Land Use Plan states that the Petiniæah (Bear Rock) Conservation Zone is an important wildlife area for moose, furbearer habitat, boreal woodland caribou and bears.</p>	The PDA intersects Petiniæah (Bear Rock) Conservation Zone		Sahtu	SLUPB, 2013:124	Petiniæah (Bear Rock) Conservation Zone lies within the Mackenzie River Special Management Zone across from Tulita at the confluence of the Mackenzie and Great Bear Rivers.

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Wildlife and Wildlife Habitat (cont'd)					
<p><u>Existing Conditions:</u> The Sahtu Land Use Plan states that the Petiniæah (Bear Rock) Conservation Zone is an important wildlife area for moose, furbearer habitat, boreal woodland caribou and bears.</p>	<p>The PDA intersects Petiniæah (Bear Rock) Conservation Zone</p>		Sahtu	SLUPB, 2013:124	<p>Petiniæah (Bear Rock) Conservation Zone lies within the Mackenzie River Special Management Zone across from Tulita at the confluence of the Mackenzie and Great Bear Rivers.</p>
<p><u>Existing Conditions</u> The Sahtu Land Use Plan reports that within the Deh Cho Special Management Zone water quality and riparian habitat is of primary concern. The Mackenzie River and its basin provide important wildlife habitat for a number of species such as moose, boreal woodland caribou, furbearers. Important Wildlife Areas for furbearers, moose and muskox, riparian areas with high moose density in winter time all exist in the zone.</p>	<p>The PDA is within the Deh Cho Special Management Zone Portions of the Mackenzie River intersect the LSA</p>		Sahtu	SLUPB, 2013:170	<p>The Deh Cho Special Management Area consists of a 5 km buffer that is applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUPB.</p>

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Wildlife and Wildlife Habitat (cont'd)					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that moose are found throughout the area. There are calving areas on the shores Blackwater Lake, east of Blackwater Lake on the shores of Notseglee Lake on Tonaenlee Lake, the shores of Fish Lake and northwest of Fish Lake.</p>	<p>Blackwater Lake, Notseglee Lake, Tonaenlee Lake, and Fish Lake are outside the RSA (Fish Lake: ~32 km from PDA. Blackwater Lake: ~45 km from PDA. Tonaenlee Lake: ~53 km from PDA. Notseglee Lake: ~65 km from PDA.)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that some barren ground caribou of the Bathurst herd are found around the eastern boundary of Pehdzeh Ki Ndeh and some members of the Bluenose East herd are found north of Blackwater Lake and Keller Lake.</p>	<p>Blackwater Lake and Keller Lake are outside the RSA (Blackwater Lake: ~45 km from PDA. Keller Lake: ~99 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20-21</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that Boreal woodland caribou are year- round inhabitants of the Pehdzeh Ki Ndeh and use the shores of Blackwater Lake and Fish Lake as calving areas. There is a wintering ground in the highlands east of Blackwater Lake. The McConnell Range along the western border of the Study Area is a summering area and the higher areas are suspected to act as calving areas</p>	<p>Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~32 km from PDA. Blackwater Lake: ~45 km from PDA.)</p> <p>McConnell Range is inside the RSA, located east (~10 km) of the existing winter road between Wrigley and Tulita.</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20-21</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Boreal caribou are common throughout the Dehcho region, although some areas tend to have higher concentrations of individuals. To some degree, population densities and trends can be inferred by traditional observations of average group sizes as well as by community harvesting levels. From this perspective, the boreal caribou population in the Dehcho is relatively stable in most areas, with a tendency toward a slow decline in others, particularly in those areas impacted by forest fires, introduction of bison, and/or high levels of sensory, hunting, and/or developmental pressures.</p>	<p>The PDA is located within the Dehcho Region</p>		<p>Dehcho First Nations</p>	<p>Dehcho First Nations, 2011:3</p>	<p>Dehcho Region includes Wrigley</p>
<p><u>Existing Conditions</u> Traditional knowledge information about boreal caribou recruitment activities (calving) is not extensive, likely given that boreal caribou spread out over large areas and generally stay in wetlands and burned areas that are difficult to access during the spring calving season. By the fact that populations are generally stable and that group sightings in fall and winter generally include a mix of adult and younger animals (with adults being the majority of the group), it is inferred that recruitment is stable.</p>			<p>Dehcho First Nations</p>	<p>Dehcho First Nations, 2011:4</p>	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> In the Wrigley area, the population of boreal caribou is moderate to high throughout most of the area and is considered stable in most areas, with some decline in the corridor between the Mackenzie River (Dehcho) and the Franklin Mountains. The strongest population is to the east of the Franklin Mountains. Group sizes of 6-7 animals are common in the fall through early winter with groups as large as 30-40 animals not uncommon in late winter, particularly east of the Franklin Mountains.</p>	Wrigley and Franklin Mountains intersect the PDA Mackenzie River is within the LSA		Dehcho First Nations	Dehcho First Nations, 2011:4	
<p><u>Existing Conditions</u> It appears that the entire Dehcho region could be referred to as boreal caribou range, in that boreal caribou populations, in varying levels (likely dependent on habitat availability and habitat pressures), are found throughout the entire region. Although the Mackenzie Mountains are generally identified as mountain caribou range, there is also evidence from Nahanni Butte and Wrigley that there is some interaction between mountain caribou and the boreal caribou that inhabit the foothills and river valleys along the eastern edge of the Mackenzie Mountains, which means that the boreal caribou range in the Dehcho extends to some degree into the Mackenzie Mountains.</p>	Mackenzie Mountains is outside the RSA (~1 km from PDA) Nahanni Butte is outside the RSA (~233 km from the PDA) Wrigley intersects the PDA		Dehcho First Nations	Dehcho First Nations, 2011:5:	Dehcho Region includes Wrigley
<p><u>Existing Conditions</u> From a traditional knowledge perspective, the degree to which individual boreal caribou move throughout the entire Dehcho range and therefore interact is not known, but it is known that many groups of boreal caribou have relatively significant 'linear' seasonal movement or migration patterns while others remain for the most part in large multi-habitat areas and simply shift the pattern of use of those areas based on seasonal habitat preferences</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:5:	Dehcho Region includes Wrigley
<p><u>Existing Conditions</u> Significant 'linear' movements appear to occur in the Wrigley area (groups of boreal caribou cross the Mackenzie River south and north of the community on the ice from east to west in the late winter / early spring and return during the late summer / early fall);</p>	Wrigley intersects the PDA Mackenzie River (south and north of Wrigley) is within the LSA		Dehcho First Nations	Dehcho First Nations, 2011:6:	Dehcho Region includes Wrigley
<p><u>Existing Conditions</u> In the Wrigley area east of the Franklin Mountains, there is considerable overlap between boreal caribou range and barren-ground caribou range in the mid-winter months. Groups of boreal caribou have been observed walking and feeding among large herds of barren-ground caribou, particularly around the Fish Lake area. The barren-ground caribou, which come down from the Sahtu so are part of what is referred to as the Bluenose West herd, only recently returned to this area after being away for approximately fifty years.</p>	Wrigley and Franklin Mountains intersect the PDA Fish Lake is outside of RSA (~32 km from PDA)		Dehcho First Nations	Dehcho First Nations, 2011:6	Dehcho Region includes Wrigley
<p><u>Existing Conditions</u> Overall, range and movement patterns appear to differ somewhat within the Dehcho region (significant 'linear' movement versus less obvious 'rotational' movement), with varying degrees of overlap between community land use areas, such that it would be difficult to clearly identify separate populations (subpopulations) within the region. All population groups move throughout the year in response to common seasonal habitat preferences</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:6	Dehcho Region includes Wrigley
<p><u>Existing Conditions</u> The general seasonal habitat trend is for boreal caribou to spread out throughout marsh and wetlands during the spring calving period; to stay close to and in areas with greater amounts of muskeg terrain throughout summer; to move more freely in fall and early winter throughout a range of habitats, while gathering into larger groups; and to overwinter in larger groups in areas that have higher amounts of thicker brush (both black spruce and pine) while remaining close to muskeg and 'willow prairie' areas that harbor ground lichens and sedge grasses.</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:6	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> Dehcho region generally appears to provide the wide and diverse range of habitat types that woodland caribou use throughout the year along with ready access, in most areas, to both hanging and ground lichens and other foraging vegetation. Boreal caribou rely on ground and hanging lichens as well as sedge grasses for feed and remain close to habitat where this type of food is accessible.</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:7	
<p><u>Existing Conditions</u> Areas with 'white muskeg' are known to be good habitat as well as areas with rich 'hanging moss'. Open 'bog' areas (a few large bogs are located in the Dehcho Region, particularly between Fort Simpson and Jean Marie River) are avoided by caribou.</p>	Fort Simpson and Jean Marie River are outside the Project RSA (Fort Simpson: ~79 km from PDA. Jean Marie River: ~220 km from PDA)		Dehcho First Nations	Dehcho First Nations, 2011:7	
<p><u>Existing Conditions</u> There appears to be a correlation between boreal caribou presence and pine forested areas. There are a large number of 'endaa' (wallows or licks) throughout the Dehcho, but the location of these sites is kept confidential unless there is a specific threat from development</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:7	
<p><u>Existing Conditions</u> Boreal caribou generally do not congregate in the same areas as moose due to habitat preference and well as predator avoidance.</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:7	
<p><u>Existing Conditions</u> There has been minimal change to boreal caribou habitat since oil and gas exploration was halted in the early 1970s. The Dehcho Region landscape, now that many seismic lines have grown in, remains relatively pristine habitat</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:7	
<p><u>Existing Conditions</u> Spring (late March through May): Once the snow crust softens, boreal caribou move from their overwintering habitat in relatively large groups and begin to travel to and spread out over calving areas, which are generally in wetlands, marshlands, or even burn areas that are difficult for predators to access. The largest concentrations of boreal caribou are generally seen in late winter / early spring, just before they disperse to calving areas. Summer (June through early August): Throughout the summer, boreal caribou primarily utilize muskeg areas or areas with access to muskeg. They lay in heavy moss that has permafrost under it in order to stay cool. They appear to move around less frequently during the mid summer months but begin to move more in late summer / early fall. Fall / Early Winter (late August through November): Fall is a transitional period, in that boreal caribou begin to move around over a wider and more diverse habitat area during the rutting and post rutting period. This is the time of year when boreal caribou are often seen along or crossing water bodies. Their primary habitat is 'open' country, and they still spend considerable time in muskeg areas that harbor ground lichens as well as sedge grasses. Winter (November through March): As winter progresses, boreal caribou tend to spend less time in open and muskeg areas and concentrate in larger groups on higher ground in thicker brush areas, where there is still access to open areas that harbor ground lichens. As the snow gets deeper and crusts (generally January through mid March), they remain more often in areas of dense pine or thickly wooded black spruce where snow is softer, where there is hanging lichen, and where there remains access to open, mixed vegetation for ground foraging. This particular mix of habitat, which supports larger groups in smaller habitat use areas, appears critical for over-wintering survival</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:7-8	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
		<p>Based on Dehcho First Nations knowledge, factors affecting calf survival include the following:</p> <ul style="list-style-type: none"> Minimizing disturbance to boreal caribou cows during the mid to late winter when energy conservation is important, and relocation is difficult due to snow conditions Protecting known and likely calving habitat and minimizing disturbances in wetland / marsh / and burn areas during late April through early June <p>Controlling known calf predator populations (wolves and bears)</p>	Dehcho First Nations	Dehcho First Nations, 2011:10	
<p><u>Existing Conditions</u> Although, for the most part, boreal caribou habitat in the Dehcho is relatively pristine, major habitat changes that have occurred in the Dehcho have been due to oil and gas development, introduction of bison, and forest fires.</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:10	
<p><u>Existing Conditions</u> Forest fires are known to damage boreal caribou habitat, particularly deep burning fires that destroy lichen cover. Once a fire has damaged a habitat area, boreal caribou generally do not go back into the area for foraging purposes, and it can take decades for the land to recover. However, there is evidence that boreal caribou may use burned areas as travel corridors and that some foraging on fresh growth does occur. Boreal caribou do not frequent burned areas in the mid to late winter, even as travel corridors.</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:10	
<p><u>Existing Conditions</u> In the Dehcho Region, a few boreal caribou habitat areas have been impacted by forest fire, but the habitat east of the Franklin Mountains in the Wrigley area have been relatively fire free and habitat remains in good shape.</p>	Wrigley and Franklin Mountains intersect the PDA	Dehcho First Nations request that particularly rich habitat areas, known to harbor quality lichen cover, need to be documented and listed under the GNWT's 'values at risk' protocol for fire protection decision-making purposes.	Dehcho First Nations	Dehcho First Nations, 2011:11	Dehcho Region includes Wrigley
<p><u>Existing Conditions</u> Participants in a 2014 Tuli'ta TK Study identified Dehdéleᑭ Tué (Sucker Lake/ Three Day Lake) as important wildlife habitat.</p>	A portion of Dehdéleᑭ Tué (Sucker Lake/ Three Day Lake) overlaps with the RSA. (~14 km from PDA)			Golder, 2015: 2-17	
<p><u>Existing Conditions</u> Dehcho First Nations are particularly concerned about the immediate and cumulative impacts of development in the region. Seismic lines, sensory disturbance from oil and gas exploration activities, oil and contaminant spills, and use of seismic wire all resulted in immediate impacts to boreal caribou. Animals were driven away from development activities and did not return to these areas for many years; some animals became entangled in seismic wire and died.</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:11	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<u>Potential Project Effects</u> Dehcho First Nations expressed concerns about animals becoming contaminated through exposure to oil and other contaminants left on or under the ground.					
<u>Potential Project Effects</u> Where development stopped and once many of the seismic lines grew back in, boreal caribou appear to have re-adapted to the landscape and the re-grown lines do not appear to be a deterrent to use. Some elders have commented that where intensive three-dimensional (3D) seismic has continued, boreal caribou have become more wary and do not linger as long in open areas as they did prior to these disturbances.			Dehcho First Nations	Dehcho First Nations, 2011:11	
<u>Existing Conditions</u> Wolf populations throughout the Dehcho region appear to be increasing, due in part to the fact that fewer of these animals are trapped or hunted today than in the past, for both cultural and socio-economic reasons. However, wolf pack sizes are considered to be normal for the area (generally 4-7 animals in a pack) and there is no evidence of increased killing of boreal caribou by wolves.	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:12	
<u>Potential Project Effects</u> Harvesters know that seismic and other lineal disturbances open corridors for wolves and can lead to an increase in predation of boreal caribou and other game animals and are concerned about this impact.			Dehcho First Nations	Dehcho First Nations, 2011:12	
<u>Existing Conditions</u> An increase in the bear population throughout the Dehcho region has been observed. Study participants reported that it was not uncommon to see a sow bear with three cubs, which would normally be considered quite unusual. It is known that bears will kill boreal caribou calves in the spring time. The increase in bears is largely due to the fact that the harvesting of bears for meat and fur has declined considerably, as harvesters are uncomfortable harvesting and eating bears that may have been foraging in dumps or other contaminated sites.	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:12	
<u>Existing Conditions</u> Cougars have been increasingly seen (directly or through tracks) throughout the Dehcho region over the past decade and are suspected of preying on boreal caribou, although there is no direct evidence to date of this occurring. This increase in cougars appears to be associated with a concurrent increase in whitetail deer (jumping deer) in the area and extensive oil and gas exploration activity occurring in northern Alberta and British Columbia (perhaps pushing cougars northward).	The PDA is located within the Dehcho Region. Wrigley is within the PDA		Dehcho First Nations	Dehcho First Nations, 2011:13	
<u>Existing Conditions</u> Increased predation of boreal caribou by wolves, bears, and cougars may be offset by the fact that other prey species are available. Moose populations remain high throughout the Dehcho region, there has been a large increase in bison populations in the Fort Providence and Nahanni Butte areas, whitetail deer populations appear to be gradually increasing and, in the past few years, signs of elk have appeared in the Mackenzie Mountains west of Wrigley and around Trout Lake. Beaver populations have also been increasing due to less trapping activity, and it is known that wolves and bear prey on beaver.	The PDA is located within the Dehcho Region Fort Providence, Nahanni Butte, Mackenzie Mountains, and Trout Lake are outside the RSA. (Mackenzie Mountains: ~1 km from PDA. Nahanni Butte: ~233 km from PDA. Trout Lake: ~296 km from PDA. Fort Providence: ~358 km from PDA.)	Ongoing monitoring of predator and prey species needs to be carried out, with a focus on boreal caribou predation rates. Measures to increase harvesting to more historical and traditional levels also need to be considered.	Dehcho First Nations	Dehcho First Nations, 2011:13	
<u>Existing Conditions</u> Overall, boreal caribou in the Dehcho region appear to be in good health. There are no reported incidents of unusual internal parasites or evidence of disease and animals are generally fat when harvested in the fall and winter. The only two health issues that harvesters express concern about are the handling and collaring of boreal caribou for research purposes and the appearance of two apparently stressed and unusually thin animals in the Trout Lake area	The PDA is located within the Dehcho Region Trout Lake is outside the RSA (~296 km from PDA)		Dehcho First Nations	Dehcho First Nations, 2011:13	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Potential Project Effects</u> Harvesters have seen collared animals with open sores on their necks and at least one collared animal appears to have died either through starvation or disease because its remains were not scavenged. Elders are increasingly uncomfortable about the need to chase, net, and handle animals for collaring; about the weight and size of the collars around the animals' necks; and about the impact of begin disrespectful to the animals on the long-term sustainability of the population.</p>		Collaring remains a controversial issue. In spite of concerns by elders, most communities agreed to collaring in order to get baseline data for management purposes. Now that adequate data has been gathered and given ongoing concerns about the negative impacts of collaring, the general consensus is that collaring should not continue. There are two main concerns: 1) that netting, handling, and collaring of animals causes physical injury and weakening of collared animals, and 2) that netting, handling, and collaring of animals is culturally inappropriate and disrespectful. Other means of carrying out research, using less intrusive methods, need to be developed.	Dehcho First Nations	Dehcho First Nations, 2011:13-14	
<p><u>Existing Conditions</u> Boreal caribou are particularly sensitive to sensory disturbance and have been affected by sensory disturbance from oil and gas exploration in the past (and currently in the Cameron Hills). The potential impact of pending and future development remains a major concern.</p>	Cameron Hills is outside the RSA (~466 km from PDA)		Dehcho First Nations	Dehcho First Nations, 2011:14	
<p><u>Potential Project Effects</u> Harvesters note that boreal caribou are sensitive to other localized disturbances, including increased use of skidoos, increased use of motorized boats, heavy truck traffic, and low flying aircraft.</p>		Finding means to reduce sensory disturbances would therefore benefit boreal caribou populations, especially reducing sensory disturbances at critical periods, such as during calving and over-wintering periods, needs to be a priority	Dehcho First Nations	Dehcho First Nations, 2011:14	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Potential Project Effects</u> Over-harvesting is of moderate concern at this time, with most concerns being expressed about the following areas: to the southwest of Buffalo Lake, to the west of the community of Hay River, along the river systems around Fort Providence, and around the Fish Lake and Willowlake River areas near Wrigley. Over-harvesting by Dehcho harvesters is not the issue, because traditional harvesting has clearly declined over the past few decades for a number of reasons but there has been a slow increase in non-Dehcho and non-Dene hunters coming into a few reasonably accessible habitat areas in the Dehcho during the fall and winter months.</p>	<p>Wrigley intersects the PDA Fish Lake, Buffalo Lake, Hay River, and Fort Providence are outside the RSA (Fish Lake: ~25 km from PDA. Fort Providence: ~358 km from PDA. Hay River: ~484 km from PDA. Buffalo Lake: ~523 km from PDA) Willowlake River is a tributary to Mackenzie south of Wrigley and outside the RSA (~53 km from PDA)</p>	<p>It is not known how many animals non-Indigenous hunters are taking so this situation needs to be more closely monitored</p>	<p>Dehcho First Nations</p>	<p>Dehcho First Nations, 2011:14</p>	
<p><u>Potential Project Effects</u> Even though there are a number of all season and winter roads crisscrossing the Dehcho region, and a reasonable number of boreal caribou sightings along these roads, there are no known incidences of boreal caribou being struck by vehicles. Sensory disturbance from large trucks, particularly on winter roads, is more of a concern</p>	<p>The PDA is located within the Dehcho Region</p>		<p>Dehcho First Nations</p>	<p>Dehcho First Nations, 2011:15</p>	
<p><u>Existing Conditions</u> The Dehcho region is clearly getting warmer and wetter overall, with more rainfall in August and September and even into October. This change is creating more incidences of ice crusting along the ground which may make it more difficult for boreal caribou to forage for ground lichens. Sudden thaws and melting during winter months also create crusts on the snow that make it difficult for boreal caribou to move around and escape predators. In some instances, frost heaves that harbor lichens are diminishing or melting entirely which reduces availability of this particularly rich habitat site. Wetter summers and falls are resulting in higher water levels on smaller rivers and streams, increasing boat access (particularly jet boat access) into boreal caribou habitat areas previously difficult to access at these times of year.</p>	<p>The PDA is located within the Dehcho Region</p>	<p>Climate change does not yet appear to be affecting ground or hanging lichens, although some monitoring of future changes to lichen due to climate change should be undertaken.</p>	<p>Dehcho First Nations</p>	<p>Dehcho First Nations, 2011:15</p>	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
		Dehcho First Nations provided community-based recommendations to be considered by Canadian Wildlife Service in its development of a National Caribou Recovery Strategy and Action Plan, including: <ul style="list-style-type: none"> • Finalize and approve the Dehcho Land Use Plan and formally establish the Dehcho Resource Management Authority to implement the land use plan and other wildlife and resource management activities as they relate to boreal caribou. • Finalize the establishment of current Candidate Protected Areas in the Dehcho, with full surface and sub-surface protection from industrial development, in order to preserve large undisturbed boreal caribou habitat areas. • Restrict and monitor industrial development generally during critical boreal caribou calving and over-wintering periods • Halt new boreal caribou collaring research and work with harvesters to develop alternative research and population monitoring methods, including greater use of community-based monitoring, aerial surveys, and less intrusive technical monitoring devices Restrict further expansion of imported bison populations into boreal caribou habitat areas by opening these areas to bison harvesting	Dehcho First Nations	Dehcho First Nations, 2011:15-16	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
		<ul style="list-style-type: none"> Carry out more detailed analyses of critical habitat characteristics, with a particular focus on calving and over-wintering habitat as well as lichen availability, quality, density, and vulnerability (from development, airborne pollution, and climate change) Verify special habitat sites / areas – such as wallows/licks, rich lichen areas, old growth forest areas, calving areas, etc. – and locate these sites / areas on GNWT ‘values at risk’ maps to guide forest fire management decisions Restrict non-Dene hunting for boreal caribou during the overwintering period and in locations where overhunting appears to be impacting populations (i.e., shorten current season, review hunting zones, and protect mature bulls) Identify and implement measures to encourage increased traditional harvesting of wolf and bear in order to limit population growth, while monitoring predator populations. <p>Ensure that Dehcho harvesters respect critical habitat periods and voluntarily maintain current harvesting levels rather than expanding or increasing harvest levels.</p>			
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that lynx is found in the Blackwater River system southeast from the lake and on the shores of Fish Lake.</p>	<p>Blackwater River southeast of Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Wildlife and Wildlife Habitat (cont'd)					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that marten is found in the Blackwater system southeast of the lake and on the shores of Fish Lake.</p>	<p>Blackwater River southeast of Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that mink is found in the Blackwater system southeast of the lake and on the shores of Fish Lake.</p>	<p>Blackwater River southeast of Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that beaver is found in the Blackwater River system southeast from the lake, the chains of small lakes east of Blackwater Lake, the shores of Fish Lake, the shores of Spuice/Tseepantee Lake.</p>	<p>Blackwater River southeast of Blackwater Lake and Fish Lake and Spuice/Tseepantee Lake are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA. Tseepantee Lake: ~94 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Moose are found throughout the Pehdzeh Ki Ndeh in every season. They occur in notably higher densities in the lower lying parts of the Franklin Mountains – in the spruce forests, bogs, ponds and streams. Southeast of Blackwater Lake is considered key moose habitat. Moose are habitually seen on the shores of the larger lakes and along the river valleys in the area.</p>	<p>The PDA is within Pehdzeh Ki Ndeh Franklin Mountains is within the PDA Blackwater Lake is outside the RSA (~45 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Wildlife and Wildlife Habitat (cont'd)					
<p><u>Existing Conditions</u> Moose in the Pehdzeh Ki Ndeh share calving grounds with boreal woodland caribou on the north and south shores of Blackwater Lake and the shores of Fish Lake.</p>	<p>Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater Lake: ~45 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 22</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that moose thrive on post burn vegetative communities and there are two significant burn areas from within the last 10 years. One is located in the south-east portion of the Pehdzeh Ki Ndeh and the other lies along the southwest shore of Blackwater Lake</p>	<p>Blackwater Lake is located outside the RSA (Blackwater Lake: ~45 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 22</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report reported that within the Dehcho region, local knowledge and sporadic surveys have indicated that moose populations in the area are either decreasing or considered to be stable.</p>	<p>The PDA is located within the Pehdzeh Ki Ndeh area The PDA is within the Dehcho Region</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 22</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley. Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.</p>
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report has stated that Boreal woodland caribou are year-round inhabitants of Pehdzeh Ki Ndeh. In the east central part of the area, there is a plateau that reportedly acts as a wintering ground for caribou.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 23</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> Woodland caribou use the shores of Blackwater Lake and Fish Lake as calving grounds. The McConnell Range along the western border of the Pehdze Ki Ndeh is a summering area and the higher areas are suspected to act as calving areas. Their preferred habitat is old growth (over 100 years old) coniferous forests that tend to foster extensive lichen growth on trees and the forest floor. In winter, they prefer upland areas with less snow and in the summer, they favour forest edges, marshes and meadows where their diet consists of old new plants and grasses. Burns in the area within the past fifteen years around the Blackwater Lake area have cleared this type of habitat.</p>	<p>Blackwater Lake and Fish Lake are outside of RSA (Fish Lake: ~25 km from PDA. Blackwater Lake: ~45 km from PDA) McConnell Range is inside the RSA, located east (~10 km) of the existing winter road between Wrigley and Tulita.</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 23	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report indicated that woodland caribou in the Dehcho are believed to be declining due to changing habitat conditions and increasing moose numbers, which may attract predators such as wolves and black bears.</p>	<p>The PDA is located within the Dehcho Region The PDA is located within the Pehdzeh Ki Ndeh area</p>		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 23	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley. Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report reports that the boreal ecotype of woodland caribou numbers approximately 5,200 in the NT according to the NWT government, which lists their population as “sensitive”. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC¹) has recognised them as “threatened”. Prime factors adding to the boreal caribou’s population status uncertainty are habitat loss, diseases and human activities – especially those that develop linear corridors, as in oil and gas developments.</p>	<p>The PDA is located within the Pehdzeh Ki Ndeh area</p>		Pehdzeh Ki DehchoFirst Nations	IMG-Golder, 2006: 23	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

¹ Reference to COSEWIC status is as appeared in the original source. Currently, Barren-ground caribou are designated as threatened by COSEWIC but are not currently listed under Schedule 1 of the federal *Species at Risk Act*. Boreal caribou are designated as threatened by the COSEWIC and under Schedule 1 of the federal *Species at Risk Act*. For further information regarding the COSEWIC status of caribou, see Technical Data Report—Caribou and Moose.

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh lies within the established lynx range. The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report indicated lynx habitat throughout the Blackwater River system and along the shores of Fish Lake. Lynx and many other furbearers' populations fluctuate with cycling prey numbers which include small mammals and hares.</p>	The Blackwater River southeast of Blackwater Lake, and Fish Lake are outside the RSA (>30 km from PDA)		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 23	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that marten is found in the Blackwater system southeast of the lake and on the shores of Fish Lake. The Horn Plateau to the south of the Pedzeh Ki Ndeh is considered prime marten habitat, whose population may act as a source for surrounding areas. Marten populations are likely stable and are considered "secure" in the NT.</p>	The Blackwater River southeast of Blackwater Lake, Fish Lake and the Horn Plateau are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA. Horn Plateau: ~177 km from PDA)		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 24	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report states that mink is found through the Blackwater River system and along the shores of Fish Lake. Mink populations are believed to be stable and are ranked as secure in the NT.</p>	The Blackwater River intersects the PDA Fish Lake is outside the RSA (~25 km from PDA)		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 25	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Beaver is found through the Blackwater River system and along the shores of Fish Lake and along the shores of Tseepantee Lake.</p>	The Blackwater River intersects the PDA Fish Lake and Tseepantee Lake are outside the RSA (Fish Lake: ~25 km from PDA. Tseepantee Lake: ~94 km from PDA)		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 25	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Red fox, fisher, wolverine, otter and muskrat are all also found in the Pehdzeh Ki Ndeh and sometimes trapped.</p>	The PDA is within the Pehdzeh Ki Ndeh		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 25	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Nneh area of Interest Report has stated a 2002 report found that the highest concentration of moose are on the shores of the Blackwater Lake, on Tonnaneenlee Lake, the shores of Fish Lake and northwest of Fish Lake. The highest concentrations of caribou are reported as being on the shores of Blackwater Lake and east of Blackwater Lake in the winter. The old army road traverses the Blackwater River system where moose and caribou are known to occur and calve.</p>	<p>Blackwater Lake Tonnaneenlee Lake and Fish Lake are outside the RSA (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA. Tonnaneenlee Lake: ~50 km from PDA)</p>		<p>Pehdzeh Ki Dehcho First Nations</p>	<p>IMG-Golder, 2006: 27</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Moose habitat is located directly on the west side of the proposed Great Bear River Bridge.</p>	<p>The Great Bear River flows into the Mackenzie River and is located within the PDA</p>		<p>Sahtu</p>	<p>EBA, 2006:6</p>	
<p><u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 calving areas for moose are located on the islands in the Mackenzie River to the SW and SE of Tulita.</p>	<p>Portions of the Mackenzie River are located within the LSA</p>		<p>Sahtu</p>	<p>EBA, 2006: Fig1</p>	
<p><u>Potential Effects</u> The proposed Highway construction period is scheduled to occur primarily in winter, with some grading, compacting, surfacing, selective culvert installation and adjustment activities taking place in spring or summer. As such, the construction activities should have little to no effect on traditional harvesting activities that occur during spring, summer and fall. However, Highway construction may affect the local distribution of some wildlife during the winter months. Wildlife may avoid areas under construction due to human activity and vehicle movement.</p>	<p>PDA</p>		<p>Sahtu</p>	<p>5658 NWT Ltd. and GNWT, 2011:12-12</p>	
<p><u>Potential Effects</u> The presence of the Highway is expected to provide easier access to harvesting areas, heritage value areas, and traditional trails located near the alignment. This may be considered either a positive or a negative effect, depending on the extent of the impact from increased access. The Highway will allow local residents and visitors to access the harvesting areas or heritage value areas year-round. Increased harvesting may be an indirect effect of the Highway.</p>	<p>PDA</p>		<p>Sahtu</p>	<p>5658 NWT Ltd. and GNWT, 2011:12-12</p>	
<p><u>Existing Conditions</u> The Sahtu consider boreal woodland caribou to be very important. The families in the communities use the hides for clothing and the meat is used as a food source.</p>			<p>Sahtu</p>	<p>McDonald, 2010:2</p>	
<p><u>Existing Conditions</u> The harvest of Boreal woodland caribou took place in the Stewart Lake area southward towards the mouth of the Keele and Redstone Rivers. This practice no longer occurs.</p>	<p>The Redstone River and Keele River are located within the RSA (Redstone River: ~2 km from PDA. Keele River: ~3 km from PDA) Stewart Lake is outside the RSA (~24 km from PDA)</p>		<p>Sahtu</p>	<p>McDonald, 2010:2</p>	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> Boreal woodland caribou can be found in two general areas on each side of the Mackenzie River. The east side of the river includes areas around Kelly Lake, Lennie Lake and Oscar Lake. Boreal woodland caribou are also found on the west side of the Mackenzie River between Stewart Lake, Tate Lake and Rusty Lake to the south along the Keele River. Participants identified two other lakes by name (Clarke Lake and Fish Lake). However, their locations were not provided so they cannot be included with the others. Both, elders and active hunters stated that these groups tend to stay away from cut lines and roads.</p>	<p>Kelly Lake, Lennie Lake, Oscar Lake, Stewart Lake, Tate Lake and Rusty Lake are outside the RSA (Tate Lake: ~23 km from PDA, Stewart Lake: ~24 km from PDA, Kelly Lake: ~24 km from PDA, Lennie Lake: ~42 km from PDA, Rusty Lake: ~33 km from PDA)</p>		Sahtu	McDonald, 2010:2	
<p><u>Existing Conditions</u> According to the participants, the primary food consumed by boreal woodland caribou includes willow tips, grasses, white lichen, and spruce tree moss. Salt licks are also actively sought out by the caribou.</p>			Sahtu	McDonald, 2010:4	
<p><u>Existing Conditions</u> The Sahtu boreal woodland caribou groups do not migrate very far during any time of the year. Primary habitat has remained fairly stable in recent years due to the low incidence of disturbance by fire and the populations have remained fairly stable.</p>			Sahtu	McDonald, 2010:4	
<p><u>Existing Conditions</u> Small populations of boreal woodland caribou can be observed within the Tulita area during the summer months. These are located in open meadows on high ground, where they forage for mosses. They are also found near rivers and lakes during times of high insect infestation.</p>	The PDA intersects Tulita		Sahtu	McDonald, 2010:4	
<p><u>Existing Conditions</u> Elders reported that there is a resident boreal woodland caribou group of 10-15 animals in the Kelly Lake area that are present throughout the year. They are seen near rivers in the spring when they seek out salt licks. During winter, they travel wherever there is adequate cover provided by forest growth and hard ground. During the fall time, they go to the high ground and come together for the annual rut, but not in large numbers.</p>	Kelly Lake is outside the RSA (~24 km from PDA)		Sahtu	McDonald, 2010:4	
<p><u>Existing Conditions</u> The consensus of the people interviewed is that there are more caribou within the region now. All interviewees reported seeing more signs of groups of caribou. This is attributed to a decrease in industrial activities throughout their habitat in recent years as caribou tend to avoid developed areas including roads and seismic lines. Lots of tracks are evident throughout the year and caribou are only hunted when opportunistically encountered by hunters.</p>			Sahtu	McDonald, 2010:5	
<p><u>Potential Effects</u> Noise is given as a major factor that impacts boreal woodland caribou. These disturbances include drilling, seismic cut-line activities, slashing, and machines including helicopters and All-terrain vehicles that conduct work during the summer. Caribou prefer old growth areas and have a tendency to stay away from winter roads because of noise pollution. Weather also plays a significant role in the health and well-being of boreal woodland caribou. Increasing extremes in annual temperatures and flooding negatively impact herds.</p>			Sahtu	McDonald, 2010:5	
<p><u>Potential Effects</u> Industry and general development are major factors that affect caribou. Noise pollution produced by these activities precludes animals from taking advantage of resources in these areas.</p>			Sahtu	McDonald, 2010:5	

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Wildlife and Wildlife Habitat (cont'd)					
<p><u>Existing Conditions</u> People from all SSA communities have observed an increase in wolf populations in recent years. This increase appears to be linked to a decrease in wolf trapping activities by SSA residents in recent years. Other observations include a general increase in the abundance of moose, muskox and beavers. The elders are adamant that there is a connection between the numbers of kinds of prey species and the availability of food resources. Muskoxen are a fairly new inhabitant in many parts of the SSA. An increase in the number of prey species like muskox and moose results in less caribou being taken by predators. This is definitely having an effect on the boreal woodland caribou populations. If there is a decrease in the number of prey species like muskox, then predators will hunt caribou.</p>			Sahtu	McDonald, 2010:5	
<p><u>Potential Effects</u> Noise and lights disturb caribou. Any development should not occur during the calving season or near caribou habitat.</p>			Sahtu	McDonald, 2010:5	
<p><u>Existing Conditions</u> Over harvesting is not a concern in the SSA as they are mostly opportunistically harvested.</p>			Sahtu	McDonald, 2010:6	
<p><u>Existing Conditions</u> Boreal woodland caribou are typically found in old growth forested areas and stay away from winter roads because of the noise pollution. Therefore, motor vehicle collisions with boreal woodland caribou do not occur in the SSA.</p>			Sahtu	McDonald, 2010:6	
<p><u>Potential Effects</u> Several general threats were identified. Both winter road and boat access to the SSA by nonresident hunters may impact populations. However, climate change, development, industry and predation were cited as the most significant impacts to boreal woodland caribou populations.</p>		Suggested mitigations include less development, encouraging trapping of predators, regulations, and avoidance.	Sahtu	McDonald, 2010:7	
<p><u>Existing Conditions</u> The MVH Extension Project is located within the habitat range of the Woodland Caribou Boreal Population. One suspected Woodland Caribou calving range is located in the terrain north and south of Ochre River, while summering areas are known to exist throughout the Mackenzie Valley, north of Wrigley up to the Sahtu territorial border.</p>	Ochre River is a tributary to the Mackenzie River and is within the PDA		Pehdzeh Ki First Nation/ Dehcho First Nations	Dessau, 2012: 76	
<p><u>Existing Conditions</u> The community of Wrigley indicates that ungulates regularly frequent areas north of Blackwater River near traditional hunting grounds</p>	The Blackwater River intersects the PDA		Pehdzeh Ki Dehcho First Nations	Dessau, 2012: 76	
<p><u>Existing Conditions</u> The MVH extension is located within a year-round moose range along the existing winter road between KM 708 and 709.</p>	The PDA intersects the moose range		Pehdzeh Ki Dehcho First Nations	Dessau, 2012: 77 and App. 1- Map (sheet 4-P)	
<p><u>Existing Conditions</u> Furbearer habitat is present throughout the area of the Mackenzie Valley, including along the MVH extension route.</p>	Within PDA		Pehdzeh Ki /Dehcho First Nations	Dessau, 2012: 77	
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh Conservation Zone is a part of the Dehcho Land Use Plan and is intended to protect the local PKFN's subsistence harvesting needs. The area provides habitat for moose, woodland and barren-ground caribou, black bears, wolves, migratory birds and fish, and represents an important cultural area for the community of Wrigley.</p>	The PDA intersects the Pehdzeh Ki Ndeh Conservation Zone		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 97	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN, a moose pasture area is located just east of the proposed highway around KM 749.</p>	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map sheet 12-P	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a moose pasture area is located just west of the existing winter road around KM 754.	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map sheet 12-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN ungulates have been observed to the east of the existing winter road around KM 776.	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map sheet 16-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN ungulates have been observed to the west of the existing winter road around KM 777 along the Mackenzie River.	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map sheet 17-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN ungulates have been observed about 1.5 km east of the proposed highway road around KM 781.	Within RSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map sheet 17-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN ungulates have been observed to the southwest of KM 790 (existing winter road).	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map sheet 19-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a moose pasture area is intersected by the existing winter road between KM 708 and 709.	PDA intersects moose pasture		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 2	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a moose pasture area is located just north along the existing winter road at KM 750.	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 6	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a moose pasture area is located along the shore of the Mackenzie River south of the existing winter road at KM 754	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 7	
<u>Existing Conditions</u> The area around Willow Lake (called Brackett Lake on the official maps) and wetlands nearby support large populations of animals. The oral tradition records many stories, which tell of the importance of this lake.	Willow Lake (Brackett Lake) is outside the RSA (~26 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:94	
<u>Existing Conditions</u> Four Mile Island was identified as a great place for hunting ducks as they migrated west each year.	Four Mile Island is an island located in the Mackenzie River SW of Tulita and it is within the RSA (~2 km from PDA)		Sahtu	EBA, 2006: 6, 7	

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<i>Wildlife and Wildlife Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> According to the TLU study conducted by the EBA in 2006 the 1995 fire cleared much of the land surrounding Tulita, allowing moose to freely move about. Calving areas for moose are located on both Islands across the Mackenzie (Windy Island and Four Mile Island). The willows for feeding are prominent in these two locations and therefore, no concern was expressed about the impact on moose habitat.</p>	<p>Four Mile Island and Windy Island are islands located in the Mackenzie River SW of Tulita and are within the RSA (Four Mile Island: ~2 km from PDA, Windy Island: ~4 km from PDA)</p>		Sahtu	EBA, 2006: 9	
<p>During the Wrigley Community Consultation (January 25-26th, 2012) the participants identified concerns around the environment regarding the construction of the MVH. One of the concerns was the impact of the project on wildlife.</p>			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 129	
<p><u>Existing Conditions</u> Porcupine quills have been used for hundreds of years by artists in the communities of the Dehcho region and the use of them precedes the use of beadwork as a form of artistic enhancement for clothing and other works of art. Artists in Wrigley today do not produce a large amount of quillworks and it is estimated that only between 2 and 3 porcupines per year are harvested in Pehdzeh Ki Ndeh for arts and crafts purposes.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh and the Dehcho area</p>		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 68	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Potential Project Effects</u> During consultations in 2004 and 2005, community members expressed concern that development may affect human health through water and air quality; and the health of the region's wildlife, fish and vegetation.</p>		<p>Improved and more frequent communication with communities regarding water quality and fish health were recommended.</p>	Elders and land users in the Sahtu region	Golder, 2015: 2-17	

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Birds and Bird Habitat					
<p><u>Existing Conditions</u></p> <p>The Sahtu Land Use Plans notes that species and habitat in the Petiniæah (Bear Rock) Conservation Zone include waterfowl and migratory bird habitat including nesting area for raptors, important breeding duck habitat, a CWS key migratory bird terrestrial habitat site.</p> <p>The Canadian Wildlife Service (CWS) has identified three Important Bird Areas (IBA) in the Sahtu Settlement Area. Two of the IBAs are located within Bear Rock area. These areas are considered key migratory bird terrestrial habitat sites in the NT. These IBAs represent important breeding habitat for globally and continentally significant concentrations of several species. The Lower Mackenzie River Islands IBA, a globally significant site, is a major stopover along the Western Central Flyway, hosting as many as 112,800 waterfowl and most of the Western Central Flyway population of Snow Geese (estimated to be half a million) in spring.”</p>	<p>There are two IBAs that intersect Bear Rock:</p> <ol style="list-style-type: none"> 1. The Lower Mackenzie River Islands IBA starts at Fort Good Hope and runs down the Mackenzie for 270 km to where the Tree River joins the Mackenzie. The IBA consist of a 5 km buffer on either side of the Mackenzie River. 2. The Middle Mackenzie River Islands IBA consists of a 250 km stretch (5 km buffer on either side) of the Mackenzie River between Redstone River and a spot 30 km north of Oscar Creek. Norman Wells and Fort Norman are located along that stretch. <p>The PDA intersects the IBAs.</p>		Sahtu	SLUPB, 2013:124 and 170	

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Birds and Bird Habitat (cont'd)					
<p><u>Existing Conditions</u> The Sahtu Land Use plan states that The Deh Cho is identified as a Special Management Zone to protect the water quality, riparian habitat, cultural/heritage sites, areas that are important for wildlife and wildlife harvesting. Special Management Zone (SMZ) designation will also allow for continued use of the river as an important regional and territorial transportation corridor (barge traffic, landing sites, winter road)."</p>	The PDA intersects the Deh Cho Special Management Zone		Sahtu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer that is applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUPB.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Nheh area of Interest Report states that goose is found in the Blackwater River system southeast from the lake</p>	The Blackwater River southeast of Blackwater Lake is outside the RSA. (~47 km from PDA)		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 20	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Nheh area of Interest Report states that tundra swan and trumpeter swan are found in the Blackwater River system southeast from Blackwater Lake,</p>	The Blackwater River southeast of Blackwater Lake, and Fish Lake is outside the RSA. (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA)		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 20	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Birds and Bird Habitat (cont'd)					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Nheh area of Interest Report states that duck is found in the Blackwater River system southeast from Blackwater Lake,</p>	<p>The Blackwater River southeast of Blackwater Lake, and Fish Lake is outside the RSA. (Fish Lake: ~25 km from PDA. Blackwater River: ~47 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 20</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Five wetlands in the Pehdzeh Ki Ndeh have been specifically identified as having importance to waterfowl. One wetland immediately north of Wrigley, one east of Wrigley at mile 442 on the Mackenzie Highway, one south of Smith Creek and two north of Blackwater River. The wetland east of Wrigley is home to many aquatic plants and so is an important food resource for waterfowl. A spring survey in 1973, counted just under 3,000 birds with more than 20 species including surf scoter, lesser scaup, mallards, green winged teal, and pintails.</p>	<p>The Blackwater River intersects the PDA Wrigley is in the LSA Smith Creek is a tributary to the Mackenzie south of Wrigley and outside the RSA (~9 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 26</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> All of the drainage areas along the MVH extension route are considered potential waterfowl habitat (EBA Engineering, 2003). This includes the Mackenzie, Blackwater and Ochre Rivers, as well as major creeks and other smaller watercourses. Waterfowl such as duck and geese species are traditionally harvested by Dehcho First Nations, including PKFN, and traditional hunting grounds located near Blackwater River and Vermillion Creek South may be utilized for harvesting this resource.</p>	<p>Portions of the Mackenzie River are within the LSA Blackwater River, Ochre River and Vermillion Creek South are within the PDA</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>Dessau, 2012: 78</p>	
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh Conservation Zone is a part of the Dehcho Land Use Plan and is intended to protect the local PKFN's subsistence harvesting needs. The area provides habitat for migratory birds and represents an important cultural area for the community of Wrigley.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh Conservation Zone</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>Dessau, 2012: 97</p>	

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Birds and Bird Habitat (cont'd)					
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters the following wildlife can be found in the area around the proposed Great Bear River Bridge: Moose, Caribou, Bears, Marten, Beavers, Muskrats, Otters, Foxes, Rabbits, Chicken, Ptarmigan, Wolves, Wolverines, Squirrels, Weasels, Minks, Lynx's and other animals.</p>	<p>The Great Bear River is a tributary to the Mackenzie River and intersects the PDA</p>			<p>Tulita Renewable Resource Council, 2019: 3; 6; 11; 14; 17; 20; 23;26</p>	
<p><u>Potential Effects:</u> They are concerned the proposed Great bear Bear River project will impact the wildlife in the area.</p>					
<p><u>Existing Conditions</u> One Wrigley trapper who harvests from the Pehdzeh Ki Ndeh reported harvesting approximately 1 swan, 15-20 ptarmigan, 50 geese and 100 ducks in the previous year. It can be assumed that waterfowl and ptarmigan are harvested by other residents as well.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area Wrigley intersects the PDA</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 27</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
Fish and Fish Habitat					
<p><u>Existing Conditions</u> Fish are acknowledged as being an important renewable resource in the Pehdzeh Ki Ndeh. Subsistence fishing is a commonly practiced activity, with the Mackenzie River, Wrigley River, Willowlake River, the River Between Two Mountains, Blackwater Lake, Greasy Lake and Highland Lake being important waterbodies for subsistence harvesting. The primary species caught are lake whitefish, lake trout, inconnu and northern pike.</p>	<p>Portions of the Mackenzie River are within the LSA Wrigley River is within the RSA (~4 km from PDA) Willow Lake River is a tributary to Mackenzie south of Wrigley and outside the RSA (~53 km from PDA) Blackwater Lake is outside the RSA (~45 km from PDA) Greasy Lake and Highland Lake, located SE of Wrigley, are outside the RSA (Greasy Lake: ~61 km from PDA, Highland Lake: ~70 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006:3</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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<i>Fish and Fish Habitat (cont'd)</i>					
<p><u>Existing Conditions</u> Pehdzeh Ki Ndeh has five larger fish bearing lakes: Keller Lake, Blackwater Lake, Fish Lake, Greasy Lake and Highland Lake.</p>	<p>Keller Lake, Blackwater Lake, Fish Lake, Greasy Lake and Highland Lake are all outside the RSA (Fish Lake: ~25 km from PDA, Blackwater Lake: ~45 km from PDA, Greasy Lake: ~61 km from PDA, Highland Lake: ~70 km from PDA, Keller Lake: ~99 km from PDA)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:37	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley. The PDA intersects the Pehdzeh Ki Ndeh on the western boundary. Most of the land is located east of the PDA though.
<p><u>Existing Conditions</u> Grayling is commonly present in the Great Bear River.</p>	<p>The Great Bear River is a tributary to the Mackenzie at Tulita and is within the PDA</p>		Sahtu	5658 NWT Ltd. and GNWT, 2011:8:35	
<p><u>Existing Conditions</u> As reported in the Dehcho Land Use Plan, as of 2003, nine known fish spawning sites are located near the MVH extension route. Spawning sites are located near the mouths of the Ochre and Blackwater Rivers, as well as in other tributaries along the route. The procurement of fish resources, particularly Whitefish, is an important subsistence harvesting activity that may be tied to traditional use, and non-traditional land use (for both subsistence and commercial uses) throughout the Mackenzie Valley.</p>	<p>Ochre River and the Blackwater River intersect the PDA</p>		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012:78	
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh Conservation Zone is a part of the Dehcho Land Use Plan and is intended to protect the local PKFN's subsistence harvesting needs. The area provides habitat for fish and represents an important cultural area for the community of Wrigley.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh Conservation Zone</p>		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012:97	
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters, a small amount of small-sized bull trout are in Great Bear River and Mackenzie River</p>	<p>Portions of the Mackenzie River intersect the LSA Great Bear River is a tributary to the Mackenzie River and intersects the PDA</p>		Sahtu	Tulita Renewable Resource Council, 2019:3	
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters there is Bull Trout in Great Bear Lake</p>	<p>Great Bear Lake is outside of RSA (~81 km from PDA)</p>		Sahtu	Tulita Renewable Resource Council, 2019:21	
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters fish species in Great Bear River includes blue fish, coney, trout, suckers, small white fish, thlo cha (bull trout), jack fish, salmon, grayling</p>	<p>Great Bear River is a tributary to the Mackenzie River and intersects the PDA</p>		Sahtu	Tulita Renewable Resource Council, 2019:3,6,9,12,15,18,21,24	

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<i>Fish and Fish Habitat (cont'd)</i>					
<u>Existing Conditions</u> Lakes and waterways in the Sahtu Settlement Area are reported to be abundant in fish; common species include trout, loche, whitefish, norther pike, and inconnu.	Portions of the PDA are within the Sahtu Settlement Area		Sahtu	Golder, 2015: 2-1	
<u>Existing Conditions</u> Participants in a 2014 Tullit'a TK Study identified Dehdéle]q Tué (Sucker Lake/ Three Day Lake) as important fish habitat.	A portion of Dehdéle]q Tué (Sucker Lake/ Three Day Lake) falls within the RSA. (~18 km from PDA)			Golder, 2015: 2-17	
<u>Existing Conditions</u> The streams in the Sahtu area are all fish bearing, though fish may only be found at certain times of year.	Portions of the PDA intersect Sahtu Region			Golder, 2015: 2-16	
	Great Bear River is a tributary to the Mackenzie and intersects the PDA	According to interviews with Sahtu harvesters GNWT-INF should focus efforts to improve, create or restore fish habitat at the mouth of Great Bear River	Sahtu	Tulita Renewable Resource Council, 2019: 16	
<u>Potential Effects</u> According to interviews with Sahtu harvesters the bridge footings will damage the rocks and sand, therefore it will impact the fish	Great Bear River is a tributary to the Mackenzie and intersects the PDA		Sahtu	Tulita Renewable Resource Council, 2019: 19	
<u>Potential Project Effects</u> During consultations in 2004 and 2005, community members expressed concern that development may affect human health through water and air quality; and the health of the region's wildlife, fish and vegetation.		Improved and more frequent communication with communities regarding water quality and fish health were recommended.	Elders and land users in the Sahtu region	Golder, 2015: 2-17	
<u>Existing Conditions</u> Land clearing for seismic operations is associated with fast-melting permafrost, leading to problems with vegetation re-establishment and erosion and slumping on the banks of the Sahtu waterbodies. Islands in K'áalq Túé (Willow Lake/ Brackett Lake) have experienced slumping, cabins in K'áalq Túé (Willow Lake/ Brackett Lake) have had to relocate due to eroding banks, and erosion is suspected to be affecting fish passage between K'áalq Túé (Willow Lake/ Brackett Lake) and Kelly Lake. Permafrost melt from development has also been linked to erosion in Sahtu Deh (Great Bear River) and other waterbodies in the area.	Sahtu Deh (Great Bear River) is a tributary to the Mackenzie River and intersects the PDA K'áalq Túé (Willow Lake/ Brackett Lake) is outside the RSA (~26 km from the PDA)	Limit project footprints and avoid uncommon landforms and steep slopes to the extent practical. Include adequate protection of permafrost under disturbed areas in closure and reclamation plans. Engage local landowners in permafrost monitoring to best assess the effects.	Elders in the K'ásho Got']ne and Tullit'a regions	Golder, 2015: 2-15	

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Non-traditional Land and Resource Use					
<p><u>Existing Conditions</u> Dehcho First Nations report that non-Dene harvesting of boreal caribou appears to be steady or rising slightly.</p>			Dehcho First Nations	Dehcho First Nations, 2011:8	
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> • Increase in resource development in the area • Industry will have easier access 			Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 130	
<p><u>Potential Project Effects</u> Over-harvesting is of moderate concern at this time, with most concerns being expressed about the following areas: to the southwest of Buffalo Lake, to the west of the community of Hay River, along the river systems around Fort Providence, and around the Fish Lake and Willowlake River areas near Wrigley. Over-harvesting by Dehcho harvesters is not the issue, because traditional harvesting has clearly declined over the past few decades for a number of reasons but there has been a slow increase in non-Dehcho and non-Dene hunters coming into a few reasonably accessible habitat areas in the Dehcho during the fall and winter months.</p>	<p>Wrigley intersects the PDA Fish Lake, Buffalo Lake Hay River, and Fort Providence are outside the RSA (Fish Lake: ~25 km from PDA. Fort Providence: ~358 km from PDA. Hay River: ~484 km from PDA. Buffalo Lake: ~523 km from PDA) Willow Lake River is a tributary to Mackenzie south of Wrigley and outside the RSA (~53 km from PDA)</p>	<p>It is not known how many animals non-Indigenous hunters are taking so this situation needs to be more closely monitored</p>	Dehcho First Nations	Dehcho First Nations, 2011:14	
<p><u>Existing Conditions</u> Closure / limiting of the barren-ground caribou harvest north of Yellowknife and increased access to river systems in the fall using jet boats has added to overharvesting concerns. Also, as favored boreal caribou habitat becomes more widely known over time, particularly winter habitat, these areas become more heavily targeted.</p>	<p>Yellowknife is outside the RSA (~468 km from PDA)</p>		Dehcho First Nations	Dehcho First Nations, 2011:14	
<p><u>Potential Project Effects</u> Harvesters are concerned about harvesting larger boreal caribou bulls, because these are considered the best breeders and they would like to see both voluntary and imposed restriction on the harvesting of large bulls. A number of communities raised concerns about the harvesting of mature mountain caribou bulls as well, particularly by outfitters, and feel that this practice weakens population health.</p>		<p>Harvesters support monitoring and, perhaps, changes to the non-Dene boreal caribou harvesting season to better protect over-wintering boreal caribou populations</p>	Dehcho First Nations	Dehcho First Nations, 2011:14	

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<i>Non-traditional Land and Resource Use (cont'd)</i>					
		<p>Dehcho First Nations provided community-based recommendations to be considered by Canadian Wildlife Service in its development of a National Caribou Recovery Strategy and Action Plan, including:</p> <ul style="list-style-type: none"> Finalize and approve the Dehcho Land Use Plan and formally establish the Dehcho Resource Management Authority to implement the land use plan and other wildlife and resource management activities as they relate to boreal caribou. Finalize the establishment of current Candidate Protected Areas in the Dehcho, with full surface and sub-surface protection from industrial development, in order to preserve large undisturbed boreal caribou habitat areas. Restrict and monitor industrial development generally during critical boreal caribou calving and over-wintering periods Halt new boreal caribou collaring research and work with harvesters to develop alternative research and population monitoring methods, including greater use of community-based monitoring, aerial surveys, and less intrusive technical monitoring devices <p>Restrict further expansion of imported bison populations into boreal caribou habitat areas by opening these areas to bison harvesting</p>	Dehcho First Nations	Dehcho First Nations, 2011:15-16	

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<i>Non-traditional Land and Resource Use (cont'd)</i>					
		<ul style="list-style-type: none"> • Carry out more detailed analyses of critical habitat characteristics, with a particular focus on calving and over-wintering habitat as well as lichen availability, quality, density, and vulnerability (from development, airborne pollution, and climate change). • Verify special habitat sites / areas – such as wallows/licks, rich lichen areas, old growth forest areas, calving areas, etc. – and locate these sites / areas on GNWT ‘values at risk’ maps to guide forest fire management decisions • Restrict non-Dene hunting for boreal caribou during the overwintering period and in locations where overhunting appears to be impacting populations (i.e., shorten current season, review hunting zones, and protect mature bulls). • Identify and implement measures to encourage increased traditional harvesting of wolf and bear in order to limit population growth, while monitoring predator populations. <p>Ensure that Dehcho harvesters respect critical habitat periods and voluntarily maintain current harvesting levels rather than expanding or increasing harvest levels.</p>			

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Heritage Resources					
<p><u>Existing Conditions</u> “Petiniæah commonly known as Bear Rock, is a large karst formation across from the community of Tulita. The mountain is one of the most sacred sites for the Dene living in and outside of the Sahtu. Archaeological sites are known to exist.”</p>	The PDA intersects Petiniæah (Bear Rock) Conservation Zone		Sahtu	SLUPB, 2013:124	
<p><u>Existing Conditions</u> The Deh Cho is identified as a Special Management Zone includes archaeological and burial sites.</p>	The PDA intersects the Deh Cho Special Management Zone		Sahtu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the Sahtu Land Use Plan (SLUP).
<p><u>Existing Conditions</u> Archaeology sites are clustered at the north and west ends of Blackwater Lake, the mouth of the Blackwater River, the shores of Fish Lake and at the mouths of different creeks and rivers along the Mackenzie River, including the Ochre River and the River Between Two Mountains</p>	<p>The mouths of the Blackwater and Ochre River are within the LSA The mouth of the River Between Two Mountains is south of Wrigley and outside of RSA (~35 km from PDA) Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~32 km from PDA. Blackwater Lake: ~45 km from PDA)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:81	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Heritage Resources (cont'd)					
<p><u>Existing Conditions</u> There are numerous locations within Pehdzeh Ki Ndeh that are valued as conservation sites. These include cabins, rare features, historic sites and archaeological sites. Over 15 such sites have been identified along the Mackenzie River within Pehdzeh Ki Ndeh, at least 8 along the River Between Two Mountains and the Fish Lake area, at least 2 around Tseepantee Lake, at least 1 at Keller Lake and at least 8 along the Blackwater River and Blackwater Lake area.</p>	<p>The Blackwater River intersects the PDA The River Between Two Mountains is south of Wrigley and outside of RSA (~35 km from PDA) Fish Lake, Tseepantee Lake, Keller Lake and Blackwater Lake are outside of the RSA (Fish Lake: ~32 km from PDA. Blackwater Lake: ~45 km from PDA. Tseepantee Lake: ~94 km from PDA. Keller Lake: ~99 km from PDA.)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:81	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Historical cabins are located along the Mackenzie River both north and south of Wrigley. These are accessible by land or water and are often used seasonally by local trappers. There are also cabin clusters on Fish Lake, Tah the tié Lake (at the headwater of the Blackwater River) and single cabins scattered elsewhere in Pehdzeh Ki Ndeh.</p>	<p>Portions of the Mackenzie River intersect the LSA Fish Lake is outside the RSA (~32 km from PDA) Tah the tié Lake is outside the RSA (~47 km from PDA) The PDA intersects the Pehdzeh Ki Ndeh</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:81	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> A historic camp is located at the lower terrace of Steep Creek within 30 m of the proposed highway (LbRn-1).</p>	Steep Creek is located within the LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<p><u>Existing Conditions</u> A cabin is located at the lower terrace of Steep Creek within 30 m of the proposed highway (LbRn-2).</p>	Steep Creek is within the LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<p><u>Existing Conditions</u> A grave is located at the upper terrace of the Saline River more than 500 m from the highway. (LbRn-4)</p>	Saline River is within the LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<p><u>Existing Conditions</u> A cabin is located at the lower terrace of Saline River 400 m from the proposed highway (LbRn-5)</p>	Saline River is within the LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<p><u>Existing Conditions</u> A cabin and grave are located on the upper terrace of Steep Creek 500 m from the proposed highway. (LbRn-8)</p>	Steep Creek is within the LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	

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Heritage Resources (cont'd)					
<u>Existing Conditions</u> A historic camp is located at the confluence of Steep Creek and the Mackenzie River over 30 m from highway. (LbRn-10)	The confluence of Steep Creek and the Mackenzie River is within the LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> Cabins are located at the confluence of Little Smith Creek and the Mackenzie River over 1 km from highway. (LcRo-3)	The confluence of Little Smith Creek and the Mackenzie River is within the RSA (~1 km from PDA)		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A cabin is located at the confluence of Little Smith Creek and the Mackenzie River over 1 km from the highway (LcRo-5)	The confluence of Little Smith Creek and the Mackenzie River is within the RSA (~1 km from PDA)		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A camp is located on the upper terrace of an unnamed creek 400 m from the proposed highway. (LdRo-15)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A camp and cabin (Rosie's cabin) are located at an unnamed lake 50-125 m from the proposed highway. (LeRo-4)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A camp and trail are located on the proposed highway. (LFRp-7)	Within PDA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A camp is located at an unnamed lake 125 m from the proposed highway. (LFRq-3)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A trail is located along Great Bear River starting 0-30 m from the proposed highway. (LFRq-10)	Within PDA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A camp and trail are located at Great Bear River 400 m off the proposed highway. (LFRq-11)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A historic camp is located at Great Bear River over 800 m from the proposed highway. (LFRq-12)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A camp is located on Great Bear River at Great Bear Rock. (LFRq-13)	The PDA intersects Bear Rock Conservation Zone.		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A historic camp is located at Great Bear River over 100 m off the proposed highway. (LFRq-15)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A cache cut stumps and a trail are located at Bear Rock Lake 40 m from the proposed highway. (LFRr-1)	Within PDA (?)		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A historic camp is located at Bear Rock Lake 300 m from the proposed highway. (LFRr-2)	Within LSA		Shtu	5658 NWT Ltd. and GNWT, 2011: 8-11	

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Heritage Resources (cont'd)					
<u>Existing Conditions</u> A historic camp is located at Bear Rock Lake 240 m from the proposed highway. (LfRr-5)	Within LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A historic camp is located at Jungle Ridge Creek 140 m from proposed highway. (LgRr-1)	Within LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A historic feature is located at Prohibition Creek over 150 m from proposed highway. (LgRs-2)	Within LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> Cabins are located at Canyon Creek over 1 km from proposed highway. (LhRt-1)	Within RSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A cabin is located at Canyon Creek over 1 km from the proposed highway and Great Bear River Bridge. (LhRt-2)	Within RSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A cabin is located at Bosworth Creek 800 m from the proposed highway and the Great Bear River Bridge. (LhRu-1)	Within LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A cabin is located at Oscar Creek 900 m from the proposed highway and Great Bear River Bridge. (LiRw-1)	Within LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> A trail is located at Oscar Creek 0-700 m from the proposed highway. (LiRw-4)	Within LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-11	
<u>Existing Conditions</u> Research of published Sahtu Dene traditional knowledge has indicated that Bear Rock is an important heritage resource. This large rock ridge west of the Great Bear River has significant cultural values for local Sahtu Dene. It is described as one of the most important sacred sites	The PDA intersects Bear Rock Conservation Zone		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-10	
<u>Existing Conditions</u> The entire length of the Great Bear River is also considered an important heritage resource to the Sahtu Dene who have many stories about it.	Great Bear River is a tributary to the Mackenzie River and intersects the PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-10	
<u>Potential Effects</u> The presence of the Highway is expected to provide easier access to harvesting areas, heritage value areas, and traditional trails located near the alignment. This may be considered either a positive or a negative effect, depending on the extent of the impact from increased access. The Highway will allow local residents and visitors to access the harvesting areas or heritage value areas year-round. Increased harvesting may be an indirect effect of the Highway.	PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 12-12	
<u>Existing Conditions</u> Traditional hunting grounds in the vicinity of Whitesand Creek may also be used in the harvesting of caribou and are located near concentrations of archaeological sites, which may indicate use of the area as far back as the prehistoric period.	Whitesand Creek is a tributary to the Mackenzie River and within the PDA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012: 76	
<u>Existing Conditions</u> A historic camp is located at the confluence of Hodgson Creek and Mackenzie River within 500 m of proposed project components. (KhRk-5)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	

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Heritage Resources (cont'd)					
<u>Existing Conditions</u> A historic camp is located on the lower terrace of Ochre River within 200 m of proposed project components. (KiRI-4)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic cabin is located on the upper terrace of the Ochre River within 600 m of proposed project components. (KiRI-8)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic trap is located at the Ochre River/Mackenzie confluence within 700 m of proposed project components. (KiRI-9)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A camp is located at the Whitesand Creek/Mackenzie confluence about 250 m from proposed project components. (KjRI-8)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A trail is located on upper terrace of the Whitesand Creek within 800 m of proposed project components. (KjRI-9)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic trap is located on the lower terrace of the Vermillion Creek South within 700 m of proposed project components. (KkRI-2)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic camp is located at the base of terrace of Vermillion Creek South within 1.4 km of proposed project components. (KkRI-3)	Within RSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic cabin is located on Blackwater River within 1.2 km from proposed project components. (KIRm-1)	Within RSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A cabin is located on the lower terrace of the Blackwater River within 500 m of proposed project components. (KIRm-2)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic camp is located on the lower terrace of Blackwater River within 100 m of proposed project components. (KIRm-4)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic shelter is located on Blackwater River within 200 m of proposed project components. (KIRm-7)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	

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Heritage Resources (cont'd)					
<u>Existing Conditions</u> A trading post is located on the lower terrace of the Blackwater River, possibly right on the winter road. (KIRm-9)	Within PDA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A historic camp is located on the lower terrace of the Blackwater River within 300 m of proposed project components. (KIRm-10)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> One or more graves are located east of the Mackenzie River, possibly right on the winter road. (KIRm-12)	Within PDA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Existing Conditions</u> A trading post is located on the shore of the Mackenzie River within 500 m of proposed project components. (KIRm-11)	Within LSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:95	
<u>Potential Effects</u> The areas north of Wrigley along the Mackenzie River and its tributaries are known to contain a number of protected archaeological and heritage sites. These sites are important aspects of PKFN cultural heritage in the region. Any impact to cultural heritage in the form of disturbance or removal of known, and undiscovered buried archaeological sites located along the route, will result in a reduced cultural, scientific and public value to the Mackenzie Valley area.	North of Wrigley along the Mackenzie River is within the RSA		Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:225	
<u>Potential Effects</u> Based on consultation with PKFN, and a review of available resources, including community mapping and a database of known heritage sites held by GNWT, 35 archaeological sites appear to be located within approximately 1.5 km of the current winter road alignment, and 21 sites are within 500 m of the alignment. The following locations along the proposed alignment (as currently planned to follow the winter road) may have conflicts with recorded archaeological sites: <ul style="list-style-type: none"> • Blackwater River • 2.2 km north of Blackwater River • Ochre River • Unnamed drainage 2 km north of Whitesand Creek There may be a grave or graves near the Blackwater River. These must be located to ensure that the road or any construction-related activities remain as far away as possible.	Ochre River intersects PDA Unnamed Creek 2 km north of Whitesand Creek intersects PDA The Blackwater River intersects PDA	In addition, 2.2 km north of Blackwater River there are recorded sites that must be considered in the analysis of options for the crossing of the Blackwater River and the approaches to the bridge. The highway itself will not impact these sites, but the crossing infrastructure and related works may result in impacts to these sites.	Pehdzeh Ki / Dehcho First Nations	Dessau, 2012:225	
<u>Existing Conditions</u> Fort Norman was constructed in 1810 at the confluence of the Mackenzie and Great Bear Rivers. In 1844 it was moved about 48 km upstream to a site a few miles below the Keele River, called 'Old Fort Point', near the site of the old North West Co. Fort Castor. In 1851 it was moved back to its present site. Old Fort Point (LdRn-1)	Old Fort Point is located on the west side of the Mackenzie River within the RSA (~48 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000: 98	
		According to the draft <i>SLUP</i> (SLUPB 2013), a land use activity shall not take place within 500 m of suspected or known burial sites, historical sites or archaeological sites	Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-36	

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Employment and Economy					
<p><u>Existing Conditions</u> Recreational fishing opportunities exist in Pehdzeh Ki Ndheh. There are several older cabins throughout the area, which could potentially be used for sport fishing purposes and the possibility for sport fishing exists at Blackwater and Fish Lakes. Presently, only one outfitter takes tourists on sport fishing trips and these trips are understood to be limited to the Mackenzie River and its major tributaries.</p>	<p>Blackwater Lake and Fish Lake are outside of RSA (Fish Lake: ~32 km from PDA. Blackwater Lake: ~ 45 km from PDA) Portions of the Mackenzie River intersects the LSA</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006:4</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Commercial fishing activities in Pehdzeh Li Kdeh have been limited to attempts at Keller and Blackwater lakes, but these endeavours were found to be not economically viable. Commercial fishing efforts in the region are likely to be faced with restricting factors such as the cold climate, parasitic infestations in the fish, high transportation, fuel, labour, material and fishing gear costs.</p>	<p>Keller Lake and Blackwater Lake are outside of RSA (Blackwater Lake: ~45 km from PDA. Keller Lake: ~ 99 km from PDA.)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006:4</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> There is a high economic value for wildlife subsistence harvesting because of the savings realized by Wrigley residents who do not have to purchase meat at its equivalent high replacement value</p>			<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006:3</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Trapping is strongly associated with cultural traditions. Pehdzeh Li Ndheh is known furbearer habitat, and some trapping is known to take place in the area. Overall, fur harvest returns to the community of Wrigley show significant income is derived from this resource use</p>	<p>The PDA intersects the Pehdzeh Li Ndheh</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006:3</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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Employment and Economy (cont'd)					
<p><u>Existing Conditions</u> Fish are acknowledged as being an important renewable resource in the Pehdzeh Ki Ndeh. Subsistence fishing is a commonly practiced activity, with the Mackenzie River, Wrigley River, Willow Lake River, the River Between Two Mountains, Blackwater Lake, Greasy Lake and Highland Lake being important waterbodies for subsistence harvesting. The primary species caught are lake whitefish, lake trout, inconnu and northern pike. These fish resources are considered to have an important cultural value for Wrigley residents and are also of significant economic value because of the savings realized by not purchasing fish meat at its market value.</p>	<p>Portions of the Mackenzie River are within the LSA Wrigley River is within the RSA (~4 km from PDA) The River Between Two Mountains, Willow Lake River, Blackwater Lake, Greasy Lake and Highland Lake are outside the RSA (River Between Two Mountains: ~35 km from PDA, Blackwater River: 45 km from PDA, Willow Lake River: ~53 km from PDA, Greasy Lake: ~61 km from PDA, Highland Lake: ~70 km from PDA)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 2-3	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Trees are utilized for many different reasons within the Pehdzeh Ki Ndeh, including as construction and building materials, for fuel and for other purposes. The harvest for fuel wood to heat individual homes is common and residents of Wrigley are granted free access to forested areas to harvest wood. The utilization of personally harvested fuel wood is acknowledge as having a high economic value for Wrigley residents because of the individual costs saved through not having to purchase fuel wood and not to heat with fuel</p>	The PDA intersects the Pehdzeh Ki Ndeh		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 5	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Pehdzeh Ki Kdheh wilderness has been a tourist attraction for several decades, but it is not well understood how important this industry is for the present economic stability of the community of Wrigley. The average number of tourists to Wrigley over the years is unknown and it is uncertain what the spending trends are of tourists once they enter the community. Accommodation options are limited to one hotel and one designated campground purchasing opportunities for tourists are very limited and there is a general perception that there is not an abundance of activities for tourists to participate in once they are in the community.</p> <p><u>Potential Project Effects</u> There are many tourism attractions in the Pehdzeh Ki Ndeh however and independent travellers with their own boats, or tourists travelling with the community's outfitting guide, may explore the area from the Mackenzie River and its navigable tributaries. There is also the option of exploring the area for the land with a guide from Wrigley who offers hiking and biking adventures to tourists.</p> <p>In general, because of Wrigley's remote location and subsequent low level of tourist visitation, lack of retail outlets where tourists can support the local economy and minimal accommodations and recreational facilities within the community, it is assumed that tourism is not presently a significant industry in Wrigley, although there is room for expansion.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh Portions of the Mackenzie River intersect the LSA Wrigley is located within the LSA</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 7	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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<i>Employment and Economy (cont'd)</i>					
<p><u>Existing Conditions</u> Both animal and vegetation parts from Pehdzeh Ki Ndeh are acknowledged as having an economic value when utilized as art and craft materials.</p>	The PDA intersects the Pehdzeh Ki Ndeh		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 6	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Activities such as hunting, fishing, fuel wood harvesting and berry picking are still important contributors to a subsistence existence for residents of the Pehdzeh Ki Ndeh area and augment the local economy in various ways.</p>	The PDA intersects the Pehdzeh Ki Ndeh		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 14	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Subsistence hunting is defined as harvesting by Aboriginal residents for food and personal use. The NTs prohibitive cost of imported commercial food products makes subsistence hunting one of the most familiar of the wildlife uses. The NT spends annually \$130 million on food imports, harvesting of local country food saves Study Area residents the cost of buying imported foods and in this way adds to the overall savings of each harvester. In 1988, the GNWT estimated that the foods being harvested annually in the NT equal \$70 million. Food prices in Wrigley are estimated to be 74% greater than food prices in Yellowknife. This reported value is based solely on food items purchased in stores</p>	Wrigley intersects the PDA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 26	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Subsistence hunting comprises an important part of life for many northern people, A high percentage of Pehdzeh Ki Ndeh residents are reported to hunt. The NT's Bureau of Statistics found that 43.1% of people over the age of 15 in the Dehcho region hunted or fished for subsistence in 2002 as dis 46% of Sahtu residents over the age of 15. The large percentage of Study Area residents who partake in hunting likely translate to high numbers of game animals harvested in the region.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 26	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Trapping holds a central place in NT's history and is still of paramount importance to many people in the NT. 20.1% of Wrigley's population over the age of 15 were reported trapping in the year 2003. Many people are interested in being able to follow a traditional lifestyle. However, the number of people reported to actively trap seems to be decreasing despite government incentives and comparatively high fur prices. The NT's annual fur sale value decreased 80% from \$6.1 million in 1987/88 to \$1 million in 1993. The GNWT estimates that the NT's current furbearer population would stand to benefit from an additional 200-300 trappers. High wages in the non-traditional sectors are blamed for taking workers away from trapping activities.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 30	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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<i>Employment and Economy (cont'd)</i>					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Nheh area of Interest Report noted that one trapper mainly traps for income and only a minimal number of animals are used domestically or sold locally.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 31	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The percentage of households in Wrigley whose total consumption of meat and fish consists of a minimum of 75% country foods was 41 % in 2004. This figure has increased substantially from previous years in which the survey was conducted. In 1999, only 28% of Wrigley households reported 75% or greater of their diet coming from county foods and this figure was 13% in the 1994 survey</p>	Wrigley intersects the PDA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 32	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Nheh area of Interest Report noted that Wrigley trappers have received an average of \$6,920.23 per year for their fur harvest.</p>	Wrigley intersects the PDA The PDA intersects the Pehdzeh Ki Nheh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 34	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> In the Dehcho region in 1989 it was estimated that 181 artists worked to produce arts and crafts items. The most popular items sold were baskets, apparel, tuftings and jewelry, generating an estimated \$0.5 million in the Dehcho. During the 1990's it was determined that throughout the Northwest Territories (prior to separation with Nunavut) 46% of art items went to tourists, 30% to collectors and 23% to non-tourists.</p>	The PDA intersects the Dehcho Region		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 69	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley. Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.

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Employment and Economy (cont'd)					
<p><u>Existing Conditions</u> More recently, tourists have been found to spend an estimated \$2 million per year on arts and crafts in the Northwest Territories. Little information is available on the economic value of arts and crafts in the Dehcho region today, or specifically for the community of Wrigley. Considering most local artists do not create their works for sale and because there is no retail location in the community for the sale of arts and crafts items, it is assumed that arts and crafts activities have a minimal influence on the economy of Wrigley.</p>	The PDA intersects the Dehcho Region Wrigley intersects the PDA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 69	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley. Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.
<p><u>Existing Conditions</u> Trapping provides some value to Pehdzeh Ki Ndeh area residents through direct income although it is acknowledged that many more residents likely trap for food (hares), other domestic use (parka trims) and local sales. Additionally, to their economic value, both resource uses are known to be of high cultural importance to the residents</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 95	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters the Great Bear River is travelled for tourism.</p>	The Great Bear River is a tributary to the Mackenzie and intersects the PDA		Sahtu	Tulita Renewable Resource Council, 2019: 19, 22	
<p><u>Existing Conditions</u> Concerns regarding security during construction and future operation of the Great Bear River Bridge.</p>		Request for local groups to rotate security responsibilities to allow residents the opportunity of work on the project.	Sahtu	EBA, 2006: 9	
<p><u>Potential Project Effects</u> Based on the information gathered during the public consultation held on July 7th, 2011 and January 25-26th, 2012 some of the main concerns regarding the MVH Extension Project in the Pehdzeh Ki Ndeh – Dehcho Region are related to training and job opportunities as well as socioeconomic impacts.</p>		In general, members from PKFN see the project as an opportunity for training and employment. Their members would like to be involved in the construction of the new bridges and of the MVH extension project, as well as its maintenance once constructed.	Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 113	

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Employment and Economy (cont'd)					
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> • Lose job opportunities to competitors • Current work in Ochre River – they could have given a notice to PKFN (Provide list of needs in services, so that the people got the opportunity to get involved in the work) • Competitive bidding - out right sole source opportunity for maintenance 			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 130	
Infrastructure, Services and Institutional Capacity					
<p><u>Potential Effects</u> The community is concerned about the potential number of people involved in the construction of the Great Bear River Bridge and the proximity of the work camps to the community.</p>	Great Bear River Bridge is within PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-37	
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the participants identified concerns around Service and Infrastructure regarding the construction of the MVH. Concerns revolved around a new store, community health care, a new Royal Canadian Mounted Police (RCMP) station, better education and transportation and access to a mine across the river.</p>			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 129	
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> • Increase in resource development in the area • Industry will have easier access 			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 130	
<p><u>Potential Project Effects</u> During consultations in 2004 and 2005, community members expressed concern about the pressure major developments may have on local infrastructure, particularly local water and waste disposal systems.</p>			Elders and land users in the Sahtu region	Golder, 2015: 2-17	
Education, Training and Skills					
<p><u>Potential Effects</u> According to the two-day consultation activities held in Wrigley on January 25th and 26th, 2012, the main concerns regarding the MVH Extension Project in the Pehdzeh Ki Ndeh - Dehcho Region are related to the following elements:</p> <ul style="list-style-type: none"> • Education and Training • Employment opportunities • Youth • Economic growth • Protection of traditional land • activity sites <p>In general, members from PKFN are not against the MVH extension on their territory, but they are concerned about the future of their children. Essentially, PKFN people hope that the project will bring about an improvement in their quality of life.</p>		They would like to have better access to education and training opportunities for their children in order for them to get good jobs and to benefit from the economic growth accompanying the MVH project. The need for grade 12 level education in Wrigley as well as specific training in heavy equipment operation (HEO) was mentioned several times during the consultations. Youth involvement throughout the MVH project is of utmost importance for the PFKN and the community members as they would like to see them take part of the entire process	Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 125	

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Education, Training and Skills (cont'd)					
		Community members feel that it is imperative to the success of the Great Bear River Bridge that the local residents are able to take advantage of certified training	Sahtu	EBA, 2006: 8	
<p><u>Potential Project Effects</u> Based on the information gathered during the public consultation held on July 7th, 2011 and January 25-26th, 2012 some of the main concerns regarding the MVH Extension Project in the Pehdzeh Ki Ndeh – Dehcho Region are related to training and job opportunities as well as socioeconomic impacts.</p>		In general, members from PKFN see the project as an opportunity for training and employment. Their members would like to be involved in the construction of the new bridges and of the MVH Extension Project, as well as its maintenance once constructed.	Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 113	
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> • increase in traffic • Easy access by general public • Migration to area by no PKFN members • Lack of control of the areas to be accessibly by others • Influx of visitors • Sharing resources due to access for harvesting. Case example in existing traditional areas 			Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 130	Access and traffic
Human Health and Community Wellness					
<p><u>Existing Conditions</u> Sathu Vision: "The ecological integrity of the region is maintained. The land, water and natural resources on which people depend are clean, healthy and abundant. There is a balance of industrial development and vast wilderness areas, a model of development hand in hand with environmental protection. Conservation Zones and legislated protected areas protect the most important places and values for future generations, while careful management allows sustainable development to proceed in all other areas... Communities have sufficient authority, capacity and involvement in managing and monitoring land use to work in true partnership with land and resource managers, co-management Boards, and regulators. Together, they provide a clear, efficient regulatory system that promotes sustainable development. Land use activities are designed, regulated and implemented with consideration for the specific values and characteristics of the people and the region. Land use decisions respect and integrate Sahtu Dene and Métis traditional laws, beliefs and management practices with scientific and regulatory frameworks. There is trust and respect amongst all participants in land and resource management. Long-term economic planning has resulted in strong renewable and non-renewable industries, providing economic self-sufficiency and stability, and employment diversity for the region. Residents are able to find work in their communities and on the land. Good access and infrastructure in the region reduce the cost of power, goods and services. A strong emphasis on training has created a skilled workforce to maximize employment and business opportunities."</p>			Tulia/Sahtu	SLUPB, 2013:12	
<p><u>Potential Effects</u> The community is concerned about the potential number of people involved in the construction of the Great Bear River Bridge and the proximity of the work camps to the community.</p>	Great Bear River Bridge is within PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-37	
<p><u>Potential Effects</u> Community is concerned about the potential level of activity relative to the Project. Community members commented on potential exposures for the youth, inclusive of an increase in drugs circulating around the community, alcohol, crime, and sex.</p>			Sahtu	EBA, 2006: 7	

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Human Health and Community Wellness (cont'd)					
<p><u>Potential Project Effects</u> During the Wrigley Community Consultation (January 25-26th, 2012) the following additional concerns were identified:</p> <ul style="list-style-type: none"> Increase in social issues, crime and violence 			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 130	Human health and wellness
<p><u>Potential Project Effects</u> In Wrigley, elders noted that boreal caribou that were harvested close to the Norman Wells Pipeline had the taste associated with stress</p>			Dehcho First Nations	Dehcho First Nations, 2011:11	
<p><u>Potential Project Effects</u> During consultations in 2004 and 2005, community members expressed concern that development may affect human health through water and air quality; and the health of the region's wildlife, fish and vegetation.</p>		Improved and more frequent communication with communities regarding water quality and fish health were recommended.	Elders and land users in the Sahtu region	Golder, 2015: 2-17	
Cultural and Traditional Land Use					
<p><u>Existing Conditions</u> "When they selected the GTA around 1951, they looked at the map. It was only for us; it was our land. They wanted us to select a small piece of land but our elders selected a big piece of land. We need to hold onto what our elders selected for us; they did not choose for others in the region. I was there when the Elders selected the GTA. Everything selected in that area is for the K'asho Got'ine control. They selected that land because everyone was attacking that area. It is for the future generation; we want our future generation to be in control. We have to start making good decisions for our future generation. Our leaders selected that GTA. We want to keep it that way. It is for our use. We lived on this land for millions of years. We discuss what is going on here. It is like our words are being wasted. I wish that it was written down that the land was selected for us and not only for the surface but for the subsurface."</p>	The Group Trapping Area (GTA) is north of Norman Wells and outside of the RSA		Elder Gabe Kochon of Fort Good Hope, SLUPB Follow-up Meeting, June 14, 2011, Fort Good Hope.	SLUPB, 2013:16	
<p><u>Existing Conditions</u> Big Smith Creek has been a good source of drinking water for many years.</p>	Big Smith Creek is within the PDA			Golder, 2015: 2-17	
<p><u>Potential Effects</u> Concerns were expressed about the increased access to areas used by Elders, trappers and hunters once the Great Bear Bridge and the Highway are constructed. The concerns specifically relate to accessing these areas during summer periods when there is typically limited access.</p>	Great Bear Bridge is within the PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-36	
<p><u>Potential Effects</u> The fact that their territory will be more accessible and exposed to outsiders, as pointed out during the door-to-door survey, is also a major preoccupation for the public consultation participants. PKFN would like its traditional lands and resources to be protected from outsiders. PKFN shared with the MVH Team Members data regarding the location of several important traditional land use sites and ancestral areas and trails where its members practice their activities. Though this information is of sensitive nature and is usually kept confidential, PKFN thought it best to share this information in order to ensure that their traditional and ancestral sites will be respected and taken into account within the mitigation measures. This additional information has been included in a confidential map appended to the report and represents sensitive components that will have to be assessed and taken into account during the next stages of the MVH Project.</p>			Pehdzeh Ki/Dehcho First Nations	Dehcho First Nations, 2011: 125	
<p><u>Concerns:</u> Based on the information gathered during the public consultation held on July 7th, 2011 and January 25-26th, 2012 some of the main concerns regarding the MVH extension project in the Pehdzeh Ki Ndeh – Dehcho Region are related to surface and land claims as well as traditional land use and knowledge and sensitive heritage and cultural considerations.</p>		It is very important to PKFN members that their traditional land use sites and knowledge be protected.	Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 113	

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<i>Cultural and Traditional Land Use – Hunting</i>					
<p><u>Existing Conditions</u> Moose are harvested from Petiniæah commonly known as Bear Rock.</p>	The PDA intersects Bear Rock Conservation Zone		Sahtu	SLUPB, 2013:124	
<p><u>Existing Conditions</u> Wildlife is assessed as being a key renewable resource in the Pehdzeh Ki Ndeh. Subsistence harvesting is an important resource use among Pehdzeh Ki Ndeh residents and provides a fairly high amount of meat to families. Moose are acknowledge as being the most important subsistence harvest species and there are numerous areas in the Pehdzeh Ki Ndeh known to be valuable moose habitat, concentrated around the shores of its many lakes. Subsistence harvesting is strongly connected with Traditional Knowledge and possesses a high cultural value in this respect. There is a high economic value for wildlife subsistence harvesting because of the savings realized by Wrigley residents who do not have to purchase meat at its equivalent high replacement value.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 2-3	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Sahtu Land Use Plan states that people harvest furbearer, moose, barren-ground caribou and bears in the Norman Range Ecoregion.</p>	The LSA intersects the Norman Range Ecoregion briefly to the northwest of Tulita		Sahtu	SLUPB, 2013:153	Norman range ecoregion is very large and is intersected by the wildlife RSA.
<p><u>Existing Conditions</u> “The Deh Cho is identified as a Special Management Zone to protect the water quality, riparian habitat, cultural/heritage sites, areas that are important for wildlife and wildlife harvesting. SMZ designation will also allow for continued use of the river as an important regional and territorial transportation corridor (barge traffic, landing sites, winter road).”</p>	The LSA intersects portions of the Deh Cho Special Management Zone		Sahtu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.

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Cultural and Traditional Land Use – Hunting (cont'd)					
<p><u>Existing Conditions</u> Along the Deh Cho: “Special Harvesting Areas as per the Sahtu Dene and Metis Comprehensive Land Claim Agreement (SDMCLCA) for moose, waterfowl and birds, plant and berry picking sites and fish camps are located along the river.”</p>	<p>Portions of the Mackenzie River (Deh Cho) intersect the LSA</p>		<p>Sahtu</p>	<p>SLUPB, 2013:171</p>	<p>The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.</p>
<p><u>Existing Conditions</u> Renewable resources harvested and collected in the Pehdzeh Ki Ndeh are utilized by artists in Wrigley for arts and crafts purposes. Animal parts such as antlers, bones, fur, hide and sinew are collected or harvested in the area. Moose and caribou are the primary ungulates whose antlers, hide and hair are used for carving clothing, souvenirs and tufting, beaver, marten, fox, wolverine and rabbit are the fur-bearing animals whose pelts are most often used for clothing and decorative trim on other items.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 6</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> The Dehcho and Sahtu residents have been utilizing the Pehdzeh Ki Ndeh area for centuries. As will all of the original inhabitants of the Northwest Territories, renewable resources were depended on for survival, wildlife, fish, trees, plants and other land and water resources played an integral role in the lives of these people and continue to do so today.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 14</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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<i>Cultural and Traditional Land Use – Hunting (cont'd)</i>					
<p><u>Existing Conditions</u> Activities such as hunting, fishing, fuel wood harvesting and berry picking are still important contributors to a subsistence existence for residents of the Pehdzeh Ki Ndeh area and augment the local economy in various ways.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 14	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report reported moose to be the most significant animal south of the tree line in the NT for meat harvesting and consumption.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 22	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Traditionally, black bears have been harvested by residents of Wrigley.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley intersects the PDA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 22	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Subsistence hunting is defined as harvesting by Aboriginal residents for food and personal use. The NTs prohibitive cost of imported commercial food products makes subsistence hunting one of the most familiar of the wildlife uses...Harvesting of local country food saves Pehdzeh Ki Ndeh residents the cost of buying imported foods and in this way adds to the overall savings of each harvester. In 1988, the GNWT estimated that the foods being harvested annually in the NT equal \$70 million.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 26	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Cultural and Traditional Land Use – Hunting (cont'd)					
<p><u>Existing Conditions</u> Subsistence hunting comprises an important part of life for many northern people, a high percentage of Study Area residents are reported to hunt. The NT's Bureau of Statistics found that 43.1% of people over the age of 15 in the Dehcho region hunted or fished for subsistence in 2002 as did 46% of Sahtu residents over the age of 15.</p>	The PDA intersects the Dehcho Region		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 26	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley. Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report estimates that the community harvested about 50 caribou, woodland and barren ground combined and about 75 moose in 2005. In the neighboring Sahtu area, hunting pressure on boreal caribou is "light" with each community typically taking less than 50 animals per year. Based on this estimate, moose are the most important subsistence harvest species in the area. However, these numbers are only estimates and the actual numbers may deviate substantially from year to year.</p>	The PDA intersects the Pehdzeh Ki Ndeh area The PDA intersects the Sahtu area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 27	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> One Wrigley trapper who harvests from the Pehdzeh Ki Ndeh reported harvesting approximately 1 swan, 15-20 ptarmigan, 50 geese and 100 ducks in the previous year. It can be assumed that waterfowl and ptarmigan are harvested by other residents as well.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley intersects the PDA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 27	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report has stated a 2002 report found that the highest concentration of moose are on the shores of the Blackwater Lake on Tonnaneenlee Lake, the shores of Fish Lake and northwest of Fish Lake. The highest concentrations of caribou are reported as being on the shores of Blackwater Lake and east of Blackwater Lake in the winter. Since caribou and moose are more likely to be found in these areas, this is also likely where they are harvested. They are also harvested where there is easier access into the area.</p>	Blackwater Lake and Fish Lake are outside of RDA (>30 km from PDA) Tonnaneenlee Lake is outside of the RSA (~50 km from PDA)		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 27	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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<i>Cultural and Traditional Land Use – Hunting (cont'd)</i>					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report reports that moose are hunted from areas adjacent to camps and traplines. Several camps and traditional trails are scattered throughout the Pehdzeh Li Ndeh and it is likely that they facilitate hunting in the area. Many mineral licks are reported immediately to the east of the Mackenzie Highway. These ungulate attractants existing next to a major transportation corridor is likely a hunter draw.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area The Mackenzie Highway is within the PDA</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 27</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Pehdzeh Ki Ndeh is one source of renewable resource materials for artists residing in Wrigley. Materials harvested or collected include animal parts such as hide, fur, sinew and vegetation matter, such as lichen, bark and berries.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA</p>		<p>Pehdzeh Ki Dehcho First Nations</p>	<p>IMG-Golder, 2006: 63</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> Concerns have been raised in the Dehcho region regarding the harvesting of renewable resources by non-residents. Traditional materials such as birch bark, fur and hides are valued by residents of the area, and they want assurance that these resources will be properly used and not wasted in order to maintain sustainable harvest levels.</p>	<p>The PDA intersects the Dehcho Region</p>		<p>Pehdzeh Ki Dehcho First Nations</p>	<p>IMG-Golder, 2006: 64</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley. Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.</p>
<p><u>Existing Conditions</u> Antler and bone materials are often used for or incorporated into carvings, used in beadwork, or used as decoration for other arts and crafts. The bones and antlers of animals harvested or collected in Pehdzeh Ki Ndeh are used by artists in Wrigley.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA</p>		<p>Pehdzeh Ki Dehcho First Nations</p>	<p>IMG-Golder, 2006: 67</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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<i>Cultural and Traditional Land Use – Hunting (cont'd)</i>					
<p><u>Existing Conditions</u> The hair of the moose and caribou are particularly prized for their value in the art of tufting. The preferred hair to use are the white ones on the shoulder and rump of the animal. Hair from animals harvested in Pehdzeh Ki Ndeh area is used in the creation of quality tufting works in Wrigley.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 67	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The hide from animals, in particular moose and caribou, is a very important renewable resource used in the arts and crafts industry. Tanned hide is used to make clothing items such as pants, mitts, mukluks and parkas and is also used in various arts and crafts projects such as for canvas material for beadwork, for pieces of souvenir items such as miniature snowshoes and canoes and as handles on birch bark baskets. Hides are tanned in Wrigley by at least one artist and the animals from which the hides were gathered were typically harvested in Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 68	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Porcupine quills have been used for hundreds of years by artists in the communities of the Dehcho region and the use of them precedes the use of beadwork as a form of artistic enhancement for clothing and other works of art. Artists in Wrigley today do not produce a large amount of quillworks and it is estimated that only between 2 and 3 porcupines per year are harvested in Pehdzeh Ki Ndeh for arts and crafts purposes.</p>	The PDA intersects the Pehdzeh Ki Ndeh and the Dehcho area		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 68	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Sinew is important in the arts and crafts industry as a quality stitching material. It was traditionally used for sewing projects, in beadwork and incorporated into other items such as snowshoes but has become less utilized in recent times as other materials such as dental floss are more readily accessible. Sinew from large animals harvested in Pehdzeh Ki Ndeh is used by artists in Wrigley.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 68	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Animals from Pehdzeh Ki Ndeh are important in the arts and crafts industry in Wrigley. It is roughly estimated that 75 animals per year (typically moose and caribou, with fewer beaver, fox, wolverine and an assortment of other mostly fur-bearing animals) are harvested in the area for arts and crafts purposes. Animals are taken from throughout the area, with certain harvesting sites perhaps being more readily accessed by the trail system that exists in Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 68	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data upland game and moose are harvested along the highway from KM 880 to 970 around Tulita, around Norman Wells and KM 1050.</p>	Within PDA		Sahtu	5658 NWT Ltd/GNWT, 2011: Fig 8-4	

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Cultural and Traditional Land Use – Hunting (cont'd)					
<u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data Barren-ground Caribou is harvested around KM 900, 930 and between KM 990 and 1030.	Within PDA		Sahtu	5658 NWT Ltd/GNWT, 2011: Fig 8-4	
<u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data Boreal Woodland Caribou is harvest west of the highway along KM 810, along the highway between KM 830 and 840 as well as just south of the highway along KM 960 and along the highway around Norman Wells.	Within PDA		Sahtu	5658 NWT Ltd/GNWT, 2011: Fig 8-4	
<u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data Boreal Mountain Caribou are harvested west of the highway between KM 820 and 850.	Within RSA		Sahtu	5658 NWT Ltd/GNWT, 2011: Fig 8-4	
<u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data waterfowl is harvested all along the Mackenzie River around Norman Wells and Tulita as well as around the Mackenzie River between KM 840 and 850.	Portions of the Mackenzie River are within the LSA Norman Wells and Tulita within the PDA		Sahtu	5658 NWT Ltd/GNWT, 2011: Fig 8-7	
<u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 duck hunting grounds are located on the south side of the Mackenzie River just east of Tulita and duck migration route is identified as extending east off the hunting grounds.	Within the RSA		Sahtu	EBA, 2006: Fig1	
<u>Existing Conditions</u> Boreal woodland caribou are used as a subsistence food source throughout the Sahtu region. However, not many people actively pursue these animals, and most are harvested opportunistically when encountered while hunting other species. When groups of boreal woodland caribou are encountered, only a few caribou from each group are harvested. More bulls are harvested than cows and calves.	The PDA intersects the Sahtu Region		Sahtu	McDonald, 2011:7	
<u>Existing Conditions</u> According to the map data compiled by McDonald Boreal Woodland Caribou are harvested just north of Tulita and along the winter road between Tulita and Norman Wells.	Tulita and Norman Wells are within the PDA		Sahtu	McDonald, 2011:9	
<u>Existing Conditions</u> The harvesting of large ungulates, including moose and caribou, represents an important resource procurement activity. Historically, the movements of the caribou herds were closely related to procurement strategies of subsistence resources and even affected the seasonal movements of Aboriginal populations. The proposed MVH extension is found within the range of both the Woodland Caribou Boreal population and moose.	PDA intersects the range of the Woodland Caribou Boreal population and moose (precise location unknown)		Pehdzeh Ki Dehcho First Nations	Dessau, 2012: 75	
<u>Existing Conditions</u> Areas utilized for big game hunting have not been identified by the Dehcho Land Use Plan, primarily due to the sensitivity of the data.			Pehdzeh Ki Dehcho First Nations	Dessau, 2012: 75	
<u>Existing Conditions</u> Through their comprehensive investigation of traditional activities in the Dehcho Region, Norwegian and Cizek (2004) found that between 22 and 36% of all dietary protein requirements were fulfilled by wild foods. According to data collected during the MGP EIS, in the Dehcho Region, between 1993 and 2002, the community of Wrigley showed an increase in traditional activities overall. In 1998, a recorded 34% of adults reported to have hunted or fished, while 53% indicated that they consumed country foods.	The PDA intersects the Dehcho Region Wrigley intersects the PDA		Pehdzeh Ki Dehcho First Nations	Dessau, 2012: 75	Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.

**Mackenzie Valley Highway Project
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<i>Cultural and Traditional Land Use – Hunting (cont'd)</i>					
<p><u>Existing Conditions</u> Along the MVH extension route, the Blackwater and Ochre Rivers, as well as Whitesand Creek are the areas in which traditional wildlife harvesting activities are focused.</p>	The Blackwater River, the Ochre River and the Whitesand Creek are tributaries to the Mackenzie River and intersect the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 76	
<p><u>Existing Conditions</u> Traditional hunting grounds in the vicinity of Whitesand Creek may also be used in the harvesting of caribou and are located near concentrations of archaeological sites, which may indicate use of the area as far back as the prehistoric period.</p>	Whitesand Creek is a tributary to the Mackenzie and intersects the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 76	
<p><u>Existing Conditions</u> Information from the community of Wrigley indicates that at least five moose pasture areas are found along the proposed route. At least one traditional hunting ground overlaps with these pasture areas in the area of Vermillion Creek South and Bob's Canyon Creek, which has been used for the past 100 years for hunting moose. Additional moose hunting areas are located near Whitesand Creek and Eentsaytoo Lake, located north of the Blackwater Creek confluence with Mackenzie River.</p>	Vermillion Creek South, Whitesand Creek and Bob's Canyon Creek are tributaries to the Mackenzie and intersect the PDA Blackwater Creek is a tributary to the Mackenzie and intersects the PDA Eentsaytoo Lake is within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 77	
<p><u>Existing Conditions</u> A spiritual site associated with moose hunting in the Mackenzie Valley area is located just south of Blackwater Creek. The site is important because it is home to a rock to which spiritual offerings are made by PKFN members while hunting.</p>	Blackwater Creek is a tributary to the Mackenzie and intersects the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 77	
<p><u>Existing Conditions</u> The route of the MVH extension is also found within year-round black bear range. Harvesting of bears may occur within the traditional hunting grounds located north of Blackwater River, Vermillion Creek South and Whitesand Creek.</p>	Blackwater River, Vermillion Creek South and Whitesand Creek are tributaries to the Mackenzie and intersect the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 77	
<p><u>Existing Conditions</u> Waterfowl such as duck and geese species are traditionally harvested by Dehcho First Nations, including PKFN, and traditional hunting grounds located near Blackwater River and Vermillion Creek South may be utilized for harvesting this resource.</p>	Blackwater River and Vermillion Creek South are tributaries to the Mackenzie and intersect the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 78	
<p><u>Potential Effects</u> In considering the socio-cultural history and traditional land uses that exist in the area of the Mackenzie Valley, north of the community of Wrigley, it is evident that the proposed MVH extension route will interact with a number of areas traditionally used for the harvesting of wildlife and vegetation resources. This will include areas important for the harvesting of caribou, moose, small game and vegetation, as well as additional non-traditional hunting and economic land uses that may be permitted in the vicinity of the Project area.</p>	Within PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 224	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a traditional hunting ground is located just west of the proposed highway between KM 730 and 731.</p>	Within PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 8-P	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Cultural and Traditional Land Use – Hunting (cont'd)					
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a traditional hunting ground is located just west of the proposed highway between KM 753 and 754.</p>	Within PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 12-P	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a traditional hunting ground is located just east of the proposed highway between KM 751 and 752.</p>	Within PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 12-P	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a traditional hunting ground is located along/in the Mackenzie River west of the existing winter road KM 786.</p>	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 18-P	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a traditional hunting ground is located north of KM 731. This area is considered a moose sensitive area.</p>	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 4	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a traditional hunting ground is located along both sides of the existing winter road extending about 1 km north of the Mackenzie River between KM 749 and 755. This area includes Bob's Canyon Creek, which is considered by PKFN participant(s) to be the best creek for moose hunting.</p> <p><u>Potential Effects/Concerns</u></p> <ul style="list-style-type: none"> PKFN are concerned that the proposed highway alignment is located too close to the Mackenzie River. 	Bob's Canyon Creek is a tributary to the Mackenzie River and intersects the PDA	PKFN suggest the alignment should take a straight line from KM 749 to 754 instead of following the existing winter road. PKFN suggests moving up the bridge at Vermillion Creek South to protect the traditional hunting ground	Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 6	
<p><u>Existing Conditions</u> According to the map data obtained from public consultation with PKFN a very large important hunting ground is located on both sides of the existing winter road stretching from KM 785 to 789 including the Mackenzie River to the south and the Eentsaytoo Lake to the North. Eentsaytoo Lake is also considered a traditional lake for moose.</p>	The PDA intersects hunting ground Eentsaytoo Lake is within PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 10	
<p><u>Existing Conditions</u> The area around Willow Lake (called Brackett Lake on the official maps) is important for hunting, and the lake and wetlands nearby support large populations of animals. The oral tradition records many stories, which tell of the importance of this lake.</p>	Willow Lake (Brackett Lake) is outside the RSA (~25 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:96	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> the Mackenzie River continues to provide critical moose and waterfowl hunting areas.</p>	Portions of the Mackenzie intersect the LSA		Sahtu	The Sahtu Historic Places and Sites Joint Working Group, 2000: 104	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> the Sahtu Dene and Métis have travelled for centuries and used the traditional resources distributed over the Sahtu region. Moose, woodland and barren ground caribou, Dall's sheep, beaver, marten, muskrats, waterfowl and other birds, fish, hare, and other small game continue to be critical subsistence resources.</p>			Sahtu	The Sahtu Historic Places and Sites Joint Working Group, 2000: 18	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> Caribou are of prime importance to life in the Sahtu region. Caribou are hunted in all seasons, providing critical sources of food. Caribou also provided hides for clothing and shelter, sinew for sewing, and bones and antler for tools and implements. Consequently, caribou occupy an important position in Sahtu Dene and Métis culture and history, and many heritage places are linked to this 'giver of life'.</p>			Sahtu	The Sahtu Historic Places and Sites Joint Working Group, 2000: 18	
<p><u>Existing Conditions</u> The Great Bear River is used by boats for hunting.</p>	The Great Bear River is a tributary to the Mackenzie and intersects the PDA		Sahtu	Tulita Renewable Resource Council, 2019	

**Mackenzie Valley Highway Project
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<i>Cultural and Traditional Land Use – Hunting (cont'd)</i>					
<p><u>Existing Conditions</u> Throughout the Dehcho Region, there appears to be a decline in the harvesting of boreal caribou by Dehcho First Nations members, although boreal caribou continue to be harvested. Reasons for this decline include:</p> <ul style="list-style-type: none"> • harvesters do not spend as much time on the land today as previous generations did • boreal caribou are sensitive to sensory disturbance and the use of skidoos decreases incidental contact • the use of boreal caribou hides for snowshoe lacing and dog harnesses has diminished • most harvesters prefer moose to boreal caribou, so boreal caribou are mostly harvested on an opportunistic basis while doing other land use activities • some harvesters are aware that boreal caribou are at risk and have cut back on harvesting 	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:8	
<p><u>Existing Conditions</u> Harvesting of boreal caribou generally takes place in the fall and winter months, when the animals are moving around more (fall / early winter) or are in larger groups in more concentrated areas (mid to late winter/early spring).</p>			Dehcho First Nations	Dehcho First Nations, 2011:8	
<p><u>Existing Conditions</u> Dehcho First Nations report that non-Dene harvesting of boreal caribou appears to be steady or rising slightly.</p>			Dehcho First Nations	Dehcho First Nations, 2011:8	
<p><u>Existing Conditions</u> Harvesting of boreal caribou generally takes place in the fall and winter months, when the animals are moving around more (fall / early winter) or are in larger groups in more concentrated areas (mid to late winter/early spring).</p>			Dehcho First Nations	Dehcho First Nations, 2011:8	
<p><u>Potential Project Effects</u> In Wrigley, elders noted that boreal caribou that were harvested close to the corridor had the taste associated with stress</p>	Wrigley intersects the PDA		Dehcho First Nations	Dehcho First Nations, 2011:11	
<p><u>Existing Conditions</u> Although boreal caribou are currently an 'incidental species from a harvesting perspective, they are highly valued by Dehcho First Nations. Caribou meat is valued for human consumption and the hide is valued for making specialized craft products such as snowshoe lacing, dog harnesses, and drums, because it doesn't stretch as much as moose hide.</p>			Dehcho First Nations	Dehcho First Nations, 2011:9	
<p><u>Existing Conditions</u> Dehcho First Nations have a spiritual relationship with boreal caribou that carries with it obligations not to unduly harm or disrespect the animals. For this reason, Dehcho First Nations are very uncomfortable with the collaring that has been carried out for research purposes. They feel that collaring is not respectful toward the integrity of the animal. This disrespect will result in the Creator 'taking the animals away'.</p>			Dehcho First Nations	Dehcho First Nations, 2011:9	
<p><u>Existing Conditions</u> Dehcho First Nations make tobacco or other offerings before hunting in a particular area or, in the past, held ceremonies at seasonal gatherings to thank the Creator for animals harvested over the past year. Taboos relating to the use of boreal caribou hair and antlers are still followed in some communities today.</p>			Dehcho First Nations	Dehcho First Nations, 2011:9	
<p><u>Existing Conditions</u> Dehcho First Nations feel that it is human behavior toward boreal caribou (and other animals) that is affecting their well-being and that we therefore have to be conscious of our behavior toward these animals if they are going to be sustained. Decisions affecting boreal caribou need to be made from a relationship-based, land-based perspective and not on the basis of paper research and reports.</p>			Dehcho First Nations	Dehcho First Nations, 2011:10	
<p><u>Potential Project Effects</u> Harvesters know that seismic and other linear disturbances open corridors for wolves and can lead to an increase in predation of boreal caribou and other game animals and are concerned about this impact.</p>			Dehcho First Nations	Dehcho First Nations, 2011:12	

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Cultural and Traditional Land Use – Hunting (cont'd)					
<p><u>Existing Conditions</u></p> <p>An increase in the bear population throughout the Dehcho region has been observed. Study participants reported that it was not uncommon to see a sow bear with three cubs, which would normally be considered quite unusual. The increase in bears is largely due to the fact that the harvesting of bears for meat and fur has declined considerably, as harvesters are uncomfortable harvesting and eating bears that may have been foraging in dumps or other contaminated sites.</p>			Dehcho First Nations	Dehcho First Nations, 2011:12	An increase in the bear population throughout the Dehcho region has been observed. Study participants reported that it was not uncommon to see a sow bear with three cubs, which would normally be considered quite unusual. It is known that bears will kill boreal caribou calves in the spring time. The increase in bears is largely due to the fact that the harvesting of bears for meat and fur has declined considerably, as harvesters are uncomfortable harvesting and eating bears that may have been foraging in dumps or other contaminated sites.
<p><u>Potential Project Effects</u></p> <p>Harvesters know that boreal caribou (and other big game) that are highly stressed from sensory or other disturbances taste differently. In the Trout Lake area, two animals were killed within the past year that exhibited signs of stress and were also unusually thin. Aside from the taste being bad and having limited fat, the animals did not show signs of illness.</p>	Trout Lake is outside the RSA (~296 km from PDA)	There is no local explanation for this phenomenon, so it needs to be monitored.	Dehcho First Nations	Dehcho First Nations, 2011:14	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Hunting (cont'd)</i>					
<p><u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported that in Norman Wells 45.1% of Indigenous persons in the community went hunting and fishing; in Tulita 46.1% of Indigenous persons in the community went hunting and fishing; and in Wrigley 68.5% of Indigenous persons in the community went hunting and fishing.</p>	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	
<p><u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported on the following frequency of hunting or fishing by Indigenous persons in communities within the Project area²: In Norman Wells, 22.9% of Indigenous persons reported hunting or fishing frequently throughout the year; 19.8% reported hunting or fishing occasionally more than day trips; 30.2% reported hunting or fishing occasionally (only day trips); and 27.1% reported rarely hunting or fishing. In Tulita, 23.4% of Indigenous persons reported hunting or fishing frequently throughout the year; 27.5% reported hunting or fishing occasionally more than day trips; 29.3% reported hunting or fishing occasionally (only day trips); and 20.4% reported rarely hunting or fishing. In Wrigley, 55.6% of Indigenous persons reported hunting or fishing frequently throughout the year; 20.6% reported hunting or fishing occasionally more than day trips; 20.6% reported hunting or fishing occasionally (only day trips). The percentage of Indigenous persons rarely hunting or fishing was not recorded.</p>	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	
<p><u>Existing Conditions</u> The Sahtu (Great Bear Lake) watershed is known for winter caribou and year-round moose hunting.</p>	A portion of the PDA overlaps with Sahtu (Great Bear Lake) watershed		Sahtu	Golder, 2015: 2-4	
<p><u>Existing Conditions</u> Moose skin boats were used for travel from the mountains to the Tull't'a area for fur and dry meat trade.</p>	Tulita is within the PDA.		Shuhta Got'Ine (Shit'a Got'Ine)	Golder, 2015: 2-5	
<p><u>Existing Conditions</u> The Willow Lake (Brackett Lake or K'áalq Tué) area is important for hunting; the area's lake and wetlands support large numbers of waterfowl and other wildlife.</p>	Willow Lake (Brackett Lake or K'áalq Tué) is outside the RSA (~25 km from PDA)		K'áalq Got'Ine (Willow Lake People)	Golder, 2015: 2-6	
<p><u>Existing Conditions</u> Tull't'a is a traditional camp site for caribou and, less commonly, muskox hunting.</p>	Tulita is within the PDA.			Golder, 2015: 2-7	
<p><u>Existing Conditions</u> The Dəo (Mackenzie River) is important for moose and waterfowl hunting for local residents.</p>	Portions of Dəo (Mackenzie River) intersect the LSA			Golder, 2015: 2-31	
<p><u>Existing Conditions</u> Paddling on Moose Lake is no longer possible as the lake has dried. Elders have linked decreasing water levels to reduced fish and wildlife habitat, and it affects land users' travel and fishing</p>	Unable to determine location of Moose Lake		Sahtu	Golder, 2015: 2-21	

² Totals may not add up to 100% due to rounding.

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Cultural and Traditional Land Use – Hunting (cont'd)					
<p><u>Existing Conditions</u> Moose, caribou, furbearers, and waterfowl are harvested from Fall Stone Lake, Mackay Creek, Tate Lake, Stewart Lake, Rusty Lake, Yellow Lake, Little Bear River, Kweten?iá or Peten?iá (Bear Rock) area, Moose Lake, and along the Dəo (Mackenzie River).</p>	<p>Little Bear River is a tributary to the Mackenzie River and is within the RSA. (~9 km from PDA) The PDA intersects Petiniæah (Bear Rock) Conservation Zone Portions of Dəo (Mackenzie River) intersect the LSA Fall Stone Lake, Mackay Creek, Tate Lake, Stewart Lake, Rusty Lake, and Yellow Lake are outside the RSA. (Fall Stone Lake: ~25 km from PDA. Mackay Creek: ~18 km from PDA. Tate Lake: ~24 km from PDA. Stewart Lake: ~25 km from PDA. Rusty Lake: ~30 km from PDA. Yellow Lake: ~30 km from PDA.) Unable to determine location of Moose Lake</p>		Sahtu	Golder, 2015: 2-32	
Cultural and Traditional Land Use – Trapping					
<p><u>Existing Conditions</u> Red fox, fisher, wolverine, otter and muskrat are all also found in the Pehdzeh Ki Ndeh and sometimes trapped.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area</p>		Pehdzeh Ki Dehcho First Nations	IMG-Golder, 2006: 25	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Fort Good Hope-Colville Lake Group Trapping Area (GTA), which is the basis for the K'asho Got'ine District boundary, is the traditional territory of the K'asho Got'ine people. The Group Trapping Area was first registered in the 1956 Northwest Territories Game Ordinance (Part VII), which allowed those named in the group (or their dependants) the exclusive right to hunt fur-bearing animals (beaver, fisher, fox, lynx, marten, mink, muskrat, otter, skunk, squirrel, weasel or ermine) within the area described in the certificate of registration. It still exists under the current NWT Wildlife Act (Trapping Regulations).</p>	<p>The Group Trapping Area is located north of Norman Wells and is outside the RSA</p>	N/A	Tulita/Sahtu	SLUPB, 2013:15	

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<i>Cultural and Traditional Land Use – Trapping (cont'd)</i>					
<u>Existing Conditions</u> Furbearers are harvested from Petiniæah commonly known as Bear Rock.	The PDA intersects Bear Rock Conservation Zone		Sahtu	SLUPB, 2013:124	
<u>Existing Conditions</u> The Sahtu Land Use Plan states that furbearers are harvested from the Norman Range Ecoregion.	The LSA intersects a small portion of the Norman Range Ecoregion		Sahtu	SLUPB, 2013:153	Norman range ecoregion is very large and is intersected by the wildlife RSA.
<u>Existing Conditions</u> The Sahtu (Great Bear Lake) watershed is known for beaver and muskrat trapping.	A portion of the PDA overlaps with Sahtu (Great Bear Lake) watershed		Sahtu	Golder, 2015: 2-4	
<u>Existing Conditions</u> Families would travel from the mountains in the fall to the Tulít'a area to trap until January.	Tulita is within the PDA		Shuhta Got'ine (Shit'a Got'ine)	Golder, 2015: 2-5	
<u>Existing Conditions</u> The Sahtu Land Use Plan identifies the Deh Cho as a Special Management Zone to protect the areas that are important for wildlife and wildlife harvesting among other things.	The PDA intersects the Deh Cho Special Management Area		Sahtu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.
<u>Existing Conditions</u> Trapping is strongly associated with cultural traditions. Pehdzeh Li Ndeh is known furbearer habitat, and some trapping is known to take place in the Area. Overall, fur harvest returns to the community of Wrigley show significant income is derived from this resource use	The PDA intersects the Pehdzeh Li Ndeh area. Wrigley is within LSA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 3	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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<i>Cultural and Traditional Land Use – Trapping (cont'd)</i>					
<p><u>Existing Conditions</u> Beaver, marten, fox, wolverine and rabbit are the fur-bearing animals whose pelts are most often used for clothing and decorative trim on other items.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 6	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Trapping holds a central place in NT's history and is still of paramount importance to many people in the NT. 20.1% of Wrigley's population over the age of 15 were reported trapping in the year 2003. Many people are interested in being able to follow a traditional lifestyle. However, the number of people reported to actively trap seems to be decreasing despite government incentives and comparatively high fur prices. The NT's annual fur sale value decreased 80% from \$6.1 million in 1987/88 to \$1 million in 1993. The GNWT estimates that the NT's current furbearer population would stand to benefit from an additional 200-300 trappers. High wages in the non-traditional sectors are blamed for taking workers away from trapping activities.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 30	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report reports that the following furbearer species were sold to fur auctions in the area between 2000-2005: beaver, muskrat, marten, fox, wolf, mink, lynx, wolverine. Marten is by far the most sold furbearer, followed by muskrat and beaver. Animals such as fox, and wolf are only occasionally harvested in the Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 31	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report reported that there are five trappers from Wrigley that used the Pehdzeh Ki Ndeh to harvest furbearers in 2006. One trapper noted that he mainly traps for income and only a minimal number of animals are used domestically or sold locally. He reported trapping the following species: wolverine, marten, fox, beaver, hare, squirrel.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 31	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report noted that Wrigley trappers have received an average of \$6,920.23 per year for their fur harvest.</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 34	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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<i>Cultural and Traditional Land Use – Trapping (cont'd)</i>					
<p><u>Existing Conditions</u> Pelts from animals such as fox, beaver, wolverine, marten, wolf, mink, rabbit and others are often used in the arts and crafts industry in the creation of clothing and souvenirs and as decoration on different item. The pelts of animals harvested in Pehdzeh Ki Ndeh are used by artists in Wrigley</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 67	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data hare is trapped along both sides of the highway around Norman Wells (KM 990-1060), Tulita (KM 880-960) and in between (KM 970-980).</p>	The PDA intersects the trapping area around Norman Wells, Tulita and in between		Sahtu	5658 NWT Ltd. and GNWT, 2011:Fig 8-5	
<p><u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data marten is harvested in a few select spots along the highway from KM 830 to 920 as well as along the highway and north of KM 1040.</p>	Within the PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011:Fig 8-5	
<p><u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data dry furbearers are harvested along the highway around KM 800, KM 830-850, around Tulita and Norman Wells as well as around KM 1050.</p>	The PDA intersects the trapping area Tulita and Norman Wells are within the PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011:Fig 8-5	
<p><u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data beaver, muskrat and mink are harvested along the Mackenzie River around Tulita and Norman Wells</p>	The PDA intersects the trapping area Tulita and Norman Wells are within the PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011:Fig 8-6	
<p><u>Existing Conditions</u> Trapping in Wrigley was shown to have declined steadily from 100% of surveyed male community members between the ages of 25 and 59 who participated in 1987 to only 24% who participated in 2002.</p>			Pehdzeh Ki Dehcho First Nations	Dessau, 2012:76	
<p><u>Existing Conditions</u> Traditional trapping activities, which focus on furbearing animals such as the martin, the beaver and the muskrat, occur along the route and are centred on trapline cabins. Some trapline cabins have been identified along the proposed MVH Extension Project by members of the Wrigley community; in the areas of Whitesand and Dam Creeks, and Blackwater River.</p>	Blackwater River, Whitesand and Dam Creeks are tributaries to the Mackenzie River and intersect the PDA		Pehdzeh Ki Dehcho First Nations	Dessau, 2012:76	
<p><u>Existing Conditions</u> There are several cabins and traplines found in the Pehdzeh Ki Ndeh area around the lakes that connect to Wrigley by traditional trails, several of which are found along the winter road alignment</p>	The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012:97	
<p><u>Existing Conditions</u> According to the map data obtained through consultation with PKFN traplines are located around the existing winter road between KM 730 and 731.</p>	The PDA intersects the trapline area		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 8-P	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Trapping (cont'd)</i>					
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN traplines are located to the west and east of the existing winter road around KM 762 and 763.	The PDA intersects the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 14-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN traplines are located to the west and east of the existing winter road around KM 773 and 774.	The PDA intersects the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 16-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN traplines are located just to the south of the existing winter road at KM 784.	The PDA borders on the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1, Map Sheet 18-P	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a trapline area is intersected by the existing winter road between KM 730 and just west of 731.	The PDA intersects the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 4	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a trapline area is located to both sides of the existing winter road between KM 762 and 763.	The PDA intersects the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 7	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a trapline area is intersected by the existing winter road between KM 773 and just west of 775.	The PDA intersects the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 8/9	
<u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a trapline area is located to the east of KM 784 of the existing winter road	The PDA borders on the trapline area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 9	
<u>Existing Conditions</u> The area around Willow Lake (called Brackett Lake on the official maps) is important for trapping, and the lake and wetlands nearby support large populations of animals. The oral tradition records many stories, which tell of the importance of this lake.	Willow Lake (Brackett Lake) is outside of RSA (~25 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:94	
<u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> the Sahtu Dene and Métis have travelled for centuries and used the traditional resources distributed over the Sahtu region. Beaver, marten, muskrats, hare, and other small game continue to be critical subsistence resources.			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:18	
Wolf populations throughout the Dehcho region appear to be increasing, due in part to the fact that fewer of these animals are trapped or hunted today than in the past, for both cultural and socio-economic reasons. However, wolf pack sizes are considered to be normal for the area (generally 4-7 animals in a pack) and there is no evidence of increased killing of boreal caribou by wolves.	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:12	
<u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported that in Norman Wells 4.2% of Indigenous persons in the community went trapping; in Tulita 5.2% of Indigenous persons in the community went trapping; and in Wrigley 37% of Indigenous persons in the community went trapping.	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Cultural and Traditional Land Use – Trapping (cont'd)					
<p><u>Existing Conditions</u> The Willow Lake (Brackett Lake or K'áalq Tué) area is important for trapping; the area's lake and wetlands support large numbers wildlife.</p>	Willow Lake (Brackett Lake or K'áalq Tué) is outside the RSA (~25 km from PDA)		K'áalq Got'Ine (Willow Lake People)	Golder, 2015: 2-6	
Cultural and Traditional Land Use – Fishing					
<p><u>Existing Conditions</u> Fish are harvested from Petiniæah commonly known as Bear Rock.</p>	The PDA intersects Bear Rock Conservation Zone		Sahtu	SLUPB, 2013:124	
<p><u>Existing Conditions</u> The Sahtu Land Use Plan states that Norman Range Ecoregion is an area where fish are harvested in the following fish bearing lakes: Moon Lake, Sam McRae Lake, Turton Lake, Chick Lake, Oscar Lake, Kelly and Lennie Lake</p>	The LSA intersects a small portion of the Norman Range Ecoregion Moon Lake, Sam McRae Lake, Turton Lake, Chick Lake, Oscar Lake, Kelly and Lennie Lake are outside of RSA (Kelly Lake: ~24 km from PDA, Lennie Lake: ~42 km from PDA, Moon Lake: ~70 km from PDA, Turton Lake: ~71 km from PDA, Sam McRae Lake: ~90 km from PDA, Chick Lake: ~112 km from PDA)		Sahtu	SLUPB, 2013:153	Norman range ecoregion is very large and is intersected by the wildlife RSA.

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Cultural and Traditional Land Use – Fishing (cont'd)					
<p><u>Existing Conditions</u> “The Deh Cho is identified as a Special Management Zone to protect the water quality, riparian habitat, cultural/heritage sites, areas that are important for wildlife and wildlife harvesting. SMZ designation will also allow for continued use of the river as an important regional and territorial transportation corridor (barge traffic, landing sites, winter road).”</p>	<p>The PDA is within the Deh Cho Special Management Zone</p>		<p>Sahtu</p>	<p>SLUPB, 2013:170</p>	<p>The Deh Cho Special Management area consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.</p>
<p><u>Existing Conditions</u> Fish are acknowledged as being an important renewable resource in the Pehdzeh Ki Ndeh. Subsistence fishing is a commonly practiced activity, with the Mackenzie River, Wrigley River, Willowlake River, the River Between Two Mountains, Blackwater Lake, Greasy Lake and Highland Lake being important waterbodies for subsistence harvesting. The primary species caught are lake whitefish, lake trout, inconnu and northern pike. These fish resources are considered to have an important cultural value for Wrigley residents and are also of significant economic value because of the savings realized by not purchasing fish meat at its market value.</p>	<p>Portions of the Mackenzie River are within the LSA Wrigley River is within the RSA (~4 km from PDA) Willowlake River and the River Between Two Mountains are tributaries flowing into the Mackenzie south of Wrigley and outside of RSA (River Between Two Mountains: ~35 km from PDA, Willowlake River: ~53 km from PDA) Blackwater Lake, Greasy Lake and Highland Lake are outside of RSA (Blackwater Lake: ~45 km from PDA, Greasy Lake: ~61 km from PDA, Highland Lake: ~70 km from PDA)</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006: 3</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Fishing (cont'd)</i>					
<p><u>Existing Conditions</u> The Dehcho and Sahtu residents have been utilizing the Pehdzeh Ki Ndeh area for centuries. As will all of the original inhabitants of the Northwest Territories, renewable resources were depended on for survival, Wildlife, fish, trees, plants and other land and water resources played an integral role in the lives of these people and continue to do so today.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 14	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Activities such as hunting, fishing, fuel wood harvesting and berry picking are still important contributors to a subsistence existence for residents of the Pehdzeh Ki Ndeh area and augment the local economy in various ways.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 14	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> A variety of fish species occurring in the Pehdzeh Ki Ndeh are known to be important food species and include: loche (burbot), pickeral (walleye), jackfish (northern pike), longnose sucker, white sucker, Arctic grayling (bluefish), broud whitefish, chum salmon (dog-face salmon), coney (inconnu), lake cisco, lake trout, lake whitefish (crooked back), round whitefish, mountain whitefish, and trout-perch</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 37	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Fishing (cont'd)</i>					
<p><u>Existing Conditions</u> The majority of residents in Wrigley are involved in subsistence fishing. Harvesting occurs mainly through the use of gill nets, but some fish are taken by angling. Lake whitefish, lake trout, inconnu and northern pike are the main harvest species for Wrigley residents, but arctic grayling, burbot and longnose sucker and walleye are also harvested. Residents usually fish for subsistence in the Mackenzie River (south of Wrigley to its confluence with the Willowlake River). The Wrigley and Willowlake Rivers and the River Between Two Mountains system. Blackwater, Fish and Highland Lakes are known to be fished extensively in winter.</p>	<p>The Mackenzie River south of Wrigley is outside the RSA Willowlake River and the River Between Two Mountains are tributaries flowing into the Mackenzie south of Wrigley and are outside of the RSA (River Between Two Mountains: ~35 km from PDA, Willowlake River: ~53 km from PDA) Blackwater, Fish and Highland Lakes are outside the RSA (Fish Lake: ~25 km from PDA, Blackwater Lake: ~45 km from PDA, Highland Lake: ~61 km from PDA)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 38	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Wrigley residents eat the flesh of all fish species and the eggs/ or liver of some species. Lake whitefish is used for many purposes and the preferred source of dried fish. During summer and fall, Wrigley residents harvest inconnu and arctic grayling, which they either eat fresh, freeze (inconnu) or feed to dogs. Lesser quantities of walley and burbot are taken. There is little fishing activity reported to occur during springtime.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 38	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Fishing (cont'd)</i>					
<p><u>Existing Conditions</u> The Renewable Resource Assessment of the Pehdzeh Ki Ndeh area of Interest Report has identified several places in Pehdzeh Ki Ndeh as being traditional subsistence fishing sites. Blackwater Lake: lake whitefish, lake trout, arctic grayling, northern pike and burbot), Fish Lake: lake Whitefish, longnose suckers, arctic grayling, walleye, northern pike. Paeenfee Lake: lake whitefish, burbot, northern pike. Long Lake: lake whitefish, walleye, northern pike and burbot Greasy Lake: lake whitefish, lake trout and longnose sucker Keller Lake and surroundings: lake Whitefish, lake trout Highland Lake: lake Whitefish, lake trout and northern pike Hodson Creek: arctic grayling, longnose sucker and round whitefish Fish are also harvested for subsistence from Notseglee Lake and Nothaykay Lake.</p>	<p>Blackwater Lake, Fish Lake, Paeenfee Lake, Greasy Lake, Keller Lake and Highland Lake are outside the RSA (Paeenfee Lake: ~24 km from PDA, Fish Lake: ~25 km from PDA, Blackwater Lake: ~45 km from PDA, Greasy Lake: ~61 km from PDA, Highland Lake: ~70 km from PDA, Keller Lake: ~99 km from PDA Long Lake is outside the RSA (by Yellowknife) (~465 km from PDA) Hodgson Creek is a tributary to the Mackenzie River north of Wrigley and intersects the PDA Notseglee Lake and Nothaykay Lake are outside the RSA (Nothaykay Lake: ~46 km from PDA, Notseflee Lake: ~65 km from PDA)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 39	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Subsistence Fishing is reported to be an important resource use for residents of Wrigley. In 2004, 41% of the residents reported that 75% or more of meat and fish consumed is locally harvested.</p>	LSA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 39	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> According to the Sahtu Renewable Resource Board map data fish is harvested in in various spots along the Mackenzie River around Norman Wells and Tulita as well as northwest (NW) of Norman Wells along the Mackenzie River.</p>	Portions of the Mackenzie River intersect the LSA		Sahtu	5658 NWT Ltd. and GNWT, 2011:Fig 8-7	
<p><u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 a fish netting area is located in the Great Bear River about 9 km up from the confluence with the Mackenzie River.</p>	Within RSA		Sahtu	EBA, 2006: Fig1	

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<i>Cultural and Traditional Land Use – Fishing (cont'd)</i>					
<u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 a fishing area (grayling) is located in the Great Bear River right at the proposed Great Bear River bridge.	The PDA intersects the fishing area		Sahtu	EBA, 2006: Fig1	
<u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 a fish netting area is located on the east side of the Great Bear River right on the confluence with the Mackenzie River on the west side of Tulita.	The fish netting area is located within the RSA		Sahtu	EBA, 2006:7 and Fig1	
<u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 a fish netting area is located on the north shore of the Mackenzie River about 60 km west of Tulita	The fish netting area is located within the RSA		Sahtu	EBA, 2006: Fig1	
<u>Existing Conditions</u> The area around Willow Lake (called Brackett Lake on the official maps) is important for fishing, and the lake and wetlands nearby support large populations of animals. The oral tradition records many stories, which tell of the importance of this lake.	Willow Lake (Brackett Lake) is outside the RSA (~25 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000: 94	
<u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> the Mackenzie River continues to provide critical domestic fisheries.	Portions of the Mackenzie River intersect the LSA		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:104	
<u>Existing Conditions</u> According to the <i>Places We Take Care Of</i> Great Bear River is good for fishing.	Great Bear River is a tributary to the Mackenzie River and intersects the PDA		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:106	
<u>Existing Conditions</u> According to the <i>Places We Take Care Of</i> the Sahtu Dene and Métis have travelled for centuries and used the traditional resources distributed over the Sahtu region. Fish continue to be critical subsistence resources.			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:106	
<u>Existing Conditions</u> According to interviews with Sahtu harvesters they fly fish in Great Bear River	Great Bear River is a tributary to the Mackenzie River and intersects the PDA		Sahtu	Tulita Renewable Resource Council, 2019:12	
<u>Potential Effects</u> According to interview with Sahtu harvesters the PDA is currently intact. They request to not place steel poles in the river, it will damage river; put bridge off rocks and sands; any changes will decrease fish, fish can be restored, but not same amount			Sahtu	Tulita Renewable Resource Council, 2019:4	
<u>Existing Conditions</u> According to interview with Sahtu harvesters the Great Bear River is used by boats for fishing.			Sahtu	Tulita Renewable Resource Council, 2019:4	
<u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported that in Norman Wells 45.1% of Indigenous persons in the community went hunting and fishing; in Tulita 46.1% of Indigenous persons in the community went hunting and fishing; and in Wrigley 68.5% of Indigenous persons in the community went hunting and fishing.	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	

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<i>Cultural and Traditional Land Use – Fishing (cont'd)</i>					
<p><u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported on the following frequency of hunting or fishing by Indigenous persons in communities within the Project area³:</p> <p>In Norman Wells, 22.9% of Indigenous persons reported hunting or fishing frequently throughout the year; 19.8% reported hunting or fishing occasionally more than day trips; 30.2% reported hunting or fishing occasionally (only day trips); and 27.1% reported rarely hunting or fishing.</p> <p>In Tulita, 23.4% of Indigenous persons reported hunting or fishing frequently throughout the year; 27.5% reported hunting or fishing occasionally more than day trips; 29.3% reported hunting or fishing occasionally (only day trips); and 20.4% reported rarely hunting or fishing.</p> <p>In Wrigley, 55.6% of Indigenous persons reported hunting or fishing frequently throughout the year; 20.6% reported hunting or fishing occasionally more than day trips; 20.6% reported hunting or fishing occasionally (only day trips). The percentage of Indigenous persons rarely hunting or fishing was not recorded.</p>	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	
<p><u>Existing Conditions</u> The Sahtu (Great Bear Lake) watershed is known for spring fishing.</p>	A portion of the PDA overlaps with Sahtu (Great Bear Lake) watershed		Sahtu	Golder, 2015: 2-4	
<p><u>Existing Conditions</u> Fish from Lac St. Teresa, Kelly Lake, Turton Lake, and Turilj (Johnny Hoe River) are reported to be contaminated from natural-source mercury. Traditional fishing here has been abandoned by many members of the Déljine community.</p>	Lac St. Teresa, Kelly Lake, Turton Lake, and Turilj (Johnny Hoe River) are outside the RSA. (Lac St Teresa: ~130 km from PDA, Kelly Lake: ~24 km from PDA, Turton Lake: ~50 km from PDA, Johnny Hoe River: ~120 km from PDA)		Sahtu	Golder, 2015: 2-4	
<p><u>Existing Conditions</u> Families would travel from the mountains to the Tulít'a area to fish in fall until January.</p>	Tulita is within the PDA		Shuhta Got'jine (Shit'a Got'jine)	Golder, 2015: 2-5	
<p><u>Existing Conditions</u> The Willow Lake (Brackett Lake or K'áalq Tué) area is important for fishing.</p>	Willow Lake (Brackett Lake or K'áalq Tué) is outside the RSA (~25 km from the PDA)		K'áalq Got'jine (Willow Lake People)	Golder, 2015: 2-6	
<p><u>Existing Conditions</u> Three Day Lake is part of the 'chain of fish lakes'; an important fishing area.</p>	A portion of Three Day Lake overlaps with the RSA (~14 km from PDA)	Communities have requested that development avoid the 'chain of fish lakes'; from Three Day Lake to Stewart Lake.		Golder, 2015: 2-30	
<p><u>Existing Conditions</u> The Dəo (Mackenzie River) is an important fishery for local residents.</p>	Portions of Dəo (Mackenzie River) intersect the LSA			Golder, 2015: 2-31	

³ Totals may not add up to 100% due to rounding

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Cultural and Traditional Land Use – Fishing (cont'd)					
<p><i>Existing Conditions</i> Windy Island is part of traditional travel routes and a traditional fishery.</p>	Windy Island is within the RSA (~4 km from PDA)		Sahtu	Golder, 2015: 2-27	
<p><i>Existing Conditions</i> Paddling on Moose Lake is no longer possible as the lake has dried. Elders have linked decreasing water levels to reduced fish and wildlife habitat, and it affects land users' travel and fishing</p>	Unable to determine location of Moose Lake		Sahtu	Golder, 2015: 2-21	
<p><i>Existing Conditions</i> Waterbodies and watercourses harvested for fish include Dəo (Mackenzie River), Kweten?íá or Peten?íá (Bear Rock) area, Windy Island, Little Bear River, Fall Stone Lake, Yellow Lake, Mirror Lake, and the 'chain of fish lakes' (including Dehdéle ø Tué [Sucker Lake/Three Day Lake]).</p>	<p>Portions of Dəo (Mackenzie River) intersect the LSA The PDA intersects Petiniæah (Bear Rock) Conservation Zone Windy Island is within the RSA (~4 km from PDA) Little Bear River is a tributary to the Mackenzie River and is within the RSA (~9 km from PDA). Fall Stone Lake, Yellow Lake, and Mirror Lake are outside the RSA. (Fall Stone Lake: ~25 km from PDA. Yellow Lake: ~30 km from PDA. Mirror Lake: ~40 km from PDA) A portion of Dehdéle ø Tué (Sucker Lake/Three Day Lake) overlap with the RSA (~14 km from PDA)</p>		Sahtu	Golder, 2015: 2-32	
<p><i>Concern</i> Residents have expressed concern that development and increased activity in the Dəo (Mackenzie River) region could negatively impact the fishery.</p>	Portions of Dəo (Mackenzie River) intersect the LSA			Golder, 2015: 2-33	

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<i>Cultural and Traditional Land Use – Plant Gathering</i>					
<p><u>Existing Conditions</u> The Sahtu Land Use plan states that plants are harvested in the Norman Range Ecoregion.</p>	The LSA intersects a small portion of the Norman Range Ecoregion		Sahtu	SLUPB, 2013:153	Norman range ecoregion is very large and is intersected by the wildlife RSA.
<p><u>Existing Conditions</u> The Sahtu Land Use plan states that plants are harvested along the Deh Cho.</p>	Portions of the Mackenzie River intersect the LSA		Sahtu	SLUPB, 2013:171	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.
<p><u>Existing Conditions</u> Trees are utilized for many different reasons within the Pehdzeh Ki Ndeh, including as construction and building materials, for fuel and for other purposes. The harvest for fuel wood to heat individual homes is common and residents of Wrigley are granted free access to forested areas to harvest wood. The utilization of personally harvested fuel wood is acknowledge as having a high economic value for Wrigley residents because of the individual costs saved through not having to purchase fuel wood and not to heat with fuel.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 5	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Plants have been used for many different purposes within the Pehdzeh Ki Ndeh, such as for berry picking, medicinal, ritual and spiritual reasons, as wild plant food reasons, but is acknowledge that such harvesting takes place within the Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 5	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Plant Gathering (cont’d)</i>					
<p><u>Existing Conditions</u> Vegetation parts are known to be used in the creation of arts and crafts works, such as birchbark for basket making, wood for carving and as components for souvenir items, and lichens and berries for dyeing ingredients</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 6	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The Dehcho and Sahtu residents have been utilizing the Pehdzeh Ki Ndeh area for centuries. As will all of the original inhabitants of the Northwest Territories, renewable resources were depended on for survival. Trees and plants among other land and water resources played an integral role in the lives of these people and continue to do so today.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 14	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Activities such as fuel wood harvesting and berry picking are still important contributors to a subsistence existence for residents of the Pehdzeh Ki Ndeh area and augment the local economy in various ways.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 14	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Berry picking is a very common activity in Wrigley and practiced by nearly all of the residents of the community. The most common berry picking places are along the highway towards Fort Simpson and the existing gas pipeline corridor near Wrigley (both within the Pehdzeh Ki Ndeh). People may also take advantage of the trail systems that winds through Pehdzeh Ki Ndeh to access berry patches. Berries being picked include blueberries, low bush cranberries, cloudberrries, and rose hips.</p>	The PDA intersects the Pehdzeh Ki Ndeh area The highway from Wrigley towards Fort Simpson is outside the RSA (~1 km from PDA) Wrigley is within LSA		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 55	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Many plant species have long served medicinal, ritual and spiritual purposes for the Dehcho people. Different plant species serve different functions, such as the relief of coughs and colds through herbal teas. The Dehcho people collect varies plants throughout the Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 55	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

**Mackenzie Valley Highway Project
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Section 4: Traditional Land Use Baseline Table
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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Plant Gathering (cont'd)</i>					
<p><u>Existing Conditions</u> Both wild and domestic plant foods may be harvested in the Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 58	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Berry picking is one popular activity which helps to supplement food costs for Wrigley residents, although the food replacement values of berry picking are unknown. Many different species are expected to be harvested, but the exact species, specific locations of harvest and harvested quantities are unknown.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 61	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Medicinal plants may be considered to have an economic replacement value. It is difficult to quantify the values of medicinal plant use because methods of harvest, doses, frequencies of use and present market values of supplementary non-traditional medicines change over time.</p>			Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 61	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Ritual and spiritual plant uses are considered to have no economic replacement value. These species are respected and utilized for specific purposes, and it is assumed that no other plant species could serve the same purpose. It is also assumed that the plants gathered from Pehdzeh Ki Ndeh for such purposes are not sold. These resource uses are known to possess an inherent cultural value that connects the harvesters with their tradition and their land.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 62	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Pehdzeh Ki Ndeh is one source of renewable resource materials for artists residing in Wrigley. Materials harvested or collected include animal parts such as hide, fur, sinew and vegetation matter, such as lichen, bark and berries.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 63	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

**Mackenzie Valley Highway Project
Technical Data Report—Cultural and Traditional Land Use**

Section 4: Traditional Land Use Baseline Table
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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Plant Gathering (cont'd)</i>					
<p><u>Existing Conditions</u> Birchbark is used to create traditional lightweight, waterproof and rot-resistant birch bark baskets. There are not many sources of birchbark in the Pehdzeh Ki Ndeh area. Most likely it is harvested from other areas for use by Wrigley artists, but it is possible that it is also harvested from areas within Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 66	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Traditionally, different lichen, berries, flowers, plants and bark materials were valued for their abilities to dye art and craft materials, in particular porcupine quills. It is possible that some of these natural renewable resources are still harvested within Pehdzeh Ki Ndeh, but it is unknown which areas are most intensely used for such purposes.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 66	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Spruce roots and spruce gum are important in the creation of birch bark baskets. The roots are used to sew the pieces of bark together and the gum is used as a sealant in the basket's seams, aiding in its waterproofing. Spruce roots are best when gathered in June and are typically harvested from the Fort Liard and Trout Lake areas of the Deh Cho. It is probable that they are also harvested in areas of Pehdzeh Ki Ndeh, for there are extensive areas of needleleaf forest cover with black spruce stands throughout the study area</p>	The PDA intersects the Pehdzeh Ki Ndeh area Fort Liard and Trout Lake are outside the RSA (Trout Lake: ~296 km from PDA, Fort Liard: ~333 km from PDA)		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 67	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> The wood of various trees and shrubs is often used in arts and crafts, or during the traditional tanning process for hides. The wood may be used solely for or incorporated into carvings, souvenirs (such as miniature snowshoes, bows and arrows, miniature canoes), birch bark baskets (red willow strips are commonly used for reinforcing the basket and its lid), beadwork and canes. The different types of wood from trees and shrubs may be harvested in various areas of the Pehdzeh Ki Ndeh, but the exact distribution or abundance of these renewable resource uses is unknown.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006: 67	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> A blueberry picking area is located on the west side of the proposed Great Bear River Bridge.</p>	Within PDA		Sahtu	EBA, 2006: 6	
<p><u>Existing Conditions</u> According to the TLU study conducted by the EBA in 2006 berry picking grounds are located on the north side of the Mackenzie River just east of Tulita.</p>	Within RSA		Sahtu	EBA, 2006: Fig1	
<p><u>Existing Conditions</u> Spruce and birch bark canoes were used for travel from the mountains to the Tulit'a area.</p>	Tulita is within the PDA		Shuhta Got'İne (Shit'a Got'İne)	Golder, 2015: 2-5	

**Mackenzie Valley Highway Project
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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Cultural and Traditional Land Use – Plant Gathering (cont'd)					
<p><u>Existing conditions</u> The harvesting of vegetation is an important traditional activity in this area of the Mackenzie Valley for subsistence, medicinal purposes and for art materials. During community interviews, two locations of rare plants were identified along the MVH extension route, south of Blackwater River and south of Whitesand Creek. However, it is also likely that other locations throughout the valley contain sources of traditionally harvestable vegetation. Not only are the berries used for subsistence, but some berries, along with other vegetation types such as birchbark, wood and lichens are used for art materials.</p>	Blackwater River and Whitesand Creek are tributaries to the Mackenzie River and intersect the PDA		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012:78	
<p><u>Potential Effects</u> Given the importance of traditional practices for PKFN in the areas surrounding the Project, impacts may also occur to the cultural value of these areas, resulting in a diminished historical and social identity for PKFN community, who maintain right and title within their asserted traditional territory. Areas most likely to experience this potential impact include those that contain culturally significant sites, such as burial, spiritual and ceremonial areas, the harvest of medicinal plants, as well as areas of concentrations of archaeological heritage sites. Portions of the MVH extension located near the Blackwater and Ochre Rivers, and Whitesand Creek are especially susceptible to this impact, as they are focal points for current and historical traditional uses of the landscape.</p>	Blackwater River, Ochre River and Whitesand Creek are all tributaries to the Mackenzie River and intersect the PDA		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012:225	
<p><u>Existing Conditions</u> According to interviews with Sahtu harvesters, berries are picked along the Great Bear River.</p>	The Great Bear River is a tributary to the Mackenzie River and intersects the PDA		Sahtu	Tulita Renewable Resource Council, 2019: 19	
<p><u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported that in Norman Wells 31.9% of Indigenous persons in the community gathered berries; in Tulita 27.9% of Indigenous persons in the community gathered berries; and in Wrigley 50% of Indigenous persons in the community gathered berries.</p>	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	
Cultural and Traditional Land Use – Trails and Travelways					
<p><u>Existing Conditions</u> Traditional trails are present in Petiniæah commonly known as Bear Rock.</p>	The PDA intersects Bear Rock Conservation Zone		Sahtu	SLUPB, 2013:124	
<p><u>Existing Conditions</u> “The Deh Cho is identified as a Special Management Zone to protect the water quality, riparian habitat, cultural/heritage sites, areas that are important for wildlife and wildlife harvesting. SMZ designation will also allow for continued use of the river as an important regional and territorial transportation corridor (barge traffic, landing sites, winter road). Traditional trails, recreation, community gathering places, log timber collection areas, cabins.”</p>	The PDA is within the Deh Cho Special Management Zone		Sahtu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.

**Mackenzie Valley Highway Project
Technical Data Report—Cultural and Traditional Land Use**

Section 4: Traditional Land Use Baseline Table
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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Trails and Travelways (cont'd)</i>					
<p><u>Existing Conditions</u> Several camps and traditional trails are scattered throughout the Pehdzeh Ki Ndeh and it is likely that they facilitate hunting in the area. Many mineral licks are reported immediately to the east of the Mackenzie Highway. These ungulate attractants existing next to a major transportation corridor is likely a hunter draw.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh</p>		<p>Pehdzeh Ki / Dehcho First Nations</p>	<p>IMG-Golder, 2006:27</p>	<p>The Pehdzeh Ki Ndeh is an estimated 17,053 km² tract of land centered around the community of Wrigley.</p>
<p><u>Existing Conditions</u> According to the Sahtu Land Use Planning Board map data, there are a lot of trails from and to Tulita and Norman Wells. Most trails are along waterways such as Great Bear River, Keele River and the Mackenzie River. Other trails are connecting towns with lakes such as Brackett Lake, Kelly Lake and Lennie Lake. Trails are used year-round to provide access to a vast harvesting region. The trails link thousands of place names, each with a story, to the place.</p>	<p>The PDA intersects many trails The PDA intersects Great Bear River Portions of the Mackenzie River intersect the PDA Keele River is within the RSA (~3 km from PDA) Brackett Lake, Kelly Lake and Lennie Lake are outside the RSA (Brackett Lake: ~26 km from PDA, Kelly Lake: ~24 km from PDA, Lennie Lake: ~42 km from PDA)</p>		<p>Sahtu</p>	<p>5658 NWT Ltd. and GNWT, 2011: Fig 8-3 and p8-35</p>	
<p><u>Existing Conditions</u> Great Bear River has been a well-used travel route between Great Bear Lake and the Mackenzie River for a considerable period of time.</p>	<p>The PDA intersects the trail along Great Bear River to Great Bear Lake Portions of the Mackenzie River intersect the PDA</p>		<p>Sahtu</p>	<p>5658 NWT Ltd. and GNWT, 2011: 8-10</p>	
<p><u>Existing Conditions</u> The chain of lakes comprising Brackett (called Willow by Dene) Lake, Kelly Lake and Mahony Lake were of key importance in the Sahtu Dene people's seasonal round.</p>	<p>Brackett Lake, Kelly Lake and Mahony Lake are outside of the RSA (Brackett Lake: ~26 km from PDA, Kelly Lake: ~24 km from PDA, Mahony Lake: ~53 km from PDA)</p>		<p>Sahtu</p>	<p>5658 NWT Ltd. and GNWT, 2011: 8-10</p>	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Trails and Travelways (cont'd)</i>					
<p><u>Existing Conditions</u> A group of people who regularly camped at Willow Lake were known as “the Willow Lakers”, and they typically travelled to Willow Lake from Tulita along the Great Bear River and the Willow (now called Brackett) River; in past times, they also ranged north to Mahony Lake or sometimes to Great Bear Lake. One of the sites recorded west of the Great Bear River is a trail which was probably one of the routes travelled by the Willow Lakers</p>	<p>The Great Bear River is a tributary to the Mackenzie River and intersects the PDA, therefore the trail from Tulita to Willow Lake along the Great Bear River also intersects the PDA Mahony Lake and Great Bear Lake are outside the RSA (Mahony Lake: ~53 km from PDA, Great Bear Lake: ~81 km from PDA)</p>				
<p><u>Potential Project Effects</u> The presence of the Highway is expected to provide easier access to harvesting areas, heritage value areas, and traditional trails located near the alignment. This may be considered either a positive or a negative effect, depending on the extent of the impact from increased access. The Highway will allow local residents and visitors to access the harvesting areas or heritage value areas year-round. Increased harvesting may be an indirect effect of the Highway.</p>			Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-10	
<p><u>Potential Project Effects</u> An additional benefit of the Highway will be that it will provide a single route of effects; that is, during summer and winter months, people will be encouraged, and will likely find it more convenient, to use this main route for travel rather than traveling across the land on new trails. It will serve to localize the effects of travel rather than creating a “spider-web” of effects across the area, such as may currently occur.</p>			Sahtu	5658 NWT Ltd. and GNWT, 2011: 12-12	
<p><u>Existing Conditions</u> The trails are primarily concentrated along the Mackenzie, Blackwater and Ochre Rivers and lead to various points of interest such as Wrigley, Blackwater Lake, Fish Lake where many cultural and spiritual sites are located. Members from PKFN also use those trails when practicing natural resources harvesting activities such as fishing, hunting, trapping, snaring and gathering of medicinal plants and other types of vegetation.</p>	<p>The trails along Blackwater and Ochre River are intersected by the PDA The trails along the Mackenzie River are likely within the LSA Wrigley is located within the LSA Blackwater Lake and Fish Lake are outside the RSA (Fish Lake: ~25 km from PDA, Blackwater Lake: ~45 km from PDA)</p>		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 79	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Trails and Travelways (cont'd)</i>					
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh Area contains the Old Wrigley town site, as well as burial sites and traditional travel routes near its western boundaries.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area Old Wrigley Town Site is outside the RSA (~16 km from PDA)</p>		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 97	
<p><u>Existing Conditions</u> There are several cabins and traplines found in the Pehdzeh Ki Ndeh area around the lakes that connect to Wrigley by traditional trails, several of which are found along the winter road alignment.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh area Wrigley is within LSA</p>		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 97	
<p><u>Existing Conditions</u> The Mountain Dene trail starts on the Mackenzie River at Tulita, crosses the Mackenzie Lowlands to Stewart and Tate Lakes, crossing the Keele drainage and on to Drum Lake in the Mackenzie Mountains. From here it joins a network of trails reaching throughout the mountains, and into the Yukon. Used extensively as a walking trail in the fall and by dog team in the winter, the trail symbolizes the Mountain Dene's use of this rugged environment.</p>	<p>The trail begins across the Mackenzie River from Tulita and is located in the RSA. Stewart and Tate Lakes are outside the RSA (Tate Lake: ~23 km from PDA, Stewart Lake: ~24 km from PDA) The Keele drainage intersects the RSA (~3 km from PDA) Drum Lake is outside the RSA (~91 km from PDA)</p>		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:100	
<p><u>Existing Conditions</u> In <i>The Places We Take Care Of</i>, the authors state that the Mackenzie River has been an important travel route for centuries, and has been the subject of exploration, study and analysis. As a traditional use area, the Mackenzie continues to provide travel access to many other locations.</p>	<p>Portions of the Mackenzie River intersect the LSA</p>		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000: 104	
<p><u>Existing Conditions</u> According to the <i>Places We Take Care Of</i> there are many stories about Great Bear River. In ancient times it was the route that Yamoria took while chasing the giant beavers from Great Bear Lake, and many places along the river are associated with this important culture-hero. More recently it was used to ferry supplies between the trading posts at Délíne and Tulita. Most of the stories tell of travel and good times. However, some tell of tragic events.</p>	<p>Tulita is intersected by the PDA The Great Bear River is a tributary to the Mackenzie River and intersects the PDA Deline is outside the RSA (~85 km from PDA)</p>		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000: 106	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Trails and Travelways (cont'd)</i>					
<p><i>Existing Conditions</i> According to the <i>Places We Take Care Of</i> Trails, used year-round, provide access to a vast harvesting region, and like beads on a string, the trails link thousands of place names, each with a story, sometimes many, bound to the place. Names and narratives convey knowledge, and in this way Sahtu Dene and Métis culture is tied directly to the landscape. Travel across the Sahtu landscape can be easily and clearly described by reference to these names and indeed travel narratives often appear as no more than long lists of place names. The network of interconnecting trails provides access to a Sahtu land use area encompassing some 300,000 km².</p>			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000: 18	
<p><i>Existing Conditions</i> According to interviews with Sahtu harvesters the Great Bear River is used by boats for transportation.</p>	Great Bear River is a tributary to the Mackenzie River and intersects the PDA		Sahtu	Tulita Renewable Resource Council, 2019:10	
<p><i>Existing Conditions</i> The Dehdéle q Tué (Sucker Lake/Three Day Lake) area is the location of traditional trail to the mountains.</p>	A portion of Dehdéle q Tué (Sucker Lake/Three Day Lake) overlaps with the RSA (~14 km from PDA)		Sahtu Dene	Golder, 2015: 2-25	
<p><i>Existing Conditions</i> Keele River is part of a traditional travel route from Tulit'a to the Mackenzie Mountains.</p>	Keele River is a tributary to the Mackenzie River and portions are within the PDA		Shúhta Got'ine	Golder, 2015: 2-24, 2-31	
<p><i>Existing Conditions</i> Old trails in the Big Smith Creek area leads to lakes and trap lines.</p>	Big Smith Creek is within the PDA		Sahtu	Golder, 2015: 2-26	
<p><i>Existing Conditions</i> The Dəo (Mackenzie River) is an important travel route for local residents.</p>	Portions of Dəo (Mackenzie River) intersect the LSA		Sahtu Dene and Métis	Golder, 2015: 2-31	
<p><i>Existing Conditions</i> Paddling on Moose Lake is no longer possible as the lake has dried. Elders have linked decreasing water levels to reduced fish and wildlife habitat, and it affects land users' travel and fishing</p>	Unable to determine location of Moose Lake		Sahtu	Golder, 2015: 2-21	
<p><i>Existing Conditions</i> According to consulted Elders, muskeg and lakes south of Tulita freeze over during October and November; access to the lower bench portion of Little Bear River may have soft spots from areas of muskeg.</p>	The area south of Tulita falls within the RSA (~3 km from PDA). Little Bear River is a tributary to the Mackenzie River and is within the RSA (~9 km from PDA).			Golder, 2015:2-16	
<p><i>Existing Conditions</i> Windy Island is part of traditional travel routes and a traditional fishery.</p>	Windy Island is within the RSA (~4 km from PDA)		Sahtu	Golder, 2015: 2-27	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Habitation</i>					
<p><u>Existing Conditions</u> The Sahtu Land Use Plan states that there are cultural and recreation sites, cabins, tent frames, camps and outpost sites in the Norman Range Ecoregion.</p>	The LSA intersects a small portion of the Norman Range Ecoregion		Sahtu	SLUPB, 2013;154	Norman range ecoregion is very large and is intersected by the wildlife RSA.
<p><u>Existing Conditions</u> Fish camps are located along the Mackenzie River.</p>	Portions of the Mackenzie River intersect the LSA		Sahtu	SLUPB, 2013:171	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the Plan.
<p><u>Existing Conditions</u> Several camps and traditional trails are scattered throughout the Pehdzeh Li Ndeh and it is likely that they facilitate hunting in the area.</p>	The PDA intersects the Pehdzeh Li Ndeh		Sahtu	SLUPB, 2013:	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Historical cabins are located along the Mackenzie River both north and south of Wrigley. These are accessible by land or water and are often used seasonally by local trappers. There are also cabin clusters on Fish Lake, Tah the tié Lake (at the headwater of the Blackwater River) and single cabins scattered elsewhere in Pehdzeh Ki Ndeh.</p>	<p>Portions of the Mackenzie River intersect the LSA Fish Lake is outside the RSA (~25 km from PDA) Tah the tié Lake is outside the RSA (~47 km from PDA)</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:27	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Habitation (cont'd)</i>					
<p><u>Existing Conditions</u> Several lookout towers exist in Pehdzeh Ki Ndeh. One is located in the area's northwest corner, one west of Fish Lake and one on the east bank of the Mackenzie River north of Wrigley.</p>	<p>The PDA intersects the Pehdzeh Li Ndeh Fish Lake is outside of RSA (~25 km from PDA) Portions of the Mackenzie River intersect the LSA Wrigley is within LSA</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:81	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> According to the TLU study conducted by the EBA in 2006 cabins are located on the south side of the Mackenzie River across from Tulita</p>	<p>Within RSA</p>		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:81	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> According to the Traditional Knowledge Study conducted by the EBA in 2006 a previous social gathering area is located along the proposed highway on the east side of the Great Bear River close to the proposed Great Bear River Bridge.</p>	<p>The previous social gathering area is bordering on the PDA</p>		Sahtu	5658 NWT Ltd. and GNWT, 2011:Fig 8-8	
<p><u>Existing Conditions</u> Some trapline cabins have been identified along the proposed MVH Extension Project by members of the Wrigley community; in the areas of Whitesand and Dam Creeks, and Blackwater River.</p>	<p>Whitesand, Dam Creeks and the Blackwater River intersect the PDA</p>		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 77	
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh Area contains the Old Wrigley town site</p>			Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 97	
<p><u>Existing conditions</u> There are several cabins and traplines found in the Pehdzeh Ki Ndeh area around the lakes that connect to Wrigley by traditional trails, several of which are found along the winter road alignment.</p>	<p>Within PDA Wrigley is within LSA</p>		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 97	

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Section 4: Traditional Land Use Baseline Table
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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Habitation (cont'd)</i>					
<p><u>Potential Effects</u> Cabin sites, which are the focal point for trapping and hunting activities, may also be affected at Dam and Whitesand Creeks, as well as areas south of Blackwater River. Impacts to cabin sites may result in their disuse and a reduced ability for cabin owners to pursue the collection of traditional resources in the area.</p>	Whitesand, Dam Creeks and the Blackwater River intersect the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 224	
<p><u>Existing Conditions</u> According to map data obtained through consultation with PKFN hunting cabins are located around the existing winter road between KM 730 and 731.</p>	The PDA intersects the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1 – map Sheet 8-P	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN hunting cabins are located to the west and east of the existing winter road around KM 762 and 763.</p>	The PDA intersects the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1 – map Sheet 14-P	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN hunting cabins are located to the west and east of the existing winter road around KM 773 and 774.</p>	The PDA intersects the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1 – map Sheet 16-P	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN hunting cabins are located just south of the existing winter road at KM 784.</p>	The PDA borders on the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 1 – Map Sheet 18-P	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN an area with hunting cabins is intersected by the existing winter road between KM 730 and just west of 731.</p>	The PDA intersects the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4 – Map Sheet 4	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN an area with a hunting cabin is intersected by the existing winter road between KM 773 and just west of 775.</p>	The PDA intersects the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4 – Map Sheet 8/9	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN an area with a hunting cabin is located to the east of KM 784 of the existing winter road.</p>	The PDA borders on the cabin area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4 – Map Sheet 9	
<p><u>Existing Conditions</u> Willow Lake (called Brackett Lake on the official maps) is the site of an important seasonal camp, and is considered the home of the K'áálô Got'ine, or 'Willow Lake People'. A small community of several cabins is located on the lake. The oral tradition records many stories, which tell of the importance of this lake.</p>	Willow Lake (Brackett Lake) is outside the RSA (~26 km from PDA)		Sahtu	Sahtu Heritage Places and sites Joint Working Group, 2000:94	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
<i>Cultural and Traditional Land Use – Habitation (cont'd)</i>					
<p><u>Existing Conditions</u> Historical cabins are located along the Mackenzie River both north and south of Wrigley. These are accessible by land or water and are often used seasonally by local trappers. There are also cabin clusters on Fish Lake, Tah the tié Lake (at the headwater of the Blackwater River) and single cabins scattered elsewhere in Pehdzeh Ki Ndeh.</p>	<p>Portions of the Mackenzie River intersect the LSA Fish Lake is outside the RSA (~25 km from PDA) Tah the tié Lake is outside the RSA (~47 km from PDA) The PDA intersects the Pehdzeh Ki Ndeh</p>		Pehdzeh Ki/Dehcho First Nations	IMG-Golder, 2006:81	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Tullt'a is a traditional camp site for caribou and, less commonly, muskox hunting.</p>	Tulita is within the PDA		Sahtu	Golder, 2015: 2-7	
<p><u>Existing Conditions</u> Traditionally the area around tributaries to Mackenzie River between Norman Wells and Tulita (Prohibition Creek, Vermilion Creek, Nota Creek, Jungle Ridge Creek) has been used for camping.</p>	Prohibition Creek, Vermilion Creek, Nota Creek and Jungle Ridge Creek are tributaries to the Mackenzie River and are within the PDA.			Golder, 2015: 2-26	
<p><u>Existing Conditions</u> Tent frames and cabins have been found on the Mackenzie River, Gaudet Creek, Kweren?iá (Bear Rock).</p>	The PDA intersects Bear Rock Conservation Zone			Golder, 2015: 2-22	
<p><u>Existing Conditions</u> Windy Island is part of traditional travel routes and a traditional fishery.</p>	Windy Island is within the RSA (~4 km from PDA)		Sahtu	Golder, 2015: 2-27	
<p><u>Existing Conditions</u> Land clearing for seismic operations is associated with fast-melting permafrost, leading to problems with vegetation re-establishment and erosion and slumping on the banks of the Sahtu waterbodies. Islands in K'áalq Túé (Willow Lake/ Brackett Lake) have experienced slumping, cabins in K'áalq Túé (Willow Lake/ Brackett Lake) have had to relocate due to eroding banks, and erosion is suspected to be affecting fish passage between K'áalq Túé (Willow Lake/ Brackett Lake) and Kelly Lake. Permafrost melt from development has also been linked to erosion in Sahtu Deh (Great Bear River) and other waterbodies in the area.</p>	K'áalq Túé (Willow Lake/ Brackett Lake) is outside the RSA (~26 km from the PDA) Sahtu Deh (Great Bear River) is a tributary to the Mackenzie River and intersects the PDA	Limit project footprints and avoid uncommon landforms and steep slopes to the extent practical. Include adequate protection of permafrost under disturbed areas in closure and reclamation plans. Engage local landowners in permafrost monitoring to best assess the effects.	Elders in the K'ásho Got'ine and Tullt'a regions	Golder, 2015: 2-15	

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<i>Cultural and Traditional Land Use – Cultural, Spiritual and Ceremonial Practices or Areas</i>					
<p><u>Existing Conditions</u> “In the last thousand years or so our ancestors have talked about taking care of our wildlife. In 1951 I was a couple of years old and all the people around Fort Good Hope and Colville Lake gathered and government came in and said they wanted to make a boundary around that little piece of land. The people disagreed and said, “This is our land and we are going to make a decision on how our land shall be governed and how big it shall be for ourselves. It’s up to us to decide.” All the elders spoke at the time, and they said, “If it’s just a little small piece of land, what good is that for us? We want to make a boundary where it covers all of the areas, all of our burial grounds, all of the areas where our people are resting out on the land.” Everybody that lived in Fort Good Hope and Colville Lake, even the people from the mountains, the river people around Little Chicago, everyone that lived in the surrounding area of Fort Good Hope and Colville Lake gathered and they made that boundary. All out towards the barren lands, all the areas that our people worked in, or harvested, or trapped in that area, that is what they all marked out to be our new trapping area. For as large as our boundary was drawn, this was as far as we had people resting on the land. That is how they decided on this boundary. Before that there was no control on the land. People went out trapping with poisons and that’s why we wanted to make this Group Trapping Area, so that we have control of what goes on our land in regard to trapping and development and everything.”</p>			K’asho Got’ine Elder J. B. Gully of Colville Lake.	SLUP, 2013:16 (SLUPB Public Hearing, May 4, 2011, Norman Wells.)	
<p><u>Existing Conditions</u> The Group Trapping Area was established to protect the residents’ harvesting rights from the new outsiders coming on to their lands, but to the residents, it was much more than that – it gave them exclusive control over how their land was used and the ability to protect it. Today, there are many more uses than trapping. The residents of Fort Good Hope and Colville Lake maintain that anyone wanting to conduct any land use within the Group Trapping Area must first come talk to them as the stewards of this area.</p>	The Group Trapping Area is located north of Norman Wells and is outside the RSA		Sahtu	SLUPB, 2013:16	
<p><u>Existing Conditions</u> The Deh Cho (Big River) or Mackenzie River is a symbolic focal point of Sahtu Dene and Métis culture and history. It is a significant heritage harvest/subsistence use location for aboriginal people in and outside of the Sahtu region. The Deh Cho is associated with legends including the stories of Yamoria, a well-known culture hero.</p>	Portions of the Mackenzie River intersect the LSA		Sahtu	SLUPB, 2013:170	
<p><u>Existing Conditions</u> “In the early 20s, 30s and 40s, outsiders were coming in looking for gold and diamonds and disrupting our way of life. The Elders negotiated with the Crown in England and with the help of a Bishop from France and it resulted in the Group Trapping Area. Now we have that land that the K’asho Got’ine call their home base, their traditional land. From generation to generation we try to make sure that the land and traditional values of our people are protected.”</p>	LSA		SLUPB Public Hearing, May 4, 2011, Norman Wells.	SLUPB, 2013:15, 16	
<p><u>Existing Conditions</u> Sahtu vision: “The region has cultural integrity. People use the land as they always have for hunting, trapping, fishing, gathering, spiritual renewal and healing. Elders are respected and play a central role in passing down the language, traditional skills, knowledge, stories and importance of the land to community leaders and the youth, strengthening cultural and spiritual connections to the land. Elders work with teachers to teach both traditional and modern skills in schools, which equip the youth to thrive and adapt in a changing environment.”</p>		N/A	Tulita/Sahtu	SLUPB, 2013:12	
<p><u>Existing Conditions</u> The Sahtu Land Use Plan states that Petiniæah is one of the most important sacred sites in Denendeh. It is of cultural value to Dene groups within and outside of the Sahtu. It is the location of a well-known story about Yamoria, a legendary hero who made the land safe for the Dene by chasing away and killing giant beavers that were causing them harm. The Sahtu Land Use Plan also states that Petiniæah commonly known as Bear Rock, is a large karst formation across from the community of Tulita. The mountain is one of the most sacred sites for the Dene living in and outside of the Sahtu area.</p>	The PDA intersects Bear Rock Conservation Zone	N/A	Sahtu	SLUPB, 2013:124	
<p><u>Existing Conditions</u> The Sahtu Land Use Plan states that the Norman Range encompasses a number of frequently used traditional, cultural and subsistence use sites.</p>	The LSA intersects part of the Norman Range Ecoregion		Sahtu	SLUPB, 2013:153	Norman range ecoregion is very large and is intersected by the wildlife RSA.

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<i>Cultural and Traditional Land Use – Cultural, Spiritual and Ceremonial Practices or Areas (cont'd)</i>					
<p><u>Existing Conditions</u> The Sattu Land Use Plan identifies The Deh Cho as a Special Management Zone to protect cultural/heritage sites among other things.</p>	The PDA is within the Deh Cho Special Management Area		Sattu	SLUPB, 2013:170	The Deh Cho Special Management Zone consists of a 5 km buffer applied to the length of the Mackenzie River as it runs through the SSA. Lands within the community boundaries of Tulita, Norman Wells and Fort Good Hope are exempt from the SLUP.
<p><u>Existing Conditions</u> Renewable resources today play an important role as raw materials for modern arts and crafts pieces and many of these materials may be found within Pehdzeh Ki Ndeh.</p>	The PDA intersects the Pehdzeh Ki Ndeh area		Pehdzeh Ki / Dehcho First Nations	IMG-Golder, 2006:63	The Pehdzeh Ki Ndeh is an estimated 17,053 km ² tract of land centered around the community of Wrigley.
<p><u>Existing Conditions</u> Sites that were mentioned as very important to PKFN include Blackwater River, a special traditional area that is home to a sacred old grave, and Willowlake River, where there is a burial ground.</p>	The Blackwater River intersects the PDA Prois located south of Wrigley and outside of RSA (~53 km from PDA)		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 71	
<p><u>Existing Conditions</u> A spiritual site associated with moose hunting in the Mackenzie Valley area is located just south of Blackwater Creek. The site is important because it is home to a rock to which spiritual offerings are made by PKFN members while hunting</p>	Within LSA		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 77	
<p><u>Existing Conditions</u> The Pehdzeh Ki Ndeh Conservation Zone is a part of the Dehcho Land Use Plan and is intended to protect the local PKFN's subsistence harvesting needs. The area also represents an important cultural area for the community of Wrigley.</p>	The PDA intersects the Pehdzeh Ki Ndeh Area		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 97	
<p><u>Existing Conditions</u> The Draft Dehcho Land Use Plan explains that Pehdzeh Ki Ndeh Area is home to, "significant ecological and cultural values." The Pehdzeh Ki Ndeh Area contains the Old Wrigley town site, as well as burial sites and traditional travel routes near its western boundaries. Within the Draft Dehcho Land Use Plan, the Pehdzeh Ki First Nation has identified numerous sacred sites in the proposed Pehdzeh Ki Ndeh Area</p>	The PDA intersects the Pehdzeh Ki Ndeh Area		Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 97	

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<i>Cultural and Traditional Land Use – Cultural, Spiritual and Ceremonial Practices or Areas (cont'd)</i>					
<p><u>Potential Effects</u> Given the importance of traditional practices for PKFN in the areas surrounding the Project, impacts may also occur to the cultural value of these areas, resulting in a diminished historical and social identity for PKFN community, who maintain right and title within their asserted traditional territory. Areas most likely to experience this potential impact include those that contain culturally significant sites, such as burial, spiritual and ceremonial areas, the harvest of medicinal plants, as well as areas of concentrations of archaeological heritage sites. Portions of the MVH extension located near the Blackwater and Ochre Rivers, and Whitesand Creek are especially susceptible to this impact, as they are focal points for current and historical traditional uses of the landscape.</p>	Blackwater and Ochre River intersect the PDA Whitesand Creek intersects the PDA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: 225	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a burial area is located on both sides of the existing winter road north of the Blackwater River, east of the Mackenzie River between KM 783 and 785.</p>	The PDA intersects the burial area The existing winter road and proposed alignment both go through the burial area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App1, Map Sheet 18-P	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN spiritual and cultural sites are located to the east of the proposed highway at KM 782, along the Blackwater River to the east of the pipeline.</p>	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App1, Map Sheet 18-P	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a burial area is located west of the Blackwater River to KM 785 of the existing winter road.</p>	The PDA intersects burial area		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 9	
<p><u>Existing Conditions</u> According to the map data obtained through public consultation with PKFN a spiritual/cultural site is located on the west shore of the Blackwater River less than 1 km north of the existing winter road. This site is a spiritual cultural rock where offerings are made when moose hunting.</p>	Within LSA		Pehdzeh Ki/Dehcho First Nations	Dessau, 2012: App 4, Map Sheet 9	
<p><u>Existing Conditions</u> Red Dog Mountain, a large mountain located on the Keele River, is considered a sacred site by the Mountain Dene. Traditionally, Dene people did not canoe past the mountain, but portaged. Traditional story suggests that the Red Dog is a whirlpool and offerings need to be brought for safe passage.</p>	Red Dog Mountain is located east of the Mackenzie River along the Keele River and is outside the RSA (~54 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:38	
<p><u>Existing Conditions</u> The story of Bear Rock is well known to all of the Dene groups occupying the Mackenzie region, and it has served as a symbol of cultural and political unity of the Dene Nation for many years. One of the most important sacred sites in Denendeh, Bear Rock is known for its association with the culture-hero, Yamoria. Located across from Tulita, at the confluence of the Mackenzie and Great Bear Rivers, Bear Rock is a prominent landmark visible for many kilometres in all directions.</p>	The PDA intersects Bear Rock Conservation Zone				

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<i>Cultural and Traditional Land Use – Cultural, Spiritual and Ceremonial Practices or Areas (cont'd)</i>					
<p><u>Existing Conditions</u> In December of 1835 three employees of the Hudson's Bay Company Post at Fort Norman were sent to collect a cache of fish at Mahony Lake. Encamped near the lake was a Dene family who, according to oral tradition, were employed to provide meat and fish for the HBC post. Partly as a result of earlier problems between one of these men and a young married Dene woman, a terrible fight ensued, and the three Hudson's Bay employees murdered eleven men, women, and children. One of the men was sent to London, England for trial, and was later transported to Canada. Another was tried for murder in Lower Canada (largely as a result of testimony given by one of his accomplices) and was sentenced to hang, which was later commuted to transportation to Australia. While awaiting a transportation, he was jailed in a prison hulk in England for several years, where he died (Hamar Foster, 1999, pers. comm.). The last man was imprisoned for a short period while awaiting trial but was eventually set free after giving testimony against his accomplice.</p> <p>The story is still recounted in the oral tradition of Tulita, and an excellent description of the event and trial proceedings can be found in Foster (1989). Foster (1989) remarks that the case is important to Canadian social and judicial history because "it is the only offence ever tried by a Canadian court during the HBC's licensed monopoly over the Indian Territories, [and] stands as a little-known example of how imperial law was enforced in the fur trade.</p>	Mahony Lake is outside of RSA (~53 km from PDA)		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:102	
<p><u>Existing Conditions</u> In <i>The Places We Take Care Of</i>, the authors state that the Mackenzie River is associated with numerous legends, including stories of Yamoria. Called Deh Cho or 'Big River', the river is a symbolic focal point of Sahtu Dene and Métis culture and history.</p>	Portions of the Mackenzie River intersect the LSA		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:104	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> one of the most important themes in understanding Sahtu Dene and Métis history is the relationship between culture and landscape. Virtually all of Sahtu Dene and Métis history is written on the land. As such, the places and sites, which commemorate this relationship, are an integral part of Sahtu Dene and Métis identity.</p>			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:16	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> from the perspective of Sahtu Dene cosmology, the landscape is a living thing, inhabited by entities, or 'powers', both benevolent and malevolent. While travelling across the landscape one must constantly mitigate the impact of personal actions by appeasing these entities with votive offerings, and by observing strict rules of behaviour. At many special places offerings are left to respect the entities that inhabit the land, and it is said that these places, and the entities inhabiting them, are being 'paid'. These offerings may be anything of value, such as matches, tobacco, ammunition, or a few coins. Sometimes more elaborate offerings are left.</p>			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:20	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> burials are always considered sacred places and hence are accorded great respect. Since the coming of Christianity, graves have been surrounded by fences. When burials are encountered while travelling, it is customary to repair grave fences, clear vegetation from the surface of the grave, and to leave offerings of tobacco or other gifts for elders. Sometimes a special ritual, the feeding-the-fire ceremony, is performed near the graves of prominent individuals. Food is ceremonially given to a fire in honour of the dead, and in return the celebrants ask their ancestors for good weather, safe travelling conditions, and success in hunting.</p>			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:20	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> at a few places, where powerful entities are resident, culture-heroes are associated with landscape features, or important events have taken place, special conditions exist providing the locality with power and significance. These places are often prominent landmarks, and consequently become powerful memory aids for recalling the significance of the location. Often special rules are required while travelling in these areas.</p>			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:20	
<p><u>Existing Conditions</u> According to <i>The Places We Take Care Of</i> as part of a knowledge system, traditional place names serve as memory 'hooks' on which to hang the cultural fabric of a narrative tradition. In this way, physical geography ordered by named places is transformed into a social landscape where culture and topography are symbolically fused.</p>			Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:23	

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<i>Cultural and Traditional Land Use – Cultural, Spiritual and Ceremonial Practices or Areas (cont'd)</i>					
<p><u>Existing Conditions</u> According to the TLU study conducted by the EBA in 2006 Bear Rock is a culturally and spiritually important area and is not to be disturbed. Other work occurring in the area sees contractors traveling all the way to Little Bear River area to haul gravel. Although there is gravel in the Bear Rock Area, it is important that it remain undisturbed.</p>	<p>Bear Rock Conservation Zone intersects the LSA Little Bear River is within the RSA (~9 km from PDA)</p>		Sahtu	EBA, 2006:7	
<p><u>Existing Conditions</u> Dehcho First Nations make tobacco or other offerings before hunting in a particular area or, in the past, held ceremonies at seasonal gatherings to thank the Creator for animals harvested over the past year. Taboos relating to the use of boreal caribou hair and antlers are still followed in some communities today.</p>			Dehcho First Nation	Dehcho First Nations, 2011:9	
<p><u>Existing Conditions</u> The area around Willow Lake (called Brackett Lake on the official maps) and wetlands nearby support large populations of animals. The oral tradition records many stories, which tell of the importance of this lake.</p>	<p>Willow Lake (Brackett Lake) is outside the RSA (~26 km from PDA)</p>		Sahtu	The Sahtu Heritage Places and Sites Joint Working Group, 2000:94	
<p><u>Existing Conditions</u> According to the Traditional Land Use study conducted by the EBA in 2006 a swimming area is located about 2.5 km west of KM 940.</p>	<p>Within RSA</p>		Sahtu	EBA, 2006: Fig1	
<p><u>Existing Conditions</u> According to the <i>Places We Take Care Of</i> (Sahtu Heritage Places and Sites Joint Working Group, 2000), the land itself is of particular importance in transmitting knowledge from one generation to the next.</p>			Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-35	
<p><u>Existing Conditions</u> Often, “culture-heroes” are associated with landscape features or locations where important events took place. The names and the narratives convey knowledge and tie the Sahtu Dene and Métis culture to the landscape, and also become powerful memory tools for recalling the significance of the location. The narratives provide information about access to harvesting areas, trails, and named places, and are also records of land use overtime and culture.</p>			Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-35	
<p><u>Existing Conditions</u> For the Dene, the landscape is a living thing, inhabited by entities or powers. At many special places, offerings are left to respect the entities that inhabit the land.</p>			Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-35	
		<p>According to <i>The Places We Take Care Of</i> Heritage places and sites within the Sahtu Dene and Métis settlement region require special protection and commemoration to ensure that they remain pristine for future</p>	Sahtu	The Sahtu Heritage Places and sites Joint Working Group, 2000: 24	
	<p>Great Bear River is a tributary to the Mackenzie and intersects the PDA The PDA intersects Bear Rock conservation Zone</p>	<p>In an interview with a Sahtu harvester he requested Respect the Traditional Boundaries and Sacred lands of the Great Bear River, as well as Bear Rock.</p>	Sahtu	Tulita Renewable Resource Council, 2019: Pg 4	

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<i>Cultural and Traditional Land Use – Cultural, Spiritual and Ceremonial Practices or Areas (cont'd)</i>					
	Great Bear River is a tributary to the Mackenzie and intersects the PDA	According to interviews with Sahtu harvesters the area around Great Bear River Bridge should be respected as there are legends surrounding the place and there are traditional and spiritual boundaries including a sacred area with Bear Rock Burial sites as well. One should also pay respects for foreigners travelling the bridge.	Sahtu	Tulita Renewable Resource Council, 2019: 20,23	
<u>Existing Conditions</u> The 2018 NWT Community Survey by the NWT Bureau of Statistics reported that in Norman Wells 24.9% of Indigenous persons in the community produced arts and crafts; in Tulita 22.1% of Indigenous persons in the community produced arts and crafts; and in Wrigley 15.2% of Indigenous persons in the community produced arts and crafts.	Norman Wells, Tulita, and Wrigley intersect the PDA			GNWT, 2018	
<u>Existing Conditions</u> Kweten?iá or Peten?iá (Bear Rock) represents cultural and political unity for the Dene Nation.	The PDA intersects Petiniæah (Bear Rock) Conservation Zone		Dene	Golder, 2015: 2-24	
<u>Existing Conditions</u> Safe travel across the Sahtu (Great Bear Lake) is the subject of stories of significance to the Sahtu Got'!ne. The area represents the cultural foundation of the Sahtu Got'!ne people.	Sahtu (Great Bear Lake) is outside the RSA (~ 81 km from the PDA)		Sahtu	Golder, 2015: 2-4	
<u>Existing Conditions</u> A limestone outcropping in Tulít'a, known as Kweten?iá or Peten?iá (Bear Rock), is traditionally important to the Dene.	The PDA intersects Bear Rock Conservation Zone		Dene	Golder, 2015: 2-7	
<u>Existing Conditions</u> Camps, archaeological sites, and burials near waterways and lakes in the Sahtu region have been identified.	Portions of the PDA intersect Sahtu region			Golder, 2015: 2-22	
<u>Existing Conditions</u> At Dehdéle]q Tué (Sucker Lake/Three Day Lake) there is a burial site of a Sahtu Dene ancestor, and it is a very spiritual area.	A portion of Dehdéle]q Tué (Sucker Lake/Three Day Lake) overlaps the RSA	According to 2014 consultation, this area was recommended for avoidance due to shallow waters, and to preserve the quality of water and fishery.	Sahtu Dene	Golder, 2015: 2-25	
<i>Additional Concerns or Issues</i>					
<i>Project Design</i>					
		Caution is needed with all land uses to reduce environmental effects by re-using existing disturbed areas and concentrating land use in existing corridors (SLUPB, 2013).	Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-35	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Additional Concerns or Issues (cont'd)					
		Camps and cabins should be left for Sahtu use and areas with cabins and camps should be avoided.	Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-35	
<p><u>Potential Effects</u> The community is concerned about the potential number of people involved in the construction of the Great Bear River Bridge and the proximity of the work camps to the community.</p>	Great Bear Bridge is within the PDA		Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-37	
<p><u>Potential Effects</u> Participants explained that traditional land use areas need to be protected. They feel that once the all-weather highway is complete, more people will move through the Pehdzeh Ki Ndeh - Dehcho Region, increasing the risk that wildlife habitats and important sacred spaces will be altered or negatively impacted. The notion of protecting natural areas, especially the ones related to traditional activities, was expressed by PKFN community throughout the public consultation process.</p>	<p>The PDA intersects the Pehdzeh Ki Ndeh and the Dehcho Region The Blackwater River intersects the PDA Willow Lake River is outside of RSA (~53 km from PDA)</p>	<p>Most importantly, PKFN explained that the rivers, creeks and forests should be protected for the future generations and that moose, caribou and fish also need to be protected. Sites that were mentioned as very important to PKFN include Blackwater River, a special traditional area that is home to a sacred old grave, and Willow Lake River, where there is a burial ground.</p>	Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012:71	Deh Cho Region is assumed to correspond to the Deh Cho Territory cited by the GNWT.
<p><u>Existing Conditions</u> Due to the fact that the proposed all-weather road will somewhat follow the path of the existing Winter Road, which passes relatively close to the Mackenzie River, the proposed road will also pass close to the Mackenzie River. For this reason, as currently proposed, the future all-weather road in the Dehcho section of the MVH Extension Project has the potential to directly affect traditional activities along the route, as it will intersect high-use areas identified by the Dehcho Land Use Planning Committee (DLUPC).</p>		<p>For this reason, additional realignment proposals, relocating the future all-weather road further in-land, were suggested by the Band Council. One suggestion was to relocate the MVH alignment 5 km in-land, thus distancing it from the Mackenzie River, where numerous traditional land use areas are located. The other suggestions, made by the recently elected Band Council members, attempt to distance the alignment from the Mackenzie River, though remaining as close as possible to the proposed alignment</p>	Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 75	
<p><u>Existing Conditions</u> Clean water is paramount to maintain healthy populations of humans, fish, and wildlife. Community participants in a 2012 Tulit'a TEK Study consider abundant healthy waterfowl to be an indicator of good water.</p>		All waterbodies and watercourses, regardless of size, be monitored for water quality.	Dene and Métis in the Sahtu	Golder, 2015: 2-16	
<p><u>Existing Conditions</u> Community members have expressed concern that development may impact water quality through increased sediment from vegetation clearing along waterbodies; impacts of blasting; impacts from melting permafrost (erosion, flooding, scouring, reduced land subsistence); and impacts on fish and wildlife, and their habitats,</p>			Elders and land users in the Sahtu region	Golder, 2015: 2-16	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Additional Concerns or Issues (cont'd)					
<p><u>Potential Project Effects</u> Based on the information gathered during the public consultation held on July 7th, 2011 and January 25-26th, 2012 some of the main concerns regarding the MVH Extension project in the Pehdzeh Ki Ndeh – Dehcho Region are related to the road alignment,</p>			Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 113	
		PKFN Band Council proposed some realignments to the optimized route which differ from the ones proposed by PKFN community, and more particularly by the elders, during the first round of consultation held in July 2011. The propositions, though trying to remain as close as possible to the optimized alignment and the winter road, tended to move the highway as far possible from the Mackenzie River.	Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 125	
<p><u>Existing Conditions</u> A most-valuable comment coming from consultations with PKFN community was the fact that most traditional activities occur along the Mackenzie River banks.</p>		Therefore, the majority of participants proposed to move the MVH extension in the Pehdzeh Ki Ndeh - Dehcho Region the furthest as possible from the Mackenzie River. A 5 km wide protection corridor was proposed by the Band Council and the public. This would avoid disturbing traditional activities sites and natural resources harvesting along the river. PKFN would prefer the MVH extension to be constructed outside of this 5 km protection corridor	Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 125	
<p><u>Potential Effects</u> Although the seasonal winter road may be currently used to access these areas, the all-weather access created by the MVH extension road may have the impact of increasing access to the Mackenzie River area for individuals and groups not currently utilizing its resources, and potentially not associated with the Pehdzeh Ki First Nation. While the increase in year-round access may benefit the Pehdzeh Ki First Nation by increasing access to resources, this also has the potential to result in a reduction of available traditional resources in the area. However, this may also result in an increased ability to pursue traditional practices in areas adjacent to the Mackenzie Valley.</p>			Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 224	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Additional Concerns or Issues (cont'd)					
	Great Bear River is a tributary to the Mackenzie and intersects the PDA	According to interviews with Sahtu harvesters the PDA is currently intact. They request not to place steel poles in the river to build the Great Bear River Bridge as it will damage the river. They request to put bridge off rocks and sand. Any changes to the river will decrease fish. Fish can be restored, but not to the same amount	Sahtu	Tulita Renewable Resource Council, 2019: 4	
	Great Bear River is a tributary to the Mackenzie and intersects the PDA	According to interviews with Sahtu harvesters the Great Bear River Bridge project should be carried out with concern for the Safety of the People. It also needs to be considered how it will impact the waters and land habitats	Sahtu	Tulita Renewable Resource Council, 2019: 5	
	Great Bear River is a tributary to the Mackenzie and intersects the PDA	According to interviews with Sahtu harvesters, life will benefit from the Bridge, but it will also have negative impacts. They request to put the Bridge at the narrowest crossing, so less piers to use for impact on the Land and Water.	Sahtu	Tulita Renewable Resource Council, 2019: 20	
Climate					
<u>Existing Conditions</u>					
Weather also plays a significant role in the health and well-being of boreal woodland caribou. Increasing extremes in annual temperatures and flooding negatively impact herds.			Sahtu	McDonald, 2010:5	
<u>Existing Conditions</u>					
Warmer temperatures, melting permafrost and other environmental changes create concerns related to the environment.			Sahtu	5658 NWT Ltd. and GNWT, 2011: 8-36	
<u>Existing Conditions</u>					
The Dehcho region is clearly getting warmer and wetter overall, with more rainfall in August and September and even into October. This change is creating more incidences of ice crusting along the ground which may make it more difficult for boreal caribou to forage for ground lichens. Sudden thaws and melting during winter months also create crusts on the snow that make it difficult for boreal caribou to move around and escape predators. In some instances, frost heaves that harbor lichens are diminishing or melting entirely which reduces availability of this particularly rich habitat site. Wetter summers and falls are resulting in higher water levels on smaller rivers and streams, increasing boat access (particularly jet boat access) into boreal caribou habitat areas previously difficult to access at these times of year.	The PDA is located within the Dehcho Region	Climate change does not yet appear to be affecting ground or hanging lichens, although some monitoring of future changes to lichen due to climate change should be undertaken.	Dehcho First Nations	Dehcho First Nations, 2011:15	

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<i>Climate (cont'd)</i>					
<p><u>Existing Conditions</u> Community members have reported that winds in the area are stronger than in the past, and southerly winds have become more frequent.</p>				Golder, 2015: 2-42	
<i>Cumulative Effects</i>					
<p><u>Existing Conditions</u> Dehcho First Nations are particularly concerned about the immediate and cumulative impacts of development in the region. Seismic lines, sensory disturbance from oil and gas exploration activities, oil and contaminant spills, and use of seismic wire all resulted in immediate impacts to boreal caribou. Animals were driven away from development activities and did not return to these areas for many years; some animals became entangled in seismic wire and died.</p>			Dehcho First Nations	Dehcho First Nations, 2011:11	
<p><u>Potential Project Effects</u> Dehcho First Nations expressed concerns about animals becoming contaminated through exposure to oil and other contaminants left on or under the ground.</p>					
<p><u>Potential Project Effects</u> Where development stopped and once many of the seismic lines grew back in, boreal caribou appear to have re-adapted to the landscape and the re-grown lines do not appear to be a deterrent to use. Some elders have commented that where intensive 3D seismic has continued, boreal caribou have become more wary and do not linger as long in open areas as they did prior to these disturbances.</p>			Dehcho First Nations	Dehcho First Nations, 2011:11	
<p><u>Potential Project Effects</u> The construction of the Norman Wells pipeline caused boreal caribou to leave the corridor area for a number of years before eventually returning.</p>	The Norman Wells Pipeline corridor intersects portions of the RSA		Dehcho First Nations	Dehcho First Nations, 2011:11	
<p><u>Potential Project Effects</u> Harvesters know that seismic and other linear disturbances open corridors for wolves and can lead to an increase in predation of boreal caribou and other game animals and are concerned about this impact.</p>			Dehcho First Nations	Dehcho First Nations, 2011:12	
<p><u>Existing Conditions</u> Cougars have been increasingly seen (directly or through tracks) throughout the Dehcho region over the past decade and are suspected of harvesting boreal caribou, although there is no direct evidence to date of this occurring. This increase in cougars appears to be associated with a concurrent increase in whitetail deer (jumping deer) in the area and extensive oil and gas exploration activity occurring in northern Alberta and British Columbia (perhaps pushing cougars northward).</p>	The PDA is located within the Dehcho Region		Dehcho First Nations	Dehcho First Nations, 2011:12	
<p><u>Existing Conditions</u> Boreal caribou are particularly sensitive to sensory disturbance and have been affected by sensory disturbance from oil and gas exploration in the past (and currently in the Cameron Hills). The potential impact of pending and future development remains a major concern.</p>	Cameron Hills is outside the RSA (~466 km from PDA)		Dehcho First Nations	Dehcho First Nations, 2011:14	
<p><u>Existing Conditions</u> Land clearing for seismic operations is associated with fast-melting permafrost, leading to problems with vegetation re-establishment and erosion and slumping on the banks of the Sahtu waterbodies. Islands in K'áalq Túé (Willow Lake/ Brackett Lake) have experienced slumping, cabins in K'áalq Túé (Willow Lake/ Brackett Lake) have had to relocate due to eroding banks, and erosion is suspected to be affecting fish passage between K'áalq Túé (Willow Lake/ Brackett Lake) and Kelly Lake. Permafrost melt from development has also been linked to erosion in Sahtu Deh (Great Bear River) and other waterbodies in the area.</p>	K'áalq Túé (Willow Lake/ Brackett Lake) is located outside the RSA (~26 km from PDA) Sahtu Deh (Great Bear River) intersects the PDA	Limit project footprints and avoid uncommon landforms and steep slopes to the extent practical. Include adequate protection of permafrost under disturbed areas in closure and reclamation plans. Engage local landowners in permafrost monitoring to best assess the effects.	Elders in the K'ásho Got'íne and Tullit'a regions	Golder, 2015: 2-15	
<p><u>Potential Effects</u> Community members have seen negative impacts of development to their water, land, wildlife, and their lifestyle; and expressed concern for these impacts. Everything is connected.</p>				Golder, 2015; 2-16	

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Indigenous Knowledge and Traditional Land Use Information	Location of Sites or Areas Relative to the Project	Indigenous Group Recommendations and Requests	Indigenous group	Source Document Reference	TK Facilitator notes
Engagement					
<p><i>Potential Project Effects</i> Based on the information gathered during the public consultation held on July 7th, 2011 and January 25-26th, 2012 some of the main concerns regarding the MVH Extension Project in the Pehdzeh Ki Ndeh – Dehcho Region are related to community participation.</p>			Pehdzeh Ki/ Dehcho First Nations	Dessau, 2012: 113	
		<p>Dehcho First Nations provided community-based recommendations to be considered by Canadian Wildlife Service in its development of a National Caribou Recovery Strategy and Action Plan, including:</p> <ul style="list-style-type: none"> • Finalize and approve the Dehcho Land Use Plan and formally establish the Dehcho Resource Management Authority to implement the land use plan and other wildlife and resource management activities as they relate to boreal caribou. • Finalize the establishment of current Candidate Protected Areas in the Dehcho, with full surface and sub-surface protection from industrial development, in order to preserve large undisturbed boreal caribou habitat areas. • Restrict and monitor industrial development generally during critical boreal caribou calving and over-wintering periods • Halt new boreal caribou collaring research and work with harvesters to develop alternative research and population monitoring methods, including greater use of community-based monitoring, aerial surveys, and less intrusive technical monitoring devices <p>Restrict further expansion of imported bison populations into boreal caribou habitat areas by opening these areas to bison harvesting</p>	Dehcho First Nations	Dehcho First Nations, 2011:15-16	

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<i>Engagement (cont'd)</i>					
		<ul style="list-style-type: none"> • Carry out more detailed analyses of critical habitat characteristics, with a particular focus on calving and over-wintering habitat as well as lichen availability, quality, density, and vulnerability (from development, airborne pollution, and climate change). • Verify special habitat sites / areas – such as wallows/licks, rich lichen areas, old growth forest areas, calving areas, etc. – and locate these sites / areas on GNWT ‘values at risk’ maps to guide forest fire management decisions • Restrict non-Dene hunting for boreal caribou during the overwintering period and in locations where overhunting appears to be impacting populations (i.e., shorten current season, review hunting zones, and protect mature bulls). • Identify and implement measures to encourage increased traditional harvesting of wolf and bear in order to limit population growth, while monitoring predator populations. <p>Ensure that Dehcho harvesters respect critical habitat periods and voluntarily maintain current harvesting levels rather than expanding or increasing harvest levels.</p>			

5 Closure

This TDR was prepared for the sole benefit of GNWT to describe existing conditions related to cultural and traditional land use within the Project LSA and RSA. If you have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,

K'alo-Stantec Limited

6 References

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