NORTHWEST TERRITORIES POWER CORPORATION

Empowering Communities

SNARE HYDROELECTRIC FACILITY
VEGETATION AND WILDLIFE MANAGEMENT
MONITORING PLAN

SNARE HYDROELECTRIC FACILITY
SANRE RIVER, NORTHWEST TERRITORIES

October 2021

DOCUMENT MAINTENANCE AND CONTROL

The Senior Environmental Licensing Specialist is responsible for the distribution, maintenance and updating of the Vegetation and Wildlife Management Plan. This Plan will be reviewed annually and updated as required, taking into account changes in the law, environmental factors, NTPC policies, and Snare Hydroelectric Facility characteristics. Changes in phone numbers, names of individuals, etc. that do not affect the intent of the Plan are to be made as required. Additional copies can be provided by the Director, Health, Safety & Environment.

DOCUMENT HISTORY				
Revision #	**Revised Section(s)**	**Description of Revision**	**Prepared by**	**Issue Date**
0	All	First Version	NTPC	October 2021

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF APPENDICES

1 INTRODUCTION

The Northwest Territories Power Corporation (NTPC) owns and operates the Snare Hydroelectric Facility (Snare Hydro) located on the Snare River, approximately 145 km northwest of Yellowknife, NT. The facility includes four hydro generation stations that provide power to the North Slave communities of Yellowknife, Behchokǫ̀, Dettah and N'Dilo along with the power generated by the Bluefish Hydroelectric Facility.

Snare Hydro currently operates under three Type A Land Use Permits (LUP) from the Wek' èezhìi Land and Water Board (WLWB) for the construction and operation of the winter roads (WR's) and quarry and borrow sites. In the fall of 2021 NTPC intends to apply for a site-wide Type A LUP that will consolidate the current LUP's under one permit to authorize existing and future land-use activities. This consolidated LUP will increase efficiencies for all regulatory undertakings related to land use at Snare Hydro, improving processes and interactions for the WLWB, GNWT Lands Inspectors, NTPC and all Snare Hydro stakeholders moving forward.

The upcoming construction and operation activities has the potential to impact wildlife and wildlife habitat in several ways, including direct habitat loss, habitat degradation and functional habitat loss due to noise or other sensory disturbances, dust, accidental spills of toxic or hazardous substances, injury or mortality due to vehicle collisions, increased mortality associated with improved access for harvesters or wildlife-human interactions, increased mortality from facilitated predator movements, and wildlife attraction to construction camps.

This Vegetation and Wildlife Management and Monitoring Plan (WMMP) outlines mitigation measures that are being implemented to reduce Projects impacts on wildlife and wildlife habitat. Monitoring plans are proposed to better understand any adverse impacts resulting from Project activities and to inform adaptive management strategies. This document is intended to meet the requirements of the *Wildlife Act,* plus further relevant legislation, as well as to meet the obligations set by Environment and Natural Resources (ENR) for a Tier 1 Wildlife Management and Monitoring Plan.

The document describes mitigation and monitoring that applies to the construction of Project activities and operation phases of the Project. In some cases, mitigation is phase-specific, while other mitigation strategies apply to both construction and operational phases, where specified.

1.1 PURPOSE AND OBJECTIVES

The Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) is responsible for the implementation and enforcement of the *Wildlife Act* (GNWT 2013). Section 95 of the *Wildlife Act* contains provisions outlining criteria for when a Wildlife Mitigation and Monitoring Plan (WMMP) will be required as well as the mandatory content for such plans (ENR 2018). This Project has not triggered the requirement for a WMMP under Section 95 of the *Wildlife Act*.

The objectives to this WMMP include the following:

- Demonstrate how NTPC will minimise project effects on vegetation, wildlife and wildlife habitat;
- Detail potential adverse effects, as a result of construction and operation, on wildlife and how these will be mitigated by NTPC;
- Demonstrate how NTPC will remain in compliance with regulatory requirements;
- Discuss engagement with communities, regulatory agencies and interested in parties in regards to wildlife impacts, mitigation and monitoring;
- Describe how NTPC will meet relevant guidelines and regulatory requirements.

This Tier 1, Basic WMMP is a living document, to be updated as necessary, through engagement and adaptive management.

This document contains a description of the upcoming projects, potential effects of the projects on wildlife and wildlife habitat, associated mitigation, and tasks to confirm how effectively the mitigation has been implemented.

1.2 ENGAGEMENT

NTPC has been completing stakeholder engagement as part of the Type A Water Licences and Type A Land Use Permits that NTPC holds with the Wek' èezhìi Land and Water Board (WLWB) for many years. In additional to the operational engagement under the Type A Water Licences for Snare Hydro NTPC completed a pre-submission engagement process for the 2021 LUP application to gather input from stakeholders on the application package. The comprehensive engagement process is outlined in the *Snare Hydroelectric Facility Engagement Plan* (NTPC, 2021) and *Snare Hydro Engagement Log* (NTPC, 2021).

1.3 RELEVANT ENVIRONMENTAL MANAGEMENT PLANS AND OPERATING PROCEDURES

This plan is to be used in conjunction the following reference plans for Snare Hydro which apply under the WL and LUP for the facility:

- Snare Hydro Facility Quarry and Winter Road Operations & Maintenance and Reclamation Plan
- Snare Hydroelectric Facility– Waste Management Plan,
- Snare Hydroelectric Facility– Spill Contingency Plan,
- Snare Hydroelectric Facility – Quarry and Winter Roads Operations and Maintenance and Reclamation Plan
- Snare Hydroelectric Facility – Erosion and Sediment Control Plan

1.4 PROJECT DESCRITPION

1.4.1 Winter Roads

NTPC annually constructs the historical Snare Winter Road (WR) from Snare Forks to the Wekweètì Winter Road, NT linking the facility to Yellowknife via NWT Highway #3, allowing access for resupply fuel, oversized equipment, and freight to be delivered to site. The Snare WR follows the same historical alignment of previous years, so relatively little brushing is required. The road does not cross any water courses and is 12.5km of portage winter road. The start point of the WR is a temporary laydown/marshalling area located at the southwest corner of Snare Forks, and the end point is a temporary laydown area located at the Wekweètì winter road junction. The temporary laydown at the Wekweètì winter road junction will be expanded to allow more space for staging of equipment and the potential for a temporary camp and/or fuel to be installed if required.

Three additional winter roads which have been used intermittently throughout the operation of the facility as required and will be included in the scope of the LUP include:

- Strutt Lake WR (8.1 km) connecting to three borrow locations on the east side of Strutt Lake. This winter road is currently authorized under Land Use Permit W2019Q0003, which expires on December 18, 2024 and is constructed when crushing is completed at Strutt Lake Pits every 4-8 years.
- The Big Spruce Lake WR 1 (17.8 km) connecting Snare rapids to the Side Dams, and Snare 5B Spillway. This route is entirely on Big Spruce Lake and is constructed every 10-20 years when major maintenance work is required at 5B or Side Dams. There is also a Big Spruce Lake WR 2 route that connects the side dams on Big Spruce Lake to the Snare site road using a couple portages and local inland lakes. The Big Spruce Lake WR 2 route would be used if ice conditions on Big Spruce Lake were not sufficient for WR construction.
- The 5B Bridge route (1.1 km) allowing for continued movement of equipment over the winter months if the 5B bridge every had any issues which impeded travel over the bridge in winter months. This is a contingency route only and would only be used in emergency situations.

The overland portion of the proposed WRs will follow previously constructed WR alignments (Strutt Lake WR, Snare WR), with an average width of the portages (overland) right-of-way of 8 to 10 metres (m). Widening of the existing portages is not expected, and only minimal brushing of the portages will be required for the Snare WR and the Strutt Lake WR. If ice and/or environmental conditions are not sufficient on the existing alignments minor changes may be required to ensure the safety of the route.

No soil stripping, removal of overburden, or draining of waterbodies/wetlands is expected during WR construction. However, small amounts of vegetation present on the portages and surface of the borrow sources will be removed. Vegetation clearing will be minimized to danger tree removal only. These activities will occur during winter months only. Any bushes or trees that are cleared will be moved to the edge of the WR corridor and left to naturally decompose..

Operation of the WRs will include use of the road for routine maintenance of the hydro facilities, and for transportation of materials and fuel for the planned upcoming construction activities.

For the Snare WR the road may be used for personnel transportation until the end of March or until the road is closed due to weather. The Snare winter roads are presented in Figure 2.

The annual construction, operation, and maintenance for the Snare WR will occur in five phases. Although each phase of the project is sequential in the annual program, there are elements of overlap between the phases.

- Phase 1 – Detailed Planning (June – October)
- Phase 2 – Mobilization (November – December)
- Phase 3 – Construction (December – January)
- Phase 4 – Operation and Maintenance (February – March)
- Phase 5 – Demobilization and Road Closure (March – April)

1.4.2 Quarries, Borrow and Storage Locations

Materials from 10 existing historical quarries and/or borrow locations across Snare Hydro will be excavated as required for future construction, resurfacing, upgrades and maintenance at the Snare Hydro Facility. All locations are existing historical borrow locations used intermittently since 1948 throughout the operation of the facility. Blasting would only occur at Snare Forks Rocks Quarry. Excavated aggregate will be stockpiled as needed at quarry and/or borrow locations, or alongside roadways or constructions sites for blending and utilizing. In addition, there will be 4 designated stockpile, storage and/or laydown locations at Snare Cascades Stockpile, KM 28, Snare Forks Laydown and the Wekweètì winter road junction.

In late 2021 GNWT will release the Quarry Sampling and Testing Guidance for the identification of Acid Rock Drainage and metal leaching potential guidelines which NTPC will reference to complete geochemical testing for all quarries and/or borrow locations across Snare Hydro in 2022 as per the requirements. The quarry, borrow and stockpile locations to be used include:

- Snare Rapids Silt Pit
- Snare Falls Clay Pit
- Snare Airstrip Sand Pit
- Snare Airstrip Junction Pit
- Snare Cascades Stockpile
- Strutt Lake Aggregate Pit 1
- Strutt Lake Aggregate Pit 2
- Strutt Lake Aggregate Pit 3
- Snare Forks Rock Quarry
- Snare Forks Till Pit 1
- Snare Forks Till Pit 2
- KM 28 Stockpile
- Snare Forks Laydown
- Snare Winter Road Laydown

Minimal vegetation clearing, overburden removal and/or disturbance to wildlife is expected throughout the quarrying, as all borrow locations have minimal overburden and vegetation present as they are historical borrow locations that have been used throughout the operation of the facility. Minor vegetation and overburden removal will be completed around the edges of the existing borrow locations when required. The existing historical quarries and/or borrow locations across Snare Hydro are presented in Figure 2.

Minor vegetation and overburden removal will be completed around the edges of the existing borrow locations when required. The 13 existing historical quarries and/or borrow locations across Snare Hydro are presented in Figure 2.

1.4.3 Snare Falls Substation

The existing substation at the Snare Falls Generating Station will be relocated approximately 70 m southeast of its current location and a new access road, 50 m in length and 6 m wide, will be constructed to link the existing road to the new substation (**Error! Reference source not found.**). In addition, pole structures will be relocated and/or replaced to accommodate the new location. The area of the new substation will be approximately 475 m^2.

1.4.4 Operation of Temporary Camps and Fuel Storage

To accommodate additional personnel, 9 potential locations for temporary camps have been identified within quarry/borrow locations and at the start and end of the Snare WR. These proposed locations are presented in Figure 3. Temporary camps will be project specific and used as contingency only if resourcing levels exceed the capacity of the main camp. These camps may include accommodations, offices, washroom facilities, fuel and waste storage. Temporary camps would have a capacity of 4- 20. Maximum Water Usage would be 250 L/p/day x 20 p= 5000L/day or 5m3/day through a temporary self-sustaining water system in which water would be manually drawn from the forebay and stored in a water tank for use at the camp. Sewage would be discharged into temporary sewage pit similar to a winter road camp. All management plans and standard procedures for the Snare Land Use Permit would also apply to the overflow camps

Temporary fuel storage has been included to support any of the temporary camps or locations where crushing would take place but only used when required. Each location would include:

- 1 60,000L double walled diesel tank or another acceptable container for the storage of hydrocarbons.
- 1 double walled 1000L gas tank

The storage of fuel and any hazardous materials will be in accordance with the SPC and WMP, which conforms with the Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (CCME 2003), and the Northern Land Use Guidelines: Camp and Support Facilities (GNWT-Lands 2014a). Locations for temporary fuels storage are outlined in Figure 3.

1.4.5 Miscellaneous Construction Activities

In addition to the above noted land use activities, the following activities will be completed:

- Minor clearing for access roads and access to transmission lines for maintenance.
- Use of heavy equipment not on an existing Right-of-Way, including but not limited to:
  - Maintenance of site roads.
  - Maintenance of transmission infrastructure.
  - Maintenance of dams and side dams.
- Major civil works and construction upgrades over the next 5 years.

.

Figure 1: Snare hydroelectric system map.

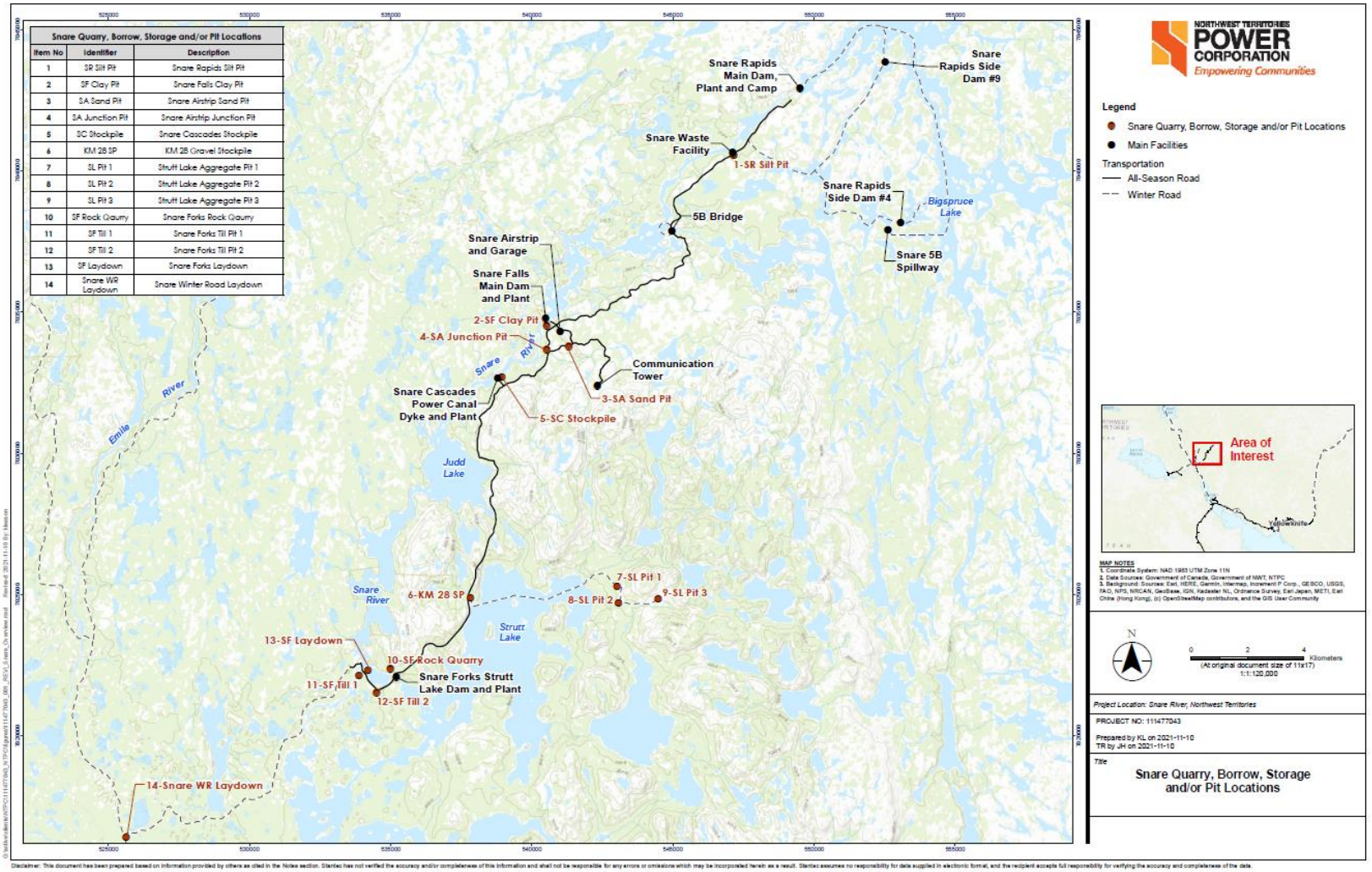


Figure 2 Snare Hydro Quarries, Winter Roads and Transmission Lines

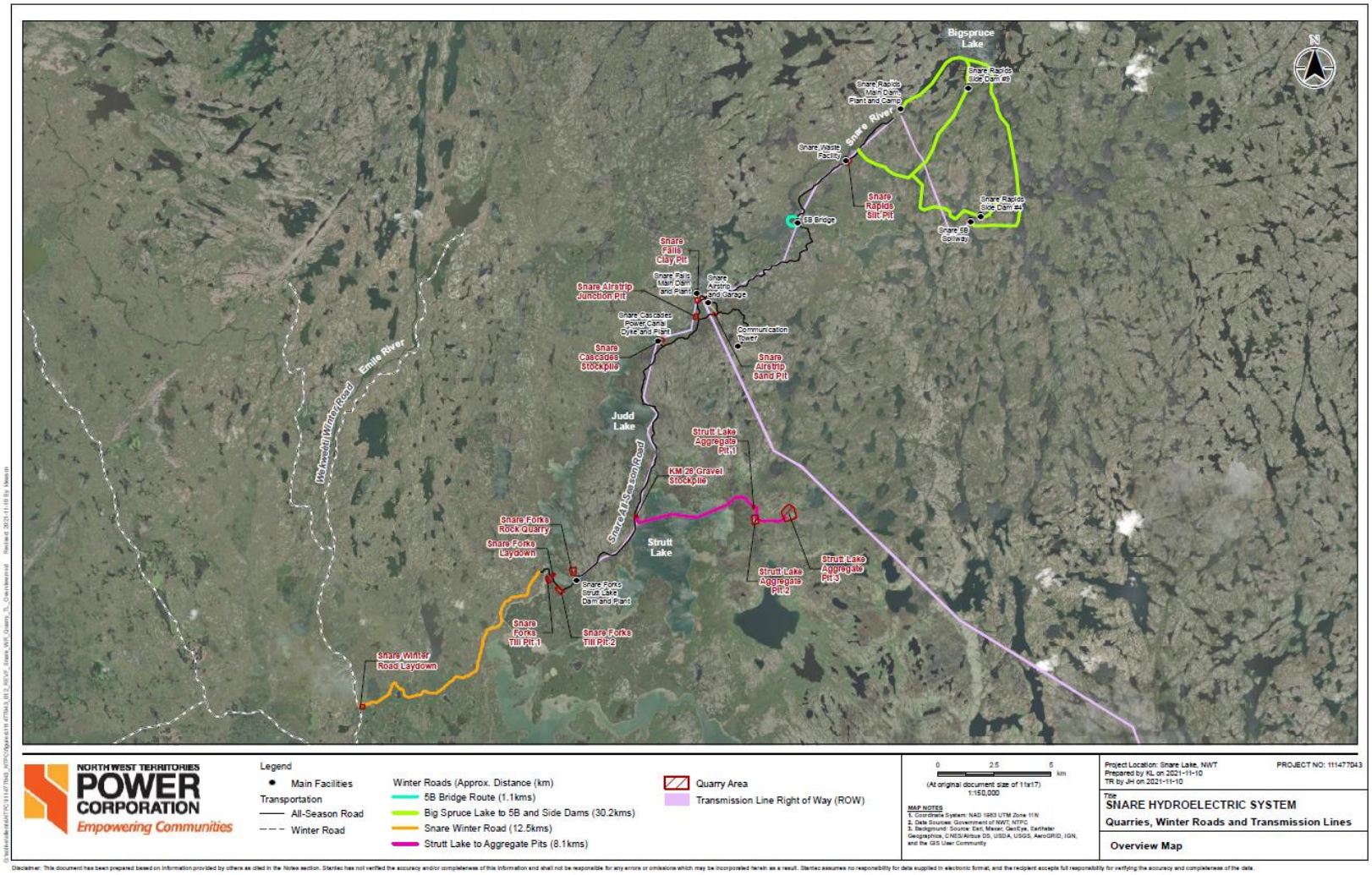
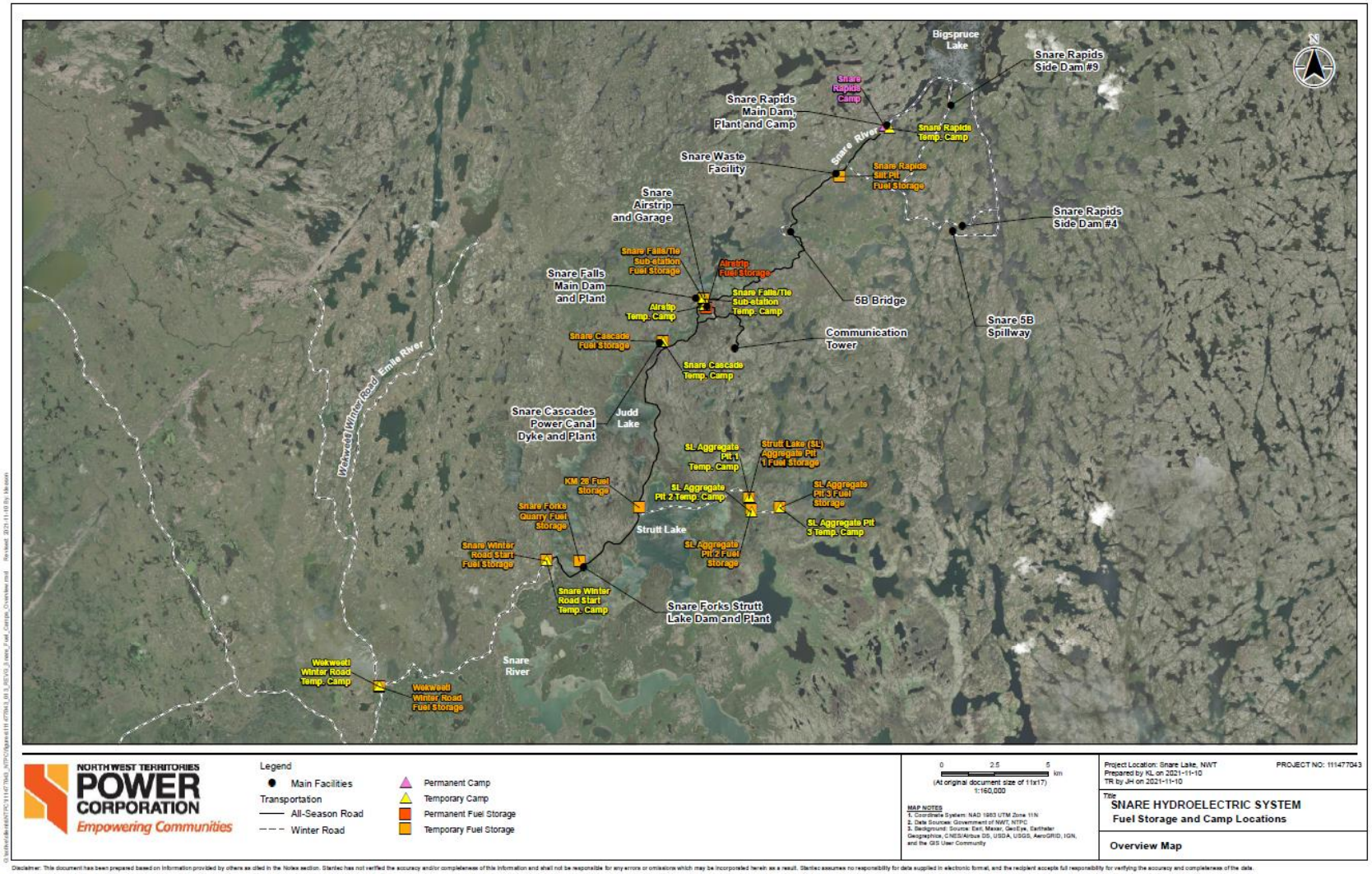


Figure 3 Temporary Overflow Camps and Fuel Storage Locations



2 POTENTIAL IMPACTS

The Snare facility is located in the Taiga Shield Great Slave Uplands High Boreal Ecoregion (ECG 2008). Within the area of the Snare Hydro System, jack pine (Pinus banksiana)-dominated forest with patches of trembling aspen (Populus tremuloides) and paper birch (Betula papyrifera) are largely present. Exposed bedrock uplands, lowland bogs, deciduous forest and treed fens are also present.

Wildlife surveys conducted previously indicate presence of snowshoe hare (*Lepus americanus*), American mink (*Neovison vison*), Canada lynx (*Lynx canadensis*), red fox (*Vulpes vulpes*), red squirrel (*Sciurus vulgaris*), spruce grouse (*Falcipennis canadensis*), wolf (*Canis lupus)*, and moose, (*Alces alces*). Based on the results of the previous surveys, disturbed and cleared areas were unsuitable for denning due to exposure caused by lack of habitat features at the Snare Hydro Facility (Golder 2020), and traffic caused by the proximity of the hydroelectric stations indicate that the forested areas within close proximity to the facilities would unlikely be used by bears for denning.

2.1 REGULATORY SETTING

The following Federal and Territorial Acts and Regulations have been taken into consideration for the vegetation and wildlife management measures proposed for the project:

- Migratory Birds Convention Act, 1994 (Government of Canada 1994) (Project construction and operation will take place outside of the migratory bird breeding window)
- Species at Risk Act (Government of Canada 2002)
- Species at Risk (NWT) Act (GNWT 2009)
- Northwest Territories Wildlife Act (GNWT 2013)
- Mackenzie Valley Resource Management Act (Government of Canada 1998)
- Northwest Territories Lands Act (GNWT 2016)

The 2019 Statutory Requirements for Wildlife in the Northwest Territories provides a summary of pertinent sections of the legislation listed above, with interpretation guidelines (see Appendix C).

2.2 AFFECTED SPECIES

The purpose of the *Species at Risk Act* (SARA) is to prevent wildlife species in Canada from becoming extirpated, endangered or threatened as a result of human activity (Government of Canada, 2016). Similarly the *Species at Risk (NWT) Act* identifies, protects and recovers species at risk in the Northwest Territories. For the purposes of this report, species at risk identified within the Project Area are assessed under these aforementioned Acts, as well as under the Committee

on the Status of Endangered Wildlife in Canada (COSEWIC)[1] and the Species at Risk Committee (SARC) for NWT, where applicable.

The WMMP focuses on wildlife species occurring in and near the project areas that are important harvestable species, have specific regulatory requirements, and/or are protected by legislation.

The Snare Hydro Facility does not overlap with the boreal caribou (NT1 population) range, but it is close to the eastern boundary of the range (ECCC 2019). The Project is in the barren-ground caribou Bathurst Herd range (GNWT 2019). The species considered in this WMMP are presented in **Table *1***. The project is not expected to affect birds, fish, amphibians, reptiles, or insects; however, these species groups were still considered.

Table 1 Wildlife species in or near the project

Common Name	Scientific Name	SARA Listing[1]	COSEWIC Assessment[2]	NWT SARA Listing[3]	SARC Assessment[4]
Mammals					
American Beaver	*Castor canadensis*	-	-	-	-
American Marten	*Martes americana*	-	-	-	-
Barren-ground Caribou	*Rangifer tarandus groenlandicus*	Schedule 1 – Special Concern	Threatened	Threatened	Threatened
Black Bear	*Ursus americanus*	-	Not at Risk	-	-
Canada Lynx	*Lynx canadensis*	-	Not at Risk	-	-
Coyote	*Canis latrans*	-	-	-	-
Grey Wolf	*Canis lupus*	-	Not at Risk	-	-
Little Brown Myotis	*Myotis lucifugus*	Schedule 1 – Endangered	Endangered	Special Concern	Special Concern
Muskrat	*Ondatra zibethicus*				
Moose	*Alces alces*	-	-	-	-

Common Name	Scientific Name	SARA Listing[1]	COSEWIC Assessment[2]	NWT SARA Listing[3]	SARC Assessment[4]
Northern Myotis	*Myotis septentrionalis*	Schedule 1 – Endangered	Endangered	Special Concern	Special Concern
Snowshoe Hare	*Lepus americanus*	-	-	-	-
Weasel	*Mustela spp.*	-	-	-	-
White-tailed Deer	*Odocoileus virginianus*	-	-	-	-
Wolverine	*Gulo gulo*	Schedule 1 – Special Concern	Special Concern	-	Not At Risk
Wood bison	*Bison bison athabascae*	Schedule 1 - Threatened	Special Concern	Threatened	Threatened
Birds					
Bank Swallow	*Riparia riparia*	Schedule 1 - Threatened	Threatened	-	-
Barn Swallow	*Hirundo rustica*	Schedule 1 - Threatened	Special Concern	-	-
Common Nighthawk	*Chordeiles minor*	Schedule 1 – Threatened	Special Concern	-	-
Harris's Sparrow	*Zonotrichia querula*	-	Special Concern	-	-
Horned Grebe	*Podiceps auritus*	Schedule 1 – Special Concern	Special Concern	-	-
Lesser Yellowlegs	*Tringa flavipes*	-	Threatened	-	-
Olive-sided Flycatcher	*Contopus cooperi*	Schedule 1 – Threatened	Special Concern	-	-
Peregrine Falcon *anatum/tundrius* complex	*Falco peregrinus*	Schedule 1 – Special Concern	Not at Risk	-	Not assessed
Red-necked Phalarope	*Phalaropus lobatus*	Schedule 1 – Special Concern	Special Concern	-	-
Rusty Blackbird	*Euphagus carolinus*	Schedule 1 – Special Concern	Special Concern	-	Not assessed

Common Name	Scientific Name	SARA Listing[1]	COSEWIC Assessment[2]	NWT SARA Listing[3]	SARC Assessment[4]
Short-eared Owl	*Asio flammeus*	Schedule 1 – Special Concern	Threatened	-	Not assessed
Yellow Rail	*Coturnicops noveboracensis*	Schedule 1 – Special Concern	Special Concern	-	-
Fish					
Shortjaw Cisco	*Coregonus zenithicus*	-	Threatened	-	-
Amphibians					
Northern Leopard Frog	*Lithobates pipiens*	Schedule 1 - Special Concern	Special Concern	Threatened	Threatened
Insects					
Gypsy cuckoo Bumble Bee	*Bombus bohemicus*	Schedule 1 - Endangered	Endangered	-	Data Deficient
Transverse Lady Beetle	*Coccinella transversoguttata*	Schedule 1 - Special Concern	Special Concern	-	Not assessed
Yellow-banded Bumble Bee	*Bombus terricola*	Schedule 1 – Special Concern	Special Concern	-	Not At Risk

1. *Species at Risk Act* (SARA) (SC 2002, c.29)
2. Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2016)
3. *Species at Risk (NWT) Act* (GNWT 2009, c.16)
4. Northwest Territories Species at Risk Committee (Species at Risk Committee 2017)

2.3 SENSITIVE PERIODS FOR WILDLIFE

Known periods of sensitivity to wildlife have been detailed in **Table *2***. Identification of sensitive periods is not intended to be used as a reason to suspend construction activities and operation. Rather, this information is intended to inform types of pre-construction surveys required as well as additional mitigation measures required during these periods to minimise adverse effects to wildlife, such as sensory disturbance and/or risk of wildlife injury or mortality.

Table 2 Known periods of sensitivity to wildlife.

Wildlife	Period	Rationale
Boreal Caribou/Moose/ Bison	Calving/Post- Calving: 01 May to 15 July (caribou) 15 May to 15 July (moose) 1 March to 15 July (bison)	Timing window for parturition through to first month of life for offspring
Boreal Caribou	Late-winter: 16 March to 04 April.	Boreal caribou exhibit their shortest daily movements at this time of year.
Birds	Nesting season: 01 May to August 15.	Damage and/or destruction of nests or eggs of migratory birds is prohibited under the Migratory Birds Regulations and the Wildlife Act. Destruction of unoccupied raptor nests is also prohibited year round under the Wildlife Act and Regulations.
Black Bear	Denning season: September 30 to March 30.	Disturbance to dens could impact survival of both adults and young born in the den. Damage or destruction of a den is forbidden under the Wildlife Act against.

2.4 POTENTIAL IMPACTS TO WILDLIFE AND WILDLIFE HABITAT

Construction and operation activities undertaken by NTPC have the potential to adversely impact vegetation, wildlife and wildlife habitat at varying scales, including direct habitat loss, habitat degradation, and functional habitat loss due to noise, dust, spills of toxic or hazardous substances. In addition, injury or mortality resulting from: vehicle collisions; increased harvesting due to improved access; wildlife-human interactions; increased ease of predation and wildlife attraction. Potential project effects on wildlife are presented in Table 3.

The quarries and borrow locations are pre-existing, and the WR alignments for Snare WR and Strutt Lake WR currently exist, therefore minimal vegetation clearing (brushing and danger tree removal) will be required to reopen the WRs. The Big Spruce Lake WR and the 5B Bridge route will be constructed completely over ice and will not require clearing or vegetation removal.

Plant communities will be affected within the some of the proposed construction footprints, including the temporary camps, new substation, and within the transmission line right of-way. Mitigation measures will be implemented to avoid unnecessary vegetation loss (Section 3).

During the WR operations of the road, traffic will primarily comprise convoys of trucks carrying supplies. Strict rules for drivers will be enforced to avoid potential for wildlife habituation (e.g. feeding wildlife, leaving refuse) and accidental wildlife strikes.

Adverse potential impacts during WR operations may result from driver error or road failure, leading to an accidental spill of deleterious substance (e.g. diesel) into a watercourse. Spills on top of the road surface can be adequately recovered, but spills under the ice may discharge downstream, and not be readily accessible for mitigation. Scenarios for this are addressed in Mitigation (Section 3) as well as the Spill Contingency Plan.

Table 3 Potential project effects on vegetation and wildlife

Potential Effect	Project-related Mechanism of Effect	Project Phase
Vegetation loss, leading to the loss of habitat availability and connectivity. Can open up niches for invasive plant species to colonise and influence wildlife abundance and distribution.	Site clearing (in preparation for construction)	Construction
	Clearing for access	Maintenance
	Introduction/ increased abundance in invasive plants	Construction and Operation
	Construction including: WR, Camps, New Substation	Construction
Overburden loss, leading to erosion, sedimentation, water pollution.	Site clearing and excavation	Construction
Habitat alteration and loss to roosting/hibernating bats, migratory birds (and their nests/eggs), bears (destruction/disturbance to dens)	Site clearing	Construction
	Spills, emissions and deleterious substances	Construction and Operation
	Introduction/ increased abundance in invasive plants	Construction and Operation
	Construction of WR, Camps, New Substation	Construction
Increased public access leading to wildlife injury and mortality leading	Wildlife collision with traffic	Construction and Operation

Potential Effect	Project-related Mechanism of Effect	Project Phase
to decreases in survival and reproduction.	Legal or illegal hunting	Construction and Operation
	Spills, erosion, emissions and deleterious substances	Construction and Operation
Alteration of surface water quality, soils and vegetation, altering availability and distribution of wildlife habitat	Spills, erosion, and deleterious substances	Construction and Operation
	Dust and air emissions, subsequent deposition	Construction and Operation
	Surface runoff from Project	Construction and Operation
	Construction and operation of Camps, WR and New Substation	Construction and Operation
Changes to wildlife habitat availability, use and connectivity, leading to changes in wildlife abundance and/or movement	Sensory disturbance and avoidance	Construction and Operation
	Construction and Operation of WR	Operation
Use of linear corridors and converted habitat (young, productive forest) by prey and predators, leading to reduction of survival and reproduction in prey species	Operation of WR	Operation
Changes to hydrological regime due to permafrost thawing, altering drainage flows and surface water levels, causing changes to soils and vegetation, thus altering wildlife habitat availability and distribution.	Construction and operation of WR	Construction and Operation
Altered movement patterns by caribou herds, potential interactions with other herds	Construction and operation of Camps, WR	Construction and Operation
Attraction of wildlife to the Project (food waste, petroleum-based products, salt), increasing human-	Construction of Camps, WR	Construction and Operation

Potential Effect	Project-related Mechanism of Effect	Project Phase
wildlife interactions, changing predator-prey relationships, altering wildlife population dynamics		

3 WILDLIFE AND WILDLIFE HABITAT MITIGATION

Mitigation measures for wildlife and wildlife habitat are provided in Table 4 and are designed to avoid and/or minimize potential project effects. The mitigation measures apply to all project personnel, contractors, and visitors to site.

Additional management plans have been prepared for the project, which contain mitigation and monitoring measures relevant to wildlife. These include the following:

- Snare Hydro Quarry and Winter Road Operations and Maintenance and Reclamation Plan - includes information regarding speed restrictions, vehicle spacing, refuse disposal, and wildlife sightings/incidents
- Snare Hydroelectric Facilities Spill Contingency Plan - includes spill prevention measures and spill response procedures, and
- Snare Hydroelectric Facilities Waste Management Plan - includes refuse management procedures and hazardous materials transport.

Table 4 Potential Effects and Mitigation Measures

Potential Effect	Project-related Mechanism of Effect	Mitigation
Vegetation loss, leading to the loss of habitat availability and connectivity. Can open up niches for invasive plant species to colonise and influence wildlife abundance and distribution.	Site clearing (maintenance access and construction)	• Minimize amount of vegetation cleared by using areas that are already cleared from historic use when possible. • Limit WR corridors widths. • Chip, mulch or stockpile for burning during the winter months. When possible merchantable timber (=> 5" in diameter) that is removed will be stacked for salvage/use. • Minimize vegetation clearing to brushing and danger tree removal only. • Conduct site clearing during winter months when possible. • Construct vehicle pullouts in non-vegetated locations.
	Construction including: WR, Camp, New Substation	• Train all staff on Standard Operating Procedures for Vegetation Removal (Appendix B).
Overburden loss, leading to erosion, sedimentation, water pollution.	Site clearing and excavation	• Minimize amount of overburden removal by using areas that are already cleared from historic use when possible. • Ensure proper removal of vegetation down to ground, without disturbing ground. • Maintain quarry stockpiles, overburden or exposed soils banks at a slope less than 70° to deter bird nesting, erosion, sedimentation and surface water runoff. • Overburden removed will be stored in a pile in the storage area. • Use the *Snare Hydro Erosion and Sediment Control* manual to apply suitable erosion control measures and slope stabilisation to avoid sedimentation and erosion and avoid adverse effects to waterbodies, as well as pollution to surface water.
Habitat alteration and loss to roosting/hibernating bats, migratory birds (and their nests/eggs), bears (destruction/disturbance to dens)	Site clearing	• Before major vegetation clearing and/or quarrying activities begin, a wildlife survey will be completed to verify the absence of migratory bird nests, bear dens and other wildlife. Result will be submitted to the WLWB and ENR. • Avoid disturbance of nests and eggs by completing work outside of breeding bird season (Early May – late August), when migratory birds are present. If work must be completed within this time frame, ensure non-intrusive checks are made of all vegetation and pre-clearing nest surveys are completed by a by a Wildlife Biologist. No-work zones to be enforced where there is evidence of nesting. Bird nests to be protected by a buffer to allow construction to continue and to be monitored. Any incidences of bird nests to be recorded in weekly wildlife monitoring reports. • Birds are to be deterred from nesting on infrastructure by using covers/screens on vents, holes and crevices where birds are likely to nest. Where necessary, active disturbance of

Potential Effect	Project-related Mechanism of Effect	Mitigation
		birds (non-lethal) on infrastructure is permitted to discourage them from establishing nests. No physical deterrents to be applied during nesting season. Where birds do construct a nest, they are not to be disturbed until birds have left the area and clearance has been discussed with a Wildlife Biologist. • Pre-clearing wildlife surveys including dens and unoccupied raptor nests to be completed where an active mammal den is identified during pre-clearing surveys or during construction, GNWT-ENR are to be notified to determine subsequent steps. Operations near the den will be paused and GNWT-ENR will be consulted. • Minimize vegetation clearing to brushing and danger tree removal only. • Construct vehicle pullouts in non-vegetated locations along the alignment. • Whenever possible, vegetation should be removed by using hand cutting methods rather than clearing methods, without disturbing the ground, and leaving roots intact.
	Spills, emissions, and deleterious substances	• Follow the approved Spill Contingency Plan and Waste Management Plans • Use industry standards for fuel containment, storage, handling, and transport to avoid contamination to workers and the environment. • Equip all equipment and trucks with industry-standard emission control systems and spill kits. • Ensure staff are trained in the Workplace Hazardous Materials Information System and the Transportation of Dangerous Goods to avoid accidental spills. • Train all staff in spill response procedures and use of emergency spill kits to minimise adverse effects to vegetation and wildlife habitat. • Regularly maintain all equipment and trucks to ensure all are in good working order and free of leaks. • Prohibit idling except where necessary for construction. • Where possible, refuel equipment and vehicles away from watercourses. • Refuel equipment and vehicles with appropriate spill containment in place, and mitigation measures at hand in case of accidental spill (see Spill Contingency Plan). Report all spills in a timely manner. Refuel at least 30 m away from water bodies. • Large fuel tanks (2000 to less than 80,000 litres) need to be double walled as per regulations..

Potential Effect	Project-related Mechanism of Effect	Mitigation
	Construction of WR, Camp, New Substation	• Construction activities to consider sensitive periods for wildlife (see Section 2.3) – do not remove vegetation during nesting season for birds. • If an active mammal den, bird nest (active or inactive) or young are discovered during construction, disruptive construction activities are to be stopped and GNWT-ENR and ECCC (for migratory birds) (see Section 5.1) are to be contacted for advice and to form an appropriate strategy.
Increased public access leading to wildlife injury and mortality leading to decreases in survival and reproduction.	Wildlife collision with traffic	• Enforce a no-chase policy. If wildlife is observed on the road all vehicles will stop and wait until wildlife have left the road. • Incorporate regular 'jump-outs' along the length of the WR to allow wildlife to safely vacate. • Enforce a maximum speed limit of 40 kph along the route. • Erect wildlife crossing signage and post speed limits along WRs. • Convoy vehicles (4-6 heavy vehicles at a time) to minimize the frequency of disturbance and collision risk to wildlife. • Precede convoys with a light pick-up truck to minimize collision risk when possible.
	Legal or illegal hunting	• Hunting by staff is prohibited..

Potential Effect	Project-related Mechanism of Effect	Mitigation
	Spills, erosion, emissions, and deleterious substances	• Follow the approved Spill Contingency Plan developed for the Snare Hydroelectric Facilities. • Follow the approved Waste Management Plans. • Fuel/diesel transporters will review the requirements of the Spill Management Plan. • Diesel will be transported using appropriate containment. • Diesel-carrying vehicles travelling on the WRs road at one time will be limited. • Ice Quality supporting vehicles or WRs will be monitored. • Use industry standards for fuel containment, storage, handling, and transport to avoid contamination to workers and the environment. • Equip all equipment and trucks with industry-standard emission control systems and spill kits. • Ensure staff are trained in the Workplace Hazardous Materials Information System and the Transportation of Dangerous Goods to avoid accidental spills. • Train all staff in spill response procedures and use of emergency spill kits to minimise adverse effects to vegetation and wildlife habitat. • Regularly maintain all equipment and trucks to ensure all are in good working order and free of leaks. • Prohibit idling except where necessary for construction. • Where possible, refuel equipment and vehicles away from watercourses. • Refuel equipment and vehicles with appropriate spill containment in place, and mitigation measures at hand in case of accidental spill (see Spill Contingency Plan). Report all spills in a timely manner. Refuel at least 30 m away from water bodies. • Locate fuel storage areas at least 100 m away from water bodies. Large fuel tanks (2000 to less than 80,000 litres) need to be double walled as per regulations. • Ensure proper removal of vegetation down to ground, without disturbing ground. • Use the *Snare Hydro Erosion and Sediment Control Plan* to apply suitable erosion control measures and slope stabilisation to avoid sedimentation and erosion and avoid adverse effects to waterbodies, as well as pollution to surface water. • Construction activities to consider sensitive periods for wildlife (see Section 2.3)
Alteration of surface water quality, soils and vegetation, altering availability and distribution of wildlife habitat	Spills, erosion, and deleterious substances	• Follow the approved Spill Contingency Plan developed for the Snare Hydroelectric Facilities. • Follow the approved Waste Management Plans. • Fuel/diesel transporters will review the requirements of the Spill Management Plan. • Diesel will be transported using appropriate containment. • Ice Quality supporting vehicles or WRs will be monitored. • Use industry standards for fuel containment, storage, handling, and transport to avoid contamination to workers and the environment.

Potential Effect	Project-related Mechanism of Effect	Mitigation
		• Equip all equipment and trucks with industry-standard emission control systems and spill kits. • Ensure staff are trained in the Workplace Hazardous Materials Information System and the Transportation of Dangerous Goods to avoid accidental spills. • Train all staff in spill response procedures and use of emergency spill kits to minimise adverse effects to vegetation and wildlife habitat. • Regularly maintain all equipment and trucks to ensure all are in good working order and free of leaks. • Prohibit idling except where necessary for construction. • Where possible, refuel equipment and vehicles away from watercourses. • Refuel equipment and vehicles with appropriate spill containment in place, and mitigation measures at hand in case of accidental spill (see Spill Contingency Plan). Report all spills in a timely manner. Refuel at least 30 m away from water bodies. • Large fuel tanks (2000 to less than 80,000 litres) need to be double walled as per regulations. • Ensure proper removal of vegetation down to ground, without disturbing ground. • Use the *Snare Hydro Erosion and Sediment Control Plan* to apply suitable erosion control measures and slope stabilisation to avoid sedimentation and erosion and avoid adverse effects to waterbodies, as well as pollution to surface water. • Construction activities to consider sensitive periods for wildlife (see Section 2.3) – do not remove vegetation during nesting season for birds.
	Dust and air emissions, subsequent deposition	• Apply dust suppression techniques using the GNWT Guideline for Dust Suppression and the *Snare Hydro Erosion and Sediment Control Plan* to minimise dust emissions on vegetation and habitat outside of right of way. • Visual cues (such as low visibility while driving, observed dust on vegetation outside of work area limits) should trigger dust suppression. • Repeat dust suppression measures until dust levels are visibly reduced. • Dust suppression measures include the application of water and/or Inspector-approved chemicals such as calcium chloride, using tanker trucks. • Trucks will only apply water/Inspector-approved chemicals as needed to active work areas. Apply only water when within 100 m of a water body. • Use gravel construction entrances/exits where construction access meets public highways to avoid tracking material onto the highway.

Potential Effect	Project-related Mechanism of Effect	Mitigation
	Surface runoff from Project	• Ensure stormwater runoff is directed into roadside ditches. • Refer to *Snare Hydro Erosion and Sediment Control Plan* manual to minimise risk of runoff on Site. • Install culverts and other design features to minimise changes in local flows and drainage patterns. Ensure regular maintenance of drainage features is undertaken to clear any debris accumulation (including ice during spring thaw).
	Construction and operation of Camps, WR and New Substation	• Avoid operation of machinery when soils are highly saturated (primarily during freshet) will be avoided where possible. Where unavoidable, suitable ground equipment will be used to prevent unnecessary soil damage.
Changes to wildlife habitat availability, use and connectivity, leading to changes in wildlife abundance and/or movement	Sensory disturbance and avoidance	• Complete construction activities during winter months where possible when migratory birds are not present and bears are denning. • Enforce a maximum speed limit of 30 kph along routes. • Convoy vehicles (4-6 heavy vehicle at a time) to minimize the frequency of disturbance and collision risk to wildlife. • If wildlife is observed on the road, vehicles will stop and wait until wildlife have left the road • Precede convoys with a light pick-up truck to minimize collision risk. • Prohibit idling except where necessary for construction. • Document project-related use of the WRs during operation (e.g., number of convoys, number and size of vehicles in convoys).

Potential Effect	Project-related Mechanism of Effect	Mitigation
	Construction and Operation of WR	• Maintain snowbanks at <1 m high and create breaks in snow berms (i.e., jump-outs) every 500 m so wildlife can readily move off the road as vehicles approach. • Multiple measures outlined in sections above are also applicable here. • Where large mammals (bison, caribou, and moose) are observed in areas where there are hazards, construction and operations at that site will be temporarily suspended by the NTPC Project Monitor, to allow wildlife to move away from the area on their own accord. If they do not move away within 15 minutes, they must be gently encouraged by the NTPC Project Monitor by vehicle to move away via a slow approach, or make their presence known by calling out and waving their arms. This must be accomplished from behind a vehicle so that the Project Monitor does not get too close. Females may be reluctant to move if there is a calf nearby, in which case all construction activities and operations must be suspended, to allow the animals to move away independently, until the area is clear. An Incident Report must subsequently be completed.

Potential Effect	Project-related Mechanism of Effect	Mitigation
Use of linear corridors and converted habitat (young, productive forest) by prey and predators, leading to reduction of survival and reproduction in prey species	Operation of WR	• Where large mammals (bison, caribou, moose) are observed in areas where there are hazards, operations at that site will be temporarily suspended by the NTPC Project Monitor, to allow wildlife to move away from the area on their own accord. If they do not move away within 15 minutes, they must be gently encouraged by the NTPC Project Monitor by vehicle to move away via a slow approach, or make their presence known by calling out and waving their arms. This must be accomplished from behind a vehicle so that the Project Monitor does not get too close. Females may be reluctant to move if there is a calf nearby, in which case all operations must be suspended, to allow the animals to move away independently, until the area is clear. An Incident Report must subsequently be completed..
Attraction of wildlife to the Project (food waste, petroleum-based products, salt), increasing human-wildlife interactions, changing predator-prey relationships, altering wildlife population dynamics	Construction and operation of Camps, WR and New Substation	• Complete the work in winter when possible when most migratory birds are not present and bears are denning. • Follow the Waste Management Plan. All waste products to be stored in secured containers and transported to approved facilities to avoid access by wildlife. • Collect and store all food and food waste in a manner inaccessible to furbearers. Incinerate waste locally or take off site to an approved facility. • All staff to be educated in proper waste management practices for the Project to avoid wildlife attraction. • Prohibit littering. • Prohibit approaching, harassing and feeding/ interacting with wildlife. • Staff to communicate wildlife sightings via radio to the NTPC Project Monitor, who will relay observations to Site Supervisors and equipment operators working in the area. Record all wildlife observations in the Wildlife Monitoring Form (see Section 5.1). • Stop work temporarily, as suspended by the NTPC Project Monitor where wildlife may be at imminent risk of injury or mortality or are close to the construction site. Record any incidents in the Wildlife Monitoring Form (Section 5.1). • Bear-banger deterrents only to be used if there is an immediate risk to life to personnel or wildlife safety. • Camps will be designed to prevent human-wildlife interactions, including appropriate storage of non-waste wildlife attractants (e.g. food, petroleum products, salt). Essential lighting will be used to detect bears or other large mammals in the vicinity. • Exposure of wildlife to contaminants will be avoided by use of appropriate deterrents (e.g. temporary fencing and noise makers) to discourage wildlife to an affected area..

4 MITIGATION MONITORING

4.1 ROLES AND RESPONSIBILITIES

NTPC will assign a Project Monitor (NTPC employee or contractor) for each of the proposed projects outlined in Section 1.4, who will be responsible for ensuring compliance with the WMMP and other safety and environmental policies. In addition, NTPC personnel will also conduct inspections for compliance. The mitigation measures described in this WMMP apply to all project personnel, contractors, and visitors to site who use the WRs or are involved with the Project activities as outlined in Section 1.4.

Specifically, the Project Monitor will be responsible for compliance with the various management plans for the project on behalf of the Project Manager, Engineering (e.g., Waste Management Plan, Spill Contingency Plan, and this WMMP). The Project Monitor will report to Project Manager, Engineering and have the authority to suspend works should the likelihood of an adverse effect on environmentally sensitive features (e.g., wildlife or wildlife habitat) arise. The temporary suspension of works will remain in effect until remedial measures have been taken to remove the environmental threat to the satisfaction of NTPC. The Project Monitor will be notified if a species at risk is observed in or near the project and will advise on appropriate species-specific mitigation.

The Project Manager will be responsible for training all project staff and contractors on the environmental sensitivity and prohibitions of the project at the beginning of each phase.

4.2 GROUND TRUTHING

A wildlife survey will be completed to document signs of wildlife and bear den habitat suitability in areas to be disturbed before any major vegetation clearing and/or quarrying activities takes place. A report of the findings of the wildlife survey including any recommendations will be submitted to the WLWB and ENR prior to starting any project activities.

4.3 WMMP MONITORING REQUIREMENTS

The monitoring requirements of The WMMP Guidelines (ENR 2018) require that a Tier 1 WMMP include mitigation monitoring. The monitoring will span both the construction and operation phases of the proposed projects. Monitoring will be conducted to determine whether mitigation measures are being implemented and are functioning as intended, and include, but are not limited to:

1. Vegetation brushing and danger tree removal;
2. Project-related vehicle operation, such as idling, speed limits, adherence to ‘no chase’ policy, recreational use;
3. Snowbank height and ‘jump-outs’; and

4. Prohibited activities such as littering, food storage, wildlife interactions, and hunting/trapping.

In addition, a mitigation audit will be completed at the end of each project or operation. The purpose of the mitigation audit is to:

1. Confirm that all WMMP mitigation was implemented;
2. Document why any WMMP mitigation was not implemented;
3. Document any new mitigation that was introduced during the course of the operations;

A protocol and data sheet for the mitigation audit is provided in Appendix A.

5 REPORTING

5.1 WILDLIFE OBSERVATION AND INCIDENTS LOG

All employees, truck drivers, and on-site contractors will be provided a Wildlife Monitoring Form and be responsible for documenting wildlife incidents in the project area (Appendix A). The Project Monitor will be responsible for collecting and analysing these logs to determine the following:

- Species presence and abundance on and near the project sites;
- Locations where species most often interact with the projects;
- Occurrence of predators and possible waste management concerns;
- Locations of animal-vehicle collisions, near misses, and mortality (including defense of life and property), and
- Non-project related use of the WRs.

NTPC will be responsible for reporting the following wildlife incidents to the GNWT-ENR officer without delay (**Error! Reference source not found.**). Wildlife incidents may include the following:

- Any wildlife mortality as a result of defense of life and property;
- Injured and suspected diseased wildlife;
- Wildlife carcass (unrelated to trapping);
- Incidence of human-wildlife conflict and anytime property is damaged by wildlife; and
- Anytime deterrents are used.

Table 5 Contacts for Reporting Wildlife Incidents

Name	Company/Agency	Title	Phone Number	Email
Wildlife Emergency Line[1]	GNWT ENR	-	1-867-873-7181	
Big Game Vehicle Collision	GNWT ENR	Renewable Resource Officer	1-866-762-2437	
Bison in the Bison Control Area	GNWT ENR		1-866-629-6438	
Wildlife Violation	GNWT ENR	Renewable Resource Officer	1-866-762-2437	
Species at Risk Observation				wildlifeobs@gov.nt.ca

1. Includes general wildlife observations/sightings including bears.

5.2 ENVIRONMENTAL REPORTING

The environmental reporting will be project specific, but in general, information will be collected following a checklist specific to potential construction/operation and site issues, along with photos. Reports will summarize:

- Activities undertaken during the reporting period;
- Log of vehicular traffic, both project and non-project related (if applicable);
- Key communications or meetings;
- Mitigations in place during the reporting period;
- Any deficiencies noted, and corrective actions undertaken by the contractor or employees;
- Log of wildlife observations and incidents; and
- Any outstanding environmental issues to be addressed.

A final report will be prepared at the completion of the project that summarizes all construction activities undertaken, mitigations, and any incidents or issues encountered on site, along with the corrective actions undertaken for the works. Reports will be submitted to GNWT-ENR and Wek'èezhìı Land and Water Board as required by conditions of the approvals or authorizations obtained for the works.

6 REFERENCES

ECG (Ecosystem Classification Group). 2008. Ecoregions of the Northwest Territories – Tiaga Shield. Government of the Northwest Territories Department of Environment and Natural Resources. Yellowknife, NT.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2019. COSEWIC wildlife species assessments (short version), May 2019. Available at: http://cosewic.ca/index.php/en-ca/assessment-process/short-version-mai-2019. Accessed: September 10, 2021.

ECCC (Environment and Climate Change Canada). 2019. Amended recovery strategy for the woodland caribou (Rangifer tarandus caribou), Boreal population, in Canada [proposed]. Species at Risk Act Recovery Strategy Series, Ottawa. xiii + 143 pp.

ENR (Environmental and Natural Resources, Government of Northwest Territories). 2018. Wildlife Management and Monitoring Plan Guidelines 2: Content Requirements.

GNWT, 2008. Available at https://www.enr.gov.nt.ca/sites/enr/files/reports/taiga_shield_poster.pdf. Accessed August 2021

GNWT. 2009. Species at Risk (NWT) Act, S.N.W.T. 2009, c.16.

GNWT. Wildlife Act. S.N.W.T. 2013, c.30. Amended October 31, 2017.

GNWT. 2019. Bathurst Caribou Range Plan. Environment and Natural Resources, Yellowknife, NT. 86 + iii pp.

Government of Canada. 1994. Migratory Birds Convention Act, S.C. 1994, c.22

Government of Canada. 2002. Species at Risk Act. c. 29. Amended May 22, 2019.

Government of Canada. 2019. Species at Risk Public Registry A to Z species index. Available at: https://wildlife-species.canada.ca/species-risk-registry/sar/index/default_e.cfm. Accessed: September 10, 2021.

Northwest Territories Species at Risk Committee. 2019. NWT Species Monitoring Infobase. Available at: https://www.nwtspeciesatrisk.ca/content/search-infobase. Accessed: September 10, 2021.

Tłı̨chǫ Government, 2013. Tłı̨chǫ Land Use Plan. Available at https://research.tlicho.ca/sites/default/files/105-landuseplan_final_version2_0_1_0.pdf. Accessed August 2021.

APPENDIX A

MONITORING DATA SHEETS AND PROTOCOLS

MITIGATION AUDIT PROCEDURE

PURPOSE

The purpose of this procedure is to confirm that the WMMP mitigation is implemented and document any changes.

RESPONSIBILITY

All staff are responsible for implementing mitigation The Project Monitor is responsible completing the mitigation audit.

PROCEDURE

1. Review the WMMP mitigation in Table 3 of the WMMP.
2. Using the data sheet provided, document which mitigation is implemented and note any mitigation with is not implemented. Provide reasons why any mitigation was not implemented.
3. Using the data sheet provided, document any new mitigation that was implemented and provide reasons why it was required.
4. Review should be completed once at the end of operations.

EQUIPMENT REQUIREMENTS

None.

REPORTING

Outcome of the Mitigation Audit will be included in the environmental report.

MITIGATION AUDIT DATA SHEET

Mitigation	Was this mitigation implemented? If not, explain why.
Complete the work in winter when most migratory birds are not present and bears are denning	
Conduct site clearing during winter months only.	
Restrict the overland portion of the Project to the existing portage	
Minimize vegetation clearing to brushing and danger tree removal only.	
Leave removed vegetation onsite, adjacent to the alignment or borrow sources.	
Construct vehicle pullouts in non-vegetated locations along the alignment.	
Follow the approved Spill Contingency Plan and Waste Management Plan under Water Licenses N1L4-0150 and MV2003L4-0014.	
Use industry standards for fuel containment, storage, handling, and	

Mitigation	Was this mitigation implemented? If not, explain why.
transport.	
Train all staff in spill response procedures and use of spill kits.	
Equip all equipment and trucks with industry-standard emission control systems and spill kits.	
Regularly maintain all equipment and trucks to ensure all are in good working order and free of leaks.	
Prohibit idling except where necessary for construction.	
Refuel equipment and vehicles away from watercourses.	
Refuel equipment and vehicles with appropriate spill containment in place, and mitigation measures at hand in case of accidental spill (see Spill Contingency Plan developed for the Snare Hydro/Cascades Project (Water Licenses N1L4-0150 and MV2003L4-0014)).	
Blasting will not be required.	
If wildlife is observed on the road, vehicles will stop and wait until wildlife	

Mitigation	Was this mitigation implemented? If not, explain why.
have left the road.	
Enforce a maximum speed limit of 30 kph along the route.	
Communicate observations of wildlife to other drivers.	
Follow the approved Waste Management Plan developed for the Snare Hydro/Cascades Project (Water Licenses N1L4-0150 and MV2003L4-0014)	
Prohibit littering.	
Prohibit feeding or interacting with wildlife.	
Collect and store all food and food waste in a manner inaccessible to scavengers. Incinerate waste locally or take off site to an approved facility.	

In the table below, document any new mitigation that was implemented, with a description of why it was necessary.

New Mitigation	Why was this mitigation required? Was it successful?

WILDLIFE OBSERVATION PROCEDURE

PURPOSE

The purpose of this procedure is to describe the management of the wildlife sightings during the construction phase of the Project.

RESPONSIBILITY

All staff are responsible for reporting wildlife sightings. The Project Monitors is responsible for maintaining and collecting the log sheets.

PROCEDURE

1. Wildlife sighting logs will be posted at the camp for Project staff to record observations of wildlife.

2. All Project staff will be encouraged to add observations to the log, including the species, number, location, and date of the observation.

3. Project Monitors will check the logs daily for evidence of problem wildlife or problem areas that may pose a risk to wildlife.

EQUIPMENT REQUIREMENTS

None. Data sheets to be posted for all Project staff use.

REPORTING

Observations relevant to human or wildlife safety, such as observations of bears, caribou, moose, bison, species at risk or nesting birds, will be included in the environmental report. Copies of all Wildlife Sightings Logs will be provided in the Weekly Report. All information including surveys and monitoring will be summarized in the Annual Report.

Wildlife Sightings Log

Date	Time	Species	Number	Location (km marker, or coordinates)	Notes (any behavioural response or reactions?)	Name	Company

WILDLIFE INCIDENT REPORTING PROCEDURE

Purpose

The following procedure is intended as a guideline to identify wildlife that requires immediate reporting and sampling (if necessary). ENR encourages all those conducting activities on the land or residents to record and report all instances of injury or possibility of disease in wildlife. The Project will document all such incidents to prevent future incidents or escalation of problems, and report to GNWT-ENR and ECCC if migratory birds are involved.

RESPONSIBILITY

All project personnel are responsibility for providing recording wildlife incident to the on the Project site.

As per Section 57 of the *Wildlife Act,* any defense of life and property kills must be reported without delay to ENR. All reasonable efforts must be made to ensure the hide and other valuable parts do not spoil and that these are turned over to an ENR Officer to avoid any wastage.

As per Section 58 of the *Wildlife Act*, and sub-section 8(1) of the Wildlife General Regulations, any person who accidentally kills or seriously wounds big game or other prescribed wildlife with a motorized vehicle on a highway must report the event to an officer within 24 hours after the incident.

PROCEDURES

Report wildlife incidents when:

- wildlife is determined to be injured.
- wildlife is suspected of being diseased.
- wildlife is found dead.
- there is the potential for human/wildlife conflict such as an occupied bird nest or wolf or bear den.
- wildlife was deterred from camp or other work area.
- there is a defensive kill.
- property is destroyed by wildlife.
- wildlife is injured or killed due to collision with a vehicle.

Complete the Wildlife Incident Record Form, providing information such as:

- Behaviour and movements
- Loss of life or property
- Reason for attraction to area
- Estimation of how long the animal was dead
- Any other animals seen in the area

Collect photographs:

- Add photo name/label
- Show general area
- In case of mortality, photograph the animal (one from each side, head, and tail), including anything unusual and any obvious injuries or marks

REPORTING

Environmental Monitors should report all incidents immediately to the NSI Environmental Manager. When the Wildlife Incident Report is complete, the NSI Environmental Manager is to contact:

- GNWT-ENR North Slave Emergency number at (867) 873 - 7181 (24 Hours), Fax: (867) 873 – 6230.
- Environment and Climate Change Canada at ec.dalfnort-wednorth.ec@canada.ca

All Incident Reports will be included in the Weekly Reports.

Occurrence Date/Time:

Date Reported:

Wildlife Incident Record

MAIN CONTACT INFORMATION			
NAME: **ADDRESS:** **PHONE NUMBER:**			
Location of Complaint: (coordinates, km marker, lake, camp)			
Details Taken by:			
Location of Incident (coordinates, km marker, lake, camp):			
Type of Incident:	☐ Encounter ☐ Nuisance ☐ Wildlife Mortality ☐ Wildlife Injured ☐ Defensive ☐ Other:		
Species:	☐ Black Bear ☐ Bison ☐ Fox ☐ Wolverine ☐ Wolf ☐ Caribou ☐ Moose ☐ Bird ☐ Other:		
Sex:	☐ Male	**AGE CLASS:**	☐ Adult
	☐ Female		☐ Juvenile
	☐ Unknown		☐ Cub
			☐ Unknown
Details of Incident: (movement, behaviour, reason for attraction, property damage, vehicle collision, etc.)			
Details of Action Taken: (reporting, deterrence type, disposal, removal of attractant, etc.)			
DATE: mm/dd/yy			
Was the incident resolved?		☐ Yes	☐ No
Has Environment & Natural Resources been contacted? **Contact Name:** **Date/Time Reported:**		☐ Yes	☐ No

APPENDIX B

STANDARD OPERATING PROCEDURES

NORTHWEST TERRITORIES POWER CORPORATION
Empowering Communities

October, 2020

Snare Hydro Vegetation Removal Standard Operating Procedure

This Standard Operating Procedure (SOP) applies to all project personnel, and contractors. Its purpose is to minimize the impacts to vegetation and wildlife habitat in areas where earthworks and site clearing may take place at the Snare Hydro Facilities, including, but not limited to the winter roads, quarry and borrow sites, temporary camp and fuel storage areas, and major construction projects at Snare Hydro.. **This SOP provides the following mitigation measures to be used during all vegetation removal, site clearing and earthwork activities at the Snare Hydro Facilities**:

- This Standard Operating Procedure is to be used in conjunction with the mitigation measures as outlined in the *Snare Hydroelectric Facility Vegetation and Wildlife Management Plan*, the *Snare Winter Roads and Quarries – Operations & Maintenance and Reclatmenation Plan,* and the *Snare Hydro Facility Erosion and Sediment Control Plan*
- Locations for temporary clearings for laydowns and other temporary facilities will be located on previously impacted areas as much as possible.
- Before major vegetation clearing and/or quarrying projects are completed a wildlife survey must be completed by an environmental professional to identify wildlife features and submitted to ENR and the WLWB for approval.
- Prior to any clearing/grubbing or stripping, limits shall be marked in the field using fencing, stakes, or flagging to ensure vegetation in adjoining areas are not disturbed, and to mitigate against over clearing. 30m Buffer zones will be implemented around sensitive areas such as wetlands and water courses where possible.
- Where possible, vegetation should be removed by using cutting methods rather than clearing methods, avoiding ground disturbance, and leaving roots intact to encourage natural re-growth following construction activities.
- During winter road construction, vehicle pullouts are to be constructed in non-vegetated locations along the alignment, and vegetation clearing will be minimized to brushing and danger tree removal only, unless absolutely necessary to do so.
- When removing vegetation there are few key principles that must be followed to meet GNWT requirements
    - **Vegetation must be kept separate from overburden**
        - **Vegetation should be piled and disposed using approved techniques below**
        - **Overburden should not be disturbed when possible. If quarrying or completing earthworks overburden should be stored in a designated pile for reclamation when work is complete**
    - **Edge of clearing should be debris free**
        - **Vegetation should not be pushed and piled around edges of clearing**

Example of Proper Vegetation Removal with minimal removal of overburden, clean vegetation perimeter with no debris and overburden stockpiled for reclamation once scope of work is completed.

NORTHWEST TERRITORIES POWER CORPORATION
Empowering Communities

October, 2020

Snare Hydro Vegetation Removal Standard Operating Procedure

- Approved techniques for disposing of vegetation as per meet GNWT requirements include:
    - For minor spot clearing vegetation can be placed particular into forest edge and allowed to naturally decompose. Vegetation should not be piled and evenly spaced to avoid fuel loading for fire.
    - Removed vegetation can be piled and burned.
        - Piles should not include any soil
        - Piles should only be burned in the winter months when no risk of forest fire is present
    - When possible merchantable timber (=>5" diameter) that is removed will be stacked for salvage/use.
    - **For large clearing work chipping and/or mulching is the preferred method of vegetation disposal as this is the safest and most efficient way to dispose of large amounts of vegetation at Snare**

Example of vegetation removal and chipping along powerline ROW (http://yukontreeservices.ca/photo-gallery/chipping-hydro-line-right-of-way-mt-mac-whitehorse-yt/).

- Grading and major earthworks is guided by the *Snare Winter Roads and Quarries – Operations & Maintenance and Reclatmenation Plan* but a few key principles that apply to vegetation clearing with equipment are:
    - All slopes from any excavations will be graded to ensure stability to avoid failure and erosion.
        - **Slopes must be less than 70 degrees to prevent nesting.**
    - If drainage issues occur (ponding water or washout areas) re-grading will be completed to ensure proper drainage is present to minimize erosion.
- Information on vegetation clearing practices is also provided in Document No. EMSG-008 on Powerline *Transmission and Distribution Procedure*.

APPENDIX C

STATUTORY REQUIREMENTS FOR WILDLIFE IN THE NWT

Table A1 Concordance of Legislation/Regulation Requirements and Wildlife Management and Monitoring Plan Guidelines

Legislation/ Regulation/ Agreement	Requirement	Corresponding Section in WMMP	Responsible Regulatory Agency
NWT Wildlife Act	A Wildlife Management and Monitoring Plan must include: (a) a description of potential disturbance to big game and other prescribed wildlife, potential harm to wildlife andpotential impacts on habitat; (b) a description of measures to be implemented for themitigation of potential impacts; (c) the process for monitoring impacts and assessingwhether mitigative measures are effective; and, (d) other prescribed requirements.	All Sections	GNWT-ENR
Species at Risk Act and *Species atRisk (NWT) Act*	NTPC will adhere to requirements of all applicable Regulations or Recovery Plans that may bedeveloped.	Section 2.2	CWS (ECCC) GNWT-ENR
NWT Wildlife Act	Engagement	Section 1.2	GNWT-ENR
	Mention of associated operational or management plans	Section 1.3	
	Project description	Section 1.4	
	Project map	Section 1.4	
	Affected species or habitat features	Section 2.2	
	Potential impacts to wildlife and wildlife habitat	Section 2.4	
	Wildlife and Wildlife Habitat Mitigation	Section 3.0	
	Employee wildlife awareness education and training	N/A	
	Infrastructure design and camp layout for bear safetyand/or to prevent denning, nesting, and roosting	Section 3.0 Section 4.2	
	Management of camp waste and other wildlife attractants	Section 3.0	
	Timing restrictions and/or set back distances to protectwildlife and wildlife habitat features	Section 2.3	
	Direct habitat loss – minimizing the project's physical footprint	N/A	

Table A1 Concordance of Legislation/Regulation Requirements and Wildlife Management and Monitoring Plan Guidelines

Legislation/ Regulation/ Agreement	Requirement	Corresponding Section in WMMP	Responsible Regulatory Agency
NWT Wildlife Act (cont'd)	Habitat alteration – minimizing physical manipulation of habitat that would decrease its value to wildlife	N/A	
	Indirect habitat loss – minimizing functional habitat loss due to sensory disturbance, dust, etc.	N/A	
	Management of hazards to wildlife (e.g., open pits, tailings ponds, roads, airstrips, spills)	Section 3.0	
	Wildlife deterrence procedures	Appendix B	
	Habitat restoration	N/A	
	Description of the role of community wildlife monitors in implementing aspects of the plan	Section 4.0	
	Offsetting or compensatory measures	N/A	
	Mitigation monitoring	Section 4.0	
	Wildlife effects monitoring	N/A	
	Project footprint size reporting	Section 5.0	
	Description of approach to adaptive management	N/A	
	Formal response frameworks with action levels	N/A	
	Reporting protocols	Section 5.0	
	Roles and responsibilities	Section 4.1	
	Literature cited	N/A	
	Glossary	N/A	
	SOPs (not required but provided)	Appendix B	
	Monitoring forms and data sheets	Appendix B	
	Reporting form templates	Appendix B	
	WMMP revisions tracking table	Page i	

CWS = Canadian Wildlife Service, Environment and Climate Change Canada.
ECCC = Environment and Climate Change Canada.
GNWT = Government of the Northwest Territories.
GNWT-ENR = Department of Environment and Natural Resources, Government of the Northwest Territories.