NWT Rare Earths Ltd.

Nechalacho Mine
Wildlife and Wildlife Habitat Protection Plan

MV2014D0001

MV2014L2-0001

12 May 2020
Version 2

Version and Revision History

Version	Date	Sections Revised/Comments
0	23 December 2013	Conceptual version submitted to the Mackenzie Valley Land and Water Board with Water Licence and Land Use Permit applications MV2010D0017 and MV2010L2- 0005 (as Supporting Documentation: Attachment M).
1	6 October 2014	Updates to address comments received from various parties through consultation, MVLWB Online Review System, and July 2014 Technical Sessions.
2	12 May 2020	Added Statutory Requirements for Wildlife in the NWT (Appendix D) Updated contact information Updated corporate information and template to reflect the new Project ownership under NWT Rare Earths Ltd. Removed reference to corporate policies, pending new policies for NWT Rare Earths Ltd.

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APPENDICES

1.0 INTRODUCTION

The Wildlife and Wildlife Habitat Protection Plan (WWHPP) is to be used as a tool for NWT Rare Earths Ltd. (referred to hereafter as NWT Rare Earths) to prevent or reduce direct wildlife and wildlife habitat effects from within the Nechalacho Mine (the Project) development area (herein referred to as Project footprint), to evaluate effects predictions and protective measures, and for community and regulatory agencies that have responsibilities to manage wildlife to oversee Project- related effects.

This WWHPP, in combination with the Wildlife Effects Monitoring Program (WEMP), together form NWT Rare Earths' commitment to monitoring and managing both direct and indirect Project related effects. The WWHPP describes protective measures and monitoring strategies to determine and manage direct effects that occur within the Project footprint, whereas the WEMP describes monitoring strategies for indirect effects that occur beyond the Project footprint. Through this WWHPP, protective measures and effects monitoring programs are enforceable by the Mackenzie Valley Land and Water Board (MVLWB) under Section 26(1)(h) of the Mackenzie Valley Land Use Regulations. Both documents will require updating prior to construction of the Nechalacho Mine.

The WWHPP is organized as a guidance document for NWT Rare Earths' staff that can be easily updated and revised as additional information becomes available as the Project progresses. It is organized into the following sections:

Section 1.0:Introduction, Corporate and Project Overview, Engagement and Community Participation, Lessons Learned, and Proposed Protective Measures

Section 2.0: Wildlife and Wildlife Habitat Monitoring

Section 3.0: NWT Rare Earths' Standard Operating Procedures

Section 4.0: Best Management Practices

1.1 Company Name, Project Location & Effective Date

NWT Rare Earths Ltd.

Corporate Contact: David Connelly
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Email: dconnelly@ileroyale.com
Address: 5110 49th St, Yellowknife, NT, Canada, X1A 1P8

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Phone: 867 445 7252
Email: ykexplor@gmail.com

Effective Date of Wildlife and Wildlife Habitat Protection Plan: 12 May 2020

1.2 Nechalacho Project Overview

NWT Rare Earths is engaged in the exploration and development of rare metal deposits in Canada. NWT Rare Earths proposes to mine, mill, and produce a mixed rare earth concentrate from the Nechalacho deposit, located on its Thor Lake Property, approximately 100 kilometres (km) southeast of Yellowknife, Northwest Territories. The proposed project is referred to as the Nechalacho Rare Earth Elements Project (Nechalacho Project).

1.2.1 Project-Related Activities and Footprints

Approximately 12-15 million tonnes of resources will be mined from the Nechalacho deposit over a period of approximately 20 years of operations. Construction will begin 24-30 months prior to operations, and reclamation activities will commence following cessation of all operations and continue for a period of approximately three years.

The Nechalacho Mine and Concentrator Plant site is planned to operate 365 days per year with a 24 hour, 7 days a week schedule (24/7). The employment schedule will be based on fly-in/fly-out transportation, onsite camp facilities and a one week in/one week out rotation.

Rare earth elements (REEs) will be mined underground and concentrated at the Nechalacho Mine and Concentrator Plant site. Primary crushing of ore and waste rock will be completed underground and conveyed to the surface. Originally, the resulting mixed REE concentrate was planned to be barged across Great Slave Lake to Pine Point for extraction of REE from the concentrate through hydrometallurgical processing; however, due to process optimization, associated logistical challenges and the agreement with Solvay, there is a high probability that the concentrate will now be barged directly to Hay River and direct shipped by rail for further treatment outside of the Northwest Territories. The resulting rare earth precipitate will then be processed in the Solvay refinery in France.

The primary components of the Nechalacho Mine and Concentrator Plant site include an underground mine, concentrator plant, water supply, tailings management facility, camp, power supply, concentrate storage and loading, access road (8 km), airstrip (1,000 m), fuel storage, and seasonal dock facility. A summary of Project-related infrastructure and activities are provided in Table 1. The current general arrangement (GA) for the Nechalacho Mine and Concentrator Plant site is illustrated in Figure 1 and more detailed information on the main Project components are provided in Figure 2, Figure 3, and Figure 4.

Table 1: Summary of Project-Related Activities and Infrastructure

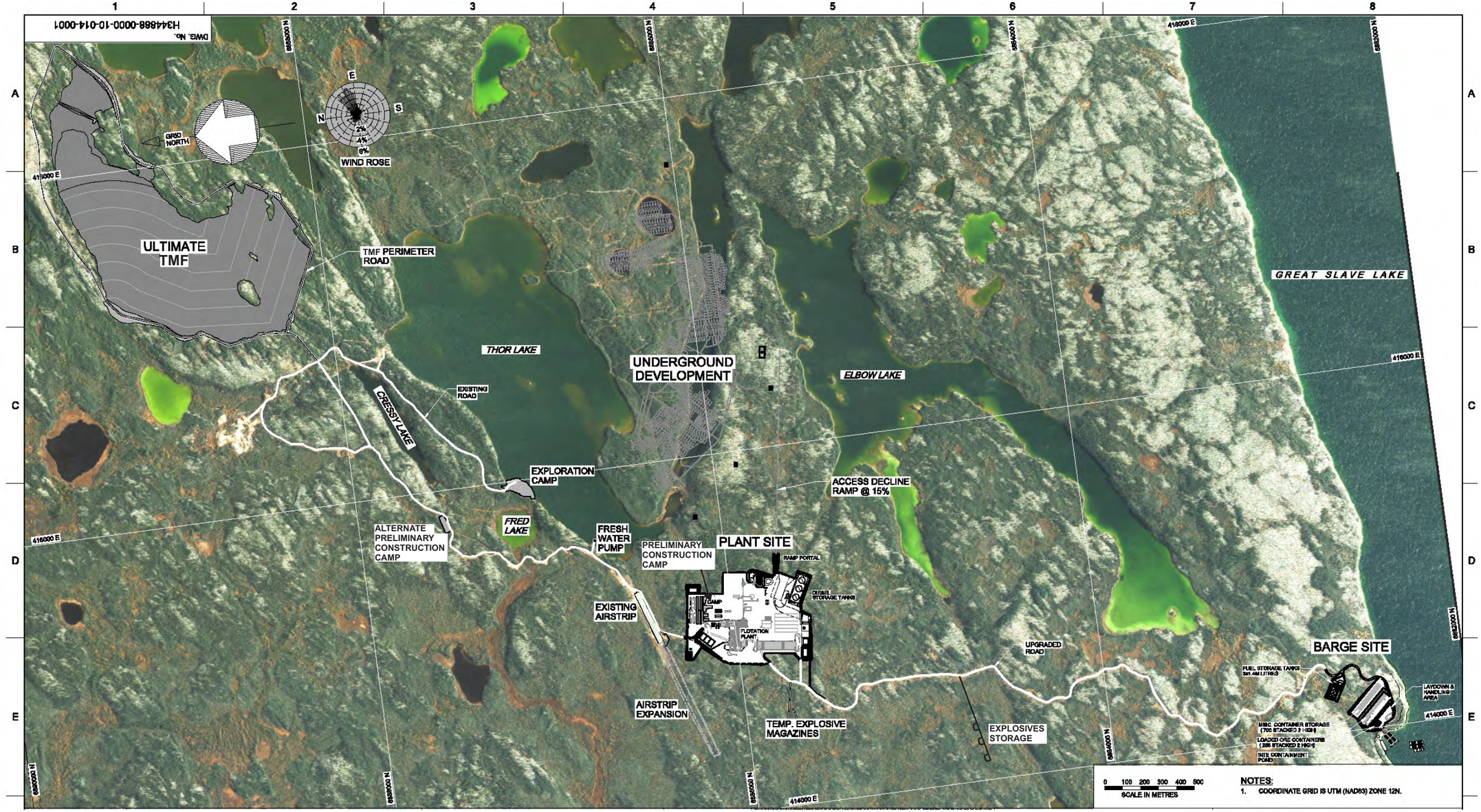
Activities/Infrastructure	Activities/Infrastructure
Construction, operation, and closure of Project facilities and infrastructure (e.g., concentrator plant, power plant incinerator fuel storage, airstrip, camp, TMF, dock facility)	Use and storage of explosives, fuel and consumables

Activities/Infrastructure	Activities/Infrastructure
Upgrade, maintenance, and operation of the Mine access roads	Storage and management of solid and hazardous wastes
Underground mining	Seasonal barging
Hauling of ore and waste rock	Use of equipment, vehicles, and other machines
Construction of berms at the TMF	Generation and disposal of waste and treated effluent
Deposition of processed tailings into the TMF	Water use for construction, processing, and domestic use
Mine rock stockpiling and crushing for site preparation	Closure and reclamation

Detailed Project-related infrastructure and activities are provided in the Developers Assessment Report (DAR)[1]. The Updated Project Description Report Provided to the MVLWB in December 2013[2] provides a consolidated update of the Project Description for the Nechalacho Project as it has evolved from 2010 to the present. This document also describes how NWT Rare Earths proposes to address the recommendations arising from the MVEIRB Report of Environmental Assessment and the commitments made during the Environmental Assessment process.

[1] Avalon Rare Metals Inc. 2011. Developer's Assessment Report, Thor Lake Project, Northwest Territories. Submitted to the Mackenzie Valley Environmental Impact Review Board.
[2] Avalon Rare Metals Inc. 2013. Updated Project Description, Nechalacho Rare Earth Element Project Mine and Flotation Plant. 142 pp.

DWG. No. H344588-0000-10-014-0001



NOTES
Source: Overall Mine Site General Arrangment Plan Rev. A (Avalon, 2013)

STATUS
ISSUED FOR USE

CLIENT
AVALON RARE METALS INC

NECHALACHO PROJECT

Nechalacho Project Footprint

TETRA TECH EBA

PROJECT NO.	DWN	CKD	APVD	REV
V15103072-02.17	MEZ	SL	KL	0

OFFICE: EBA-VANC
DATE: October 1, 2014

Figure 1

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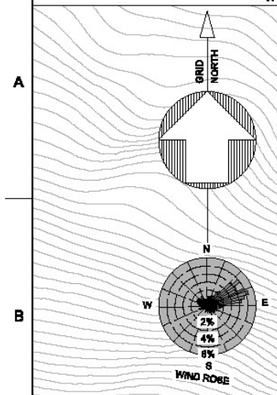
DWG. No. H344888-6000-10-035-0002



FUEL PIPELINE TO CONCENTRATOR PLANT FUEL STORAGE TANKS

FUEL STORAGE TANKS
3 x 1.4M LITERS
EL. 197.00

FUEL PIPELINE TO TANKS

EL. 180.00

CONTAINER/LAYDOWN STORAGE YARDS

EL. 170.00

LOADED ORE CONTAINERS (2265 STACKED 2 HIGH)

MISC. CONTAINER STORAGE (700 STACKED 2 HIGH)

FUEL BARGE

SITE CONTAINMENT POND

LAYDOWN/HANDLING AREA - EL. 162.00

LOADED ORE CONTAINERS (2265 STACKED 2 HIGH)

EL. 180.00

EL. 170.00

30.48 CLR FROM LAKE H.W.

CARGO BARGE

GREAT SLAVE LAKE
LAKE EL. 156.64m

6682500 N

414000 E

414500 E

0 15 30 45 60 75
1:1500 SCALE IN METRES

NOTES
Source: Avalon (2013)

STATUS
ISSUED FOR USE

AVALON RARE METALS INC

TETRA TECH EBA

NECHALACHO PROJECT

Nechalacho Barge Dock Facility and Laydown Area

PROJECT NO.	DWN	CKD	APVD	REV
V15103072-02.17	MEZ	SL	RH	0

OFFICE	DATE
EBA-VANC	October 6, 2014

Figure 2

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DWG. NO. H344888-6000-10-035-0001

EXISTING AIRSTRIP
TERMINAL
AIRSTRIP PHASE 2
GRID NORTH
WIND ROSE
CAMP
120-PERMENANT
200-CONSTRUCTION
MINE DEWATERING POND
S.T.P.
SEDIM. POND
REAGENTS STORAGE
BUS LOOP/ PARKING
KITCHEN/REC
CONST. POWER/ FUEL TANKS
WAREHOUSE/ MAINTENANCE
SERVICE COMPLEX
MOBILE EQUIPMENT
CONCENTRATOR BLDG
PASTE BACKFILL
MINE CONTRACTOR
BURIED ELECTRICAL LINE
WASTE ROCK STOCKPILE
O/H POWER LINE
BATCH PLANT
CRUSHER PLANT/ STOCKPILES
RE CONCENTRATE STORAGE BUILDING
POWER PLANT
ACCESS DECLINE RAMP
RAMP PORTAL
TEMPORARY DETONATOR MAGAZINES
CONSTRUCTION LAYDOWN
TRUCK FUELING
DIESEL STORAGE 3 X 10.0 Ml TANKS
SITE WATER COLLECTION POND
LANDFARM
FUEL OFFLOADING AND TRANSFER
WASTE SORTING/ INCINERATOR
FUEL PIPELINE
ACCESS ROAD TO PORT FACILITIES
THOR LAKE
UNDERGROUND DEVELOPMENT
SCALE IN METRES

NOTES
Source: Nechalacho Mine and Flotation Plant Rev. A
Avalon (2013)

STATUS
ISSUED FOR USE

CLIENT
AVALON RARE METALS INC

TETRA TECH EBA

NECHALACHO PROJECT

Concentrator Site Plan

PROJECT NO.	DWN	CKD	APVD	REV
V15103072-02.17	MEZ	SL	KL	0

OFFICE: EBA-VANC
DATE: October 1, 2014

Figure 3

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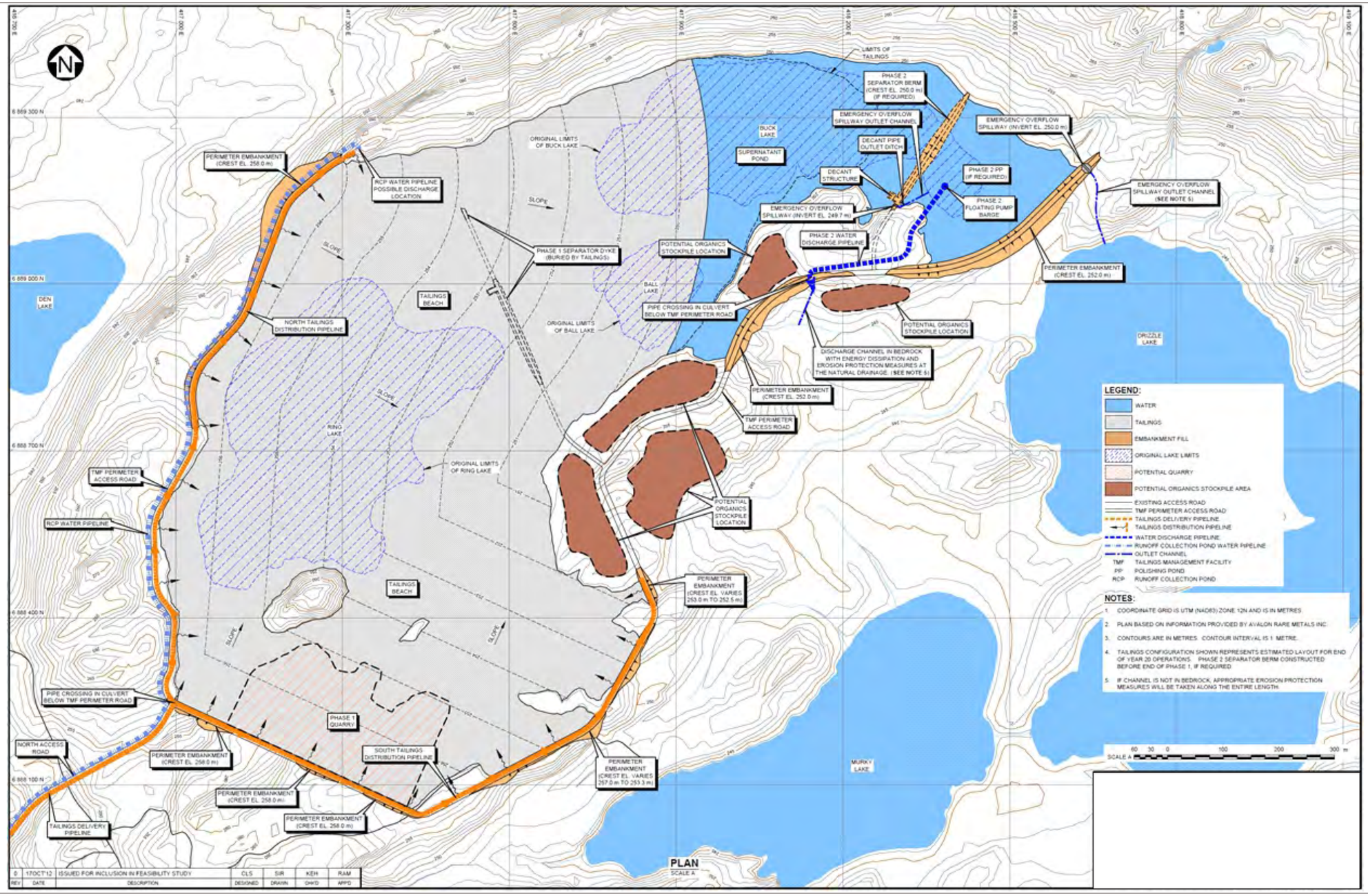

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NOTES
Source: Figure 6.4.3, Feasibility Study, Avalon (2013)

STATUS
ISSUED FOR USE

CLIENT
AVALON RARE METALS INC

TETRA TECH EBA

NECHALACHO PROJECT

Tailings Management Facility General Arrangement – End of Phase 2

PROJECT NO.	DWN	CKD	APVD	REV
V15103072-01.17	MEZ	SL	KL	0

OFFICE	DATE
EBA-VANC	October 1, 2014

Figure 4

1.3 Lessons Learned from Community Participation

Traditional Knowledge Studies[3] were completed with members of the Lutsel K'e Dene First Nation, Deninu Ku'e Nation and Fort Resolution Metis Council, and the Yellowknife Dene First Nation in N'Dilo and Dettah for the initial project design and assessment stages. All participants indicated that they depend on the North and South Slave regions for their income. Each person interviewed said that they historically or currently hunt and trap as a source of income. In particular, participants cited specific locations in the greater Project area where people historically lived or had cabins including Beaulieu River, Blanchet Island, Francois Bay, Gros Cap, Keith Island, Narrows (east of the Project site), Narrow Island, Simpson Islands, Taltheilei Narrows, and the entire north shore of Great Slave Lake.

Local and Traditional Knowledge has been incorporated into the initial project design and assessment, and NWT Rare Earths anticipates that the project will continue to benefit from the application of such knowledge from the aboriginal workforce, including the aboriginal environmental and wildlife personnel that will be participating in the Wildlife Monitoring Program.

Similarly, this WWHPP is built upon lessons learned from other project developments, which have incorporated Traditional Knowledge and community driven protective measures (Section 1.4 Lessons Learned from Other Projects).

Going forward, opportunities for community participation and engagement in the design, implementation, and evaluation of this WWHPP and its products are integrated directly into Section 2.0 Monitoring and include community site visits, regulatory meetings, public information sessions, annual reports, audit results, wildlife monitoring and cumulative effects workshops, and NWT Rare Earths' website.

1.4 Lessons Learned from Other Projects

Three diamond mines are currently in operation in the Northwest Territories. Unlike the Nechalacho Project, all of these other mines are located on the tundra and interact with barrenland species and habitats. Many of these, as well as others in Nunavut, have developed WWHPPs (or similar programs) and have been documenting practical and effective protective measures, proven monitoring and training programs. The effective implementation of these plans has generally resulted in reduced wildlife and wildlife habitat effects, and lessons learned through their adaptive management strategies. This WWHPP incorporates these lessons learned, as much as practical; but also allows for the process of "learning by doing" based on NWT Rare Earths' adaptive management practice

[3] EBA Engineering Consultants Ltd. (EBA). 2011a. Traditional Knowledge Study Summary Report: Yellowknives Dene First Nation, Dettah and N'Dilo, NWT;

EBA Engineering Consultants Ltd. (EBA). 2011b. Traditional Knowledge Study Summary Report: Deninu Ku'e First Nation and Fort Resolution Metis Council, Fort Resolution, NWT;

EBA Engineering Consultants Ltd. (EBA). 2011c. Traditional Knowledge Study Summary Report: Lutsel K'e Dene First Nation, Lutsel K'e, NWT.

and local regulatory and community engagement (Sections 2.3 and 2.4 Annual Report and Engagement and Adaptive Management, respectively).

The following recent documents were reviewed and provided guidance in the preparation of this WWHPP:

- Fortune Minerals Limited NICO Project Wildlife and Wildlife Habitat Protection Plan – Version 1[4];
- De Beers Canada Inc. Gahcho Kué Mine Wildlife and Wildlife Habitat Protection Plan[5];
- Diavik Diamond Mines Inc. 2011 Wildlife Monitoring Program Report[6];
- Snap Lake Wildlife Management Plan[7];
- Snap Lake Diamond Project Wildlife Effects Monitoring Program[8];
- Wildlife Mitigation and Monitoring Plan for the Jericho Diamond Project[9]; and
- Diamond Mines Wildlife Monitoring Programs – Community Workshop[10].

1.5 Potential Project Effects and Protective Measures

Potential effects on wildlife and their habitat from the Nechalacho Project are detailed in the DAR[11] (Avalon 2011) and provided as a summary within this WWHPP. Within the DAR, the main ways Project-related activities and infrastructure could directly affect wildlife and wildlife habitat within the Project footprint was through habitat loss, changes in movement, and mortality.

NWT Rare Earths is committed to avoiding and reducing these effects by incorporating protective measures and monitoring their effectiveness via standardized Monitoring Programs (MP) (refer to Section 2.0 Monitoring). Protective measures include specific Project-designs that range from significant pre-development planning of Project footprints/activities to designing, operating, and maintaining lined containment areas for hazardous waste storage. Likewise, protective measures also include the development and incorporation of employee/contractor training and practices, corporate policies, Standard Operating Procedures (SOP), and Best Management

[4] Golder Associates. 2013. NICO Project Wildlife and Wildlife Habitat Protection Plan – Version 1. Prepared for Fortune Minerals Limited.
[5] De Beers Canada Inc. 2014. Gahcho Kué Mine Wildlife and Wildlife Habitat Protection Plan. De Beers Group of Companies. 111 pp.
[6] Diavik Diamond Mines Inc. 2012. Wildlife Monitoring Program Report - 2011. Diavik Diamond Mines Health, Safety, Environment, and Training Department. 116 pp.
[7] Golder Associates. 2007. De Beers Canada Snap Lake Mine Wildlife Management Plan. 27 pp.
[8] De Beers Canada Mining Inc. 2004. Snap Lake Diamond Project Wildlife Effects Monitoring Program. 48 pp.
[9] Golder Associates. 2007. Wildlife Mitigation and Monitoring Plan for the Jericho Diamond Project. 133 pp.
[10] Handley, J and J. Barnaby. 2010. Diamond Mines Wildlife Monitoring Programs – Community Workshop, October 5 and 6, 2010. Web access http://www.emab.ca/Portals/0/Documents/Communities%20Wildlife%20Workshop%20Rpt_Oct%202010%20FINAL.pdf [accessed September 2014].
[11] Avalon Rare Metals Inc. 2011. Developer's Assessment Report, Thor Lake Project, Northwest Territories. Submitted to the Mackenzie Valley Environmental Impact Review Board.

Practices (BMP) such as prohibiting littering, reporting wildlife present in and near the roads, and using dust control strategies to reduce Project-related dust.

General protective measures to avoid and/or minimize these Project-related effects are organized within four categories:

1) Protecting Habitat
2) Working Near Wildlife
3) Preventing Attraction/Avoidance Behaviour
4) Employee/Contractor Training and On-Site Orientation

Many of these protective measures are further detailed within the relevant Nechalacho Project operating plans developed as part of the Project's overall environmental management system and should also be reviewed in conjunction with this WWHPP. These include the:

- Wildlife Effects Monitoring Plan;
- Aquatic Effects Monitoring Plan;
- Emergency Response Plan;
- Waste Management Plan;
- Waste Rock Management Plan;
- Incinerator Management Plan;
- Hazardous Materials Spill Contingency Plan;
- Explosives Management Plan;
- Erosion and Sediment Control Plan;
- Air Quality Monitoring Plan; and
- Closure and Reclamation Plan.

1.5.1 Protecting Habitat

NWT Rare Earths is proposing several protective measures to avoid or minimize wildlife habitat effects (Table 2):

Table 2: Habitat Protective Measures

Limiting the spatial extent of the project footprint through Project design, and monitoring the Project footprint and direct wildlife habitat loss through the construction to remediation phases (MP #2 Direct Habitat Loss Monitoring Program)	Implementing dust suppression strategies (e.g., water or approved dust suppressant products) in accordance with the Air Quality Monitoring Plan and the Government of Northwest Territories (GNWT) Dust Suppression Guidelines[12]
Progressive reclamation during the long term operations phase and following mine closure to re-establish self- sustaining ecosystem types	Monitoring and enforcing use of dust suppressants on roads during the summer and fall to suppress dust as per the Air Quality Monitoring Plan
Collecting and storing top soil for re-vegetation, as per the Closure and Reclamation Plan	Implementing the Hazardous Materials Spill Contingency Plan to minimize impacts to wildlife habitat from potential spills
Stipulating low speed limits to reduce dust along the roads	Maintaining a minimum100 m buffer distance between the Project and waterbodies

1.5.2 Working Near Wildlife

NWT Rare Earths is proposing several protective measures to avoid or minimize negative effects to wildlife on or near Project-related work sites and activities (Table 3). These are to be implemented to the extent practical.

Table 3: Working Near Wildlife Protective Measures

Wildlife sensitivity training and educating of wildlife-related policies and protection measures for employees and contractors during on-site orientation	Temporarily suspending surface blasting if wildlife observed in the blast zone area
Educating employees and contractors the procedures to report wildlife observations (following SOP #1 Wildlife Observations and Procedures) and actively avoid caribou and Species at Risk if encountered (SOP # 5 Uncommon and Rare Species Observations)	Monitoring and enforcing speed limits to avoid wildlife injuries and to suppress dust. Traffic speeds are anticipated to be in the range of 10 – 35 kilometres per hour (km/hr) (depending on the road condition and vehicle/equipment) and will be posted on site

[12] ENR. 2013. Guideline for Dust Suppression. Web access: http://www.enr.gov.nt.ca/sites/default/files/guidelines/dustsupression.pdf [accessed September 2014].

Monitoring and enforcing setback distances to sensitive and Species at Risk (following MP #1 Wildlife Surveillance Monitoring Program; SOP #5 Uncommon and Rare Species Observations)	All Project-related transportation giving wildlife the right-of- way (following SOP #2 Wildlife on Roads or Airstrip)
Training employees and contractors on the alert system to relay sightings of all medium and large-sized mammals on or in the immediate area of the Project footprint to vehicles and equipment operators and on-site personnel (SOP #2 Wildlife on Roads or Airstrip)	Restricting vehicle use to designated roads, and prohibiting recreational off-road use of vehicles
Conducting tree cutting and land clearing outside of the breeding season for migratory birds including Species at Risk (May 5 to August 15)	Following SOP #2 Wildlife on Roads or Airstrip and BMP procedures for flying into and departing from the airstrip to accommodate wildlife, if present
Conducting tree cutting and land clearing outside of the owl breeding season (March 15 to August 1)	Educating contractors and employees to follow a minimum flying altitude of 600 metres (m) for helicopters and fixed- wing aircrafts, except during take-off and landings (BMP #1 Flying Low)
Conducting mowing or other activities within the airstrip buffer zone outside of Short-eared Owl breeding season (April 20 to July 31)	Strictly Prohibiting hunting and trapping by employees and contractors while working on or near (within 3 km) the Project. No personal hunting or trapping equipment allowed on site.
Avoiding all known bird nests (i.e., nests of all species including Species at Risk) from May 5 to August 15	Avoiding all known wolf, black bear, or wolverine den sites (year round) by a minimum of 500 m during construction. If dens discovered within 500 m of the Project after construction, reporting to and consulting with ENR as early as practical
Preventing upland breeding birds and raptors from nesting on Project infrastructure using anti-bird spikes, where necessary	Avoiding all known berry patches (including no berry harvesting) by a minimum of 300 m, to the extent practical, during the fruit bearing season (July 15 to September 15)
Identifying and monitoring bird nests on and in the vicinity of Project infrastructure. If nests are found with eggs present, staff will monitor the nest for abandonment and/or fledging and other employees/contractors and equipment will avoid the nests	Avoiding all known mineral licks by a minimum of 300 m during season where accessible. To date, none have been found in the vicinity of the Project

1.5.3 Preventing Attraction/Avoidance Behaviour

Significant effort regarding strict waste management practices has reduced wildlife attraction to and incidents at existing mines in the NWT. Protective measures proposed to avoid or minimize wildlife habitat effects include adherence to NWT Rare Earths' Waste Management Plan, Incinerator Management Plan, and SOP #3 Reducing Wildlife Attraction, among others (Table 4).

Table 4: Preventing Attraction/Avoidance Protective Measures

Skirting all buildings and monitoring skirting condition to limit opportunities for animals to tunnel and find suitable shelter (following MP #1 Wildlife Surveillance Monitoring Program; SOP #3 Reducing Wildlife Attraction)	Regular incinerating of all waste foods and human garbage consistent with the Incinerator Management Plan
Preventing ravens and gulls from perching and nesting on potentially dangerous Project infrastructure using anti-bird spikes, where necessary (following SOP #3 Reducing Wildlife Attraction)	Educating employees and contractors to the dangers to wildlife and legislation prohibiting against littering and feeding wildlife
Implementing and monitoring the effectiveness of the Waste and Incinerator management plans to reduce the availability of wildlife attractants such as food wastes and petroleum products (MP #1 Wildlife Surveillance Monitoring Program; SOP #3 Reducing Wildlife Attraction; BMP #2 Camp Waste and Wildlife Attraction Guideline[13] _bookmark28)	Collecting, sorting, and managing wastes in color-coded animal-proof containers (or buildings) within a designated waste management area until they can be shipped off site in concordance with the Waste Management Plan

1.5.4 Employee/Contractor Training and On-Site Orientation

Limiting potential impacts to wildlife and their habitat begins with educating employees and contractors. Educating and training programs are significant components at existing mine sites in the NWT.

NWT Rare Earths is committed to providing applicable wildlife sensitivity and education programs on wildlife-related policies and protection measures to all Project employees and contractors. Training and education approaches will include:

- NWT Rare Earths' on-site orientation training;

[13] ENR North Slave Region. 2013. Camp Waste & Wildlife Attraction Guideline. 7pp. 14 Avalon Rare Metals Inc. 2011. Developer's Assessment Report, Thor Lake Project, Northwest Territories. Submitted to the Mackenzie Valley Environmental Impact Review Board.

- invited guest (e.g., in person, Skype, conference meetings) sessions lead by BearWise, Wildlife Officers, and/or elders to educate NWT Rare Earths' staff on topics such as bear encounters and deterrents, and wildlife ecology and behaviour (e.g., species and sex identification, tracking, sensitive periods);
- in-house sessions led by NWT Rare Earths' staff;
- external training (e.g., certified firearm safety);
- Wildlife Officer and community site visits;
- site orientations; and
- safety meeting topics.

Regular training of and reminders to personnel and contractors will be carried out throughout the construction, operation, and reclamation phases that are appropriate to their tasks and responsibilities. Training sessions will include:

- Responsibilities of all site personnel and contractors for environmental protection and to follow NWT Rare Earths' plans and SOPs;
- Identification of key wildlife species and species at risk potentially occurring in the Project area;
- Bear safety, firearm acquisition licence, and wildlife deterrent training;
- Waste management, incineration, and potential attractants;
- Spill response;
- Emergency response;
- NWT Rare Earths' mitigation measures and procedures outlined in this WWHPP and other applicable NWT Rare Earths management plans; and
- Wildlife observation reporting and documentation procedures.

2.0 WILDLIFE AND WILDLIFE HABITAT MONITORING

2.1 Objectives

As a practical tool, this WWHPP is designed specifically as a guidance document for the consolidation of:

- compliance and environmental protection measures, applicable legislation, standard operating procedures, and best management practices to protect wildlife and wildlife habitat within the Project footprint;
- monitoring programs to determine effects at the Project footprint; and
- reporting and community engagement approaches to transmit this information to NWT Rare Earths' Aboriginal partners and stakeholders.

Its design allows for revisions as additional Project-related information, continued feedback from community and government agencies, and adaptive management strategies are recognized.

With its day to day use, NWT Rare Earths' objectives are:

- to prevent or reduce direct impacts to wildlife and their habitat;
- to improve Project employee and wildlife safety by reducing their interactions;
- to comply with NWT Rare Earths' legal requirements; and
- foster transparent reporting and communications with communities and government agencies.

NWT Rare Earths will use information gained through the implementation of the WWHPP to track wildlife and wildlife habitat effects, and ultimately to continuously work to improve management practices, where identified, within the Project footprint.

As the Project progresses and through the process of adaptive management, this WWHPP may be adapted to incorporate modifications and/or additions to monitoring programs, methods, corporate SOPs, and industry BMPs.

2.2 Valued Components and Species at Risk

Project scoping focuses the effects assessment on key issues of concern, commonly referred to as Valued Components (VCs). VCs represent elements of the natural and human world considered to be of value by society. Species at Risk are typically included as VCs for assessing potential project effects.

The DAR[14] assessed the potential effects of the proposed Nechalacho Project and associated activities on the wildlife resources of the Project area. Common wildlife in the Project area include moose (*Alces alces*), black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), beaver (*Castor Canadensis*), muskrat (*Ondatra zibethicus*) and other small furbearers, waterfowl, waterbirds, and raptors (including Bald Eagle (*Haliaeetus leucocephalus*), Osprey (*Pandion haliaetus*), and Great Horned Owl (*Bubo* virginianus)). Species at Risk that may occur in the Project are provided in Table 5.

Table 5: Species at Risk Potentially Occurring at Nechalacho Project

Species	NWT General Status Rank/NWT SARC Assessment[1]	COSEWIC Assessment[2]	SARA Listing[2]
Horned Grebe (*Podiceps auritus*)	Not Applicable	Special Concern (2009)	Special Concern (2017)
Peregrine Falcon (*Falco peregrinus anatum/tundrius*)	No Status/Not Assessed	Not at Risk (2017)	Special Concern (2012)
Short-eared Owl (*Asio flammeus*)	No Status/Not Assessed	Special Concern (2008)	Special Concern (2012)
Common Nighthawk (*Chordeiles minor*)	Not Applicable	Special Concern (2018)	Threatened (2010)
Olive-sided Flycatcher (*Contopus cooperi*)	Not Applicable	Special Concern (2018)	Threatened (2010)
Bank Swallow (*Riparia riparia*)	Not Applicable	Threatened (2013)	Threatened (2017)
Barn Swallow (*Hirundo rustica*)	Not Applicable	Threatened (2011)	Threatened (2017)
Rusty Blackbird (*Euphagus carolinus*)	No Status/Not Assessed	Special Concern (2017)	Special Concern (2009)
Little Brown Myotis (*Myotis lucifugus*)	Special Concern	Endangered (2013)	Endangered (2014)

[14] Avalon Rare Metals Inc. 2011. Developer's Assessment Report, Thor Lake Project, Northwest Territories. Submitted to the Mackenzie Valley Environmental Impact Review Board.

Species	NWT General Status Rank/NWT SARC Assessment[1]	COSEWIC Assessment[2]	SARA Listing[2]
Grizzly Bear (*Ursus arctos*)	No Status/Special Concern	Special Concern (2012)	Special Concern (2018)
Wolverine (*Gulo gulo*)	Sensitive/Not At Risk	Special Concern (2014)	Special Concern (2018)

[1] Environment and Natural Resources (ENR). 2018. Species At Risk in The Northwest Territories. Yellowknife, NT. 107 pp;
[2] Government of Canada. A to Z Species Index. Web access: https://species-registry.canada.ca/index-en.htm [accessed May 2020]

2.3 Reporting and Engagement

An annual WWHPP report will be prepared that will identify the methods and present the results of the data collected each year, lessons learned, and an evaluation of adaptive management. Since several years of data may be required to confidently identify wildlife and wildlife habitat effects and possible trends, detailed report analyses including an interpretation of the data will be conducted every three years. These annual and comprehensive WWHPP reports will be submitted by March 31 each year and will be published on NWT Rare Earths' website, provided to applicable regulatory bodies, our Aboriginal parties, and Project communities, presented in community information sessions, monitoring workshops, site audits, or others as presented.

NWT Rare Earths will record and incorporate information and suggestions presented from various stakeholders into the annual and comprehensive reports and will further evaluate the application of these adaptive management suggestions respecting Project-specific designs and conditions.

2.4 Adaptive Management

Adaptive management is a structured, iterative process of decision making in the face of uncertainty, with an aim to reduce uncertainty over time via system monitoring and modifications.

The policies and recommended protection measures described in this WWHPP have been developed based on existing NWT Rare Earths and other northern mining projects best management practices. However, a review process, in the form of adaptive management, is required to ensure effectiveness of protective measures at the Nechalacho Project and to incrementally improve site-specific performance. Adaptive management action thresholds, responses, and reporting requirements are suggested within each Monitoring Program (Section 2.5 Monitoring Programs).

NWT Rare Earths' WWHPP is a living document. It is anticipated that the wildlife monitoring procedures and protective measures on-site will be evaluated each reporting cycle and reviewed with the resource management agencies and Aboriginal communities. Recommendations for improvement based on science, local and traditional knowledge, and new lessons learned from other mines will be incorporated into subsequent editions of the WWHPP. Should there be a situation or incident which could not be predicted, NWT Rare Earths will contact the

responsible authorities (e.g., ENR, Environment Canada, Aboriginal partners) for guidance on associated protective measures, deterrents, or other remedial actions.

2.5 Monitoring Programs

The main purpose of the monitoring programs is to detect, mitigate, and track direct wildlife and wildlife effects within the Project footprint over time. They outline the monitoring process for implementation by staff and include objectives of each program, monitoring locations and methods, responsible parties, timing and frequency of monitoring events, adaptive management triggers or early warning signs, and the reporting process.

Monitoring programs, found in Appendix A, include:

MP #1 – Wildlife Surveillance Monitoring Program

MP #2 – Direct Habitat Loss Monitoring Program

MP #3 – TMF Remote Camera Monitoring Program

MP #4 – Waste Management Monitoring Program

MP #5 – Barren-ground Caribou Monitoring Program

3.0 STANDARD OPERATING PROCEDURES

3.1 Objectives

Standard Operating Procedures are NWT Rare Earths' standardized instructions to perform tasks in a consistent manner. These practices are mandatory and are subject to NWT Rare Earths' compliance actions.

3.2 Standard Operating Procedures

The following SOPs are included in Appendix B:

SOP #1 – Wildlife Observations and Procedures

SOP #2 – Wildlife on Roads or Airstrip

SOP #3 – Reducing Wildlife Attractions

SOP #4 – Bear Response Procedures

SOP #5 – Uncommon and Rare Species Observations

SOP #6 – Problem Wildlife

SOP #7 – Encountering Wildlife Carcasses

4.0 REGULATORY AGENCY BEST MANAGEMENT PRACTICES

4.1 Objectives

Best Management Practices are practices developed by regulatory bodies that are provided to the public as information sources to desired activities and/or outcomes on public lands. Best Management Practices are not mandatory, and are not subject to compliance actions.

The following BMPs can be found in Appendix C:

BMP #1 – Flying Low

BMP #2 – Camp Waste and Wildlife Attraction Guideline

BMP #3 – Safety in Grizzly and Black Bear Country

BMP #4 – Bear Incident Response Guideline

BMP #5 – Guideline for Dust Suppression

BMP #6 – Fire Prevention and Suppression Guideline

4.2 Statutory Requirements

A current summary of Statutory Requirements for wildlife in the NWT, including the NWT *Wildlife Act*, *Species at Risk (NWT) Act*, Migratory Birds Convention Act, and Species at Risk Act (Federal) is presented in Appendix D.

APPENDIX A

MONITORING PROGRAMS

MP #1 – Wildlife Surveillance Monitoring Program

MP #2 – Direct Habitat Loss Monitoring Program

MP #3 – TMF Remote Camera Monitoring Program

MP #4 – Waste Management Monitoring Program

MP #5 – Barren-ground Caribou Monitoring Program

MP #1 - WILDLIFE SURVEILLANCE MONITORING PROGRAM

MP #1 MP #1 - Wildlife Surveillance Monitoring Program

CATEGORY:	Field Investigation	**REVISION NO.:**	00	**PAGE:**	1 of 7
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

This work method is intended to provide Avalon's environmental staff with procedures to carry out the Wildlife Surveillance Monitoring Program, as a component of the WWHPP. Deviation from these procedures must be in collaboration with and approved by Avalon's Superintendent of Environment and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR).

1.0 INTRODUCTION AND OBJECTIVES

The Avalon DAR predicted an increase in disturbance to wildlife from Project-related sources and possible changes in movement patterns. To mitigate, Avalon has committed to a number of protective measures while working near wildlife.

The objectives of this monitoring program are to continuously test these protective measures implemented at the Project by tracking the number of and species observations within the Project footprint, to reduce human-wildlife encounters to the extent practical, and to actively implement adaptive management, if necessary.

2.0 RESPONSIBILITIES AND AUTHORITIES

Avalon's environmental staff will be responsible for carrying out this monitoring program, organizing the periodic audits by a Wildlife Officer or others as appropriate and requested (e.g., BearWise), reporting, and informing Avalon's Superintendent of Environment or designate on a weekly basis of any wildlife observations, and immediately if a species at risk, bears, or caribou are confirmed nearby.

3.0 MONITORING LOCATIONS

The Project-related footprint and activity zones include but are not limited to:

- Accommodations building
- Waste storage and transfer facility (WSTF)
- Incinerator building
- Sewage treatment plant
- Concentrator plant
- Airstrip and building

- Truck shop
- Fuel storage tank area
- Temporary barge dock (only when in operation)
- Barge laydown and handling area
- Site roads
- Other small activity zones, as defined by Avalon's Superintendent of Environment

4.0 SCHEDULE

This monitoring program will include:

- Weekly monitoring when Project-related activities on site for the first six years of monitoring, after which, the frequency of monitoring may be modified depending on the conclusions of the comprehensive reports.
- Safety meeting follow-up and employee/contractor reminders, as and when required based on the results of the monitoring program.
- Annual WWHPP report due by March 31.
- Every third year the comprehensive WWHPP report due by March 31.

5.0 METRICS TO BE MONITORED

During the construction, operation, and reclamation phases of the Project, the following metrics are to be monitored:

Metrics	Project Phases		
	Construction	Operation	Reclamation
Species and number occupying the Project footprint	√	√	√
Species behaviour or activity when observed	√	√	√
Location and description of Project-structure compromised due to wildlife	√	√	√
Suspected history of individual animals on site	√	√	√

6.0 EQUIPMENT AND MATERIALS

- Field guide(s)
- Binocular(s)
- Radio
- Digital camera
- Datasheets
- GPS

- Project footprint maps

7.0 METHODS

Methods to carry out this monitoring program include:

- Environmental personnel to review the Wildlife Sighting Logs completed by Avalon's employees and contractors at a minimum of weekly intervals.
- Complete a weekly surveillance by driving and walking to locate, identify, and record the number of wildlife and wildlife sign observed on the Project footprint. Record:
  - Date and time of surveillance;
  - Species of the animal or recent sign (nest/den, scat, tracks, digs/clawing) and number observed;
  - Sex and group composition (if known) including:
    - Lone male or female
    - Group: female/young, male/female, male/female/young.
    - Behaviour or activity when observed including:
      - Feeding
      - Standing/Alert
      - Walking
      - Trotting
      - Running
      - Lying
  - Location and description of Project-structure compromised due to wildlife digging, clawing, and breaking (e.g., under the skirting of buildings); and
  - Suspected history of this animal on site (e.g., regularly observe an animal at or near a particular location).
- Data entry into the standardized database and check for errors. No observations of wildlife or wildlife sign must also be entered into the database as "no wildlife" for that particular inspection. Photos, if any, to be downloaded and filed based on each daily inspection date.
- Any wildlife and wildlife sign observed outside the Wildlife Surveillance Monitoring Program should also be entered into the database.

8.0 REPORTING

Topics of discussion in the annual and comprehensive reports (also refer to Section 2.3 *Reporting and* Engagement) should include:

- Dangerous wildlife encounters or incidents.
- Summary of the monitored metrics and a summary of the Wildlife Sighting Logs completed by other Avalon employees and contractors.
- Observations of uncommon or Species at Risk including an annual review of species conservation status to identify new or modified listings (e.g., Species At Risk (NWT) Act), and management and recovery plans available that may need to be incorporated into the wildlife surveillance monitoring program.
- Appropriate local traditional and scientific knowledge and new industry Best Management Practices identified in the review and engagement processes.
- Adaptive management actions taken.

9.0 ADAPTIVE MANAGEMENT ACTION THRESHOLDS AND RESPONSES

The adaptive management process will be triggered if at least one the following action thresholds are reached:

- A dangerous wildlife encounter.
- A dangerous animal suspected to have been observed on multiple days occupying the Project footprint.
- Mine-related wildlife injury or death.
- New species present within the Project footprint listed as a Species At Risk, or new publications of their management and/or recovery plans.

Adaptive management options may include:

- Modify the monitoring plan design (e.g., frequency, methods).
- Further investigate the cause of wildlife encounters/injury/death and corrective protective measures.
- Problem wildlife deterrent action (SOP #6 Problem Wildlife)
- Safety meeting follow-up and employee/contractor reminders.
- Additional training.
- Limiting human-wildlife encounters through Project design (e.g., additional outdoor lighting) or innovation.
- Other applicable protective measures, as suggested by Avalon's environmental staff, Aboriginal partners, and or regulatory bodies.

10.0 RELEVANT PLANS, STANDARD OPERATING PROCEDURES, AND BEST MANAGEMENT PRACTICES

SOP #1 - Wildlife Observations and Procedures

SOP #2 - Wildlife on Roads or Airstrip

SOP #4 - Bear Response Procedures

SOP #5 - Uncommon and Rare Species Observations

SOP #6 - Problem Wildlife

BMP #2 - Camp Waste and Wildlife Attraction Guideline

BMP #3 - Safety in Grizzly and Black Bear Country

BMP #4 - Bear Incident Response Guideline

11.0 ATTACHMENTS

1. Wildlife Surveillance Datasheet
2. Wildlife Sighting Logs

WILDLIFE SURVEILLANCE MONITORING PROGRAM, NECHALACHO PROJECT: **WILDLIFE DATASHEET**

SURVELLANCE DATE (M/D/Y):		PAGE: OF
TIME START (24 HRS):	TIME END (24 HRS):	SURVEYORS:

WILDLIFE OBSERVATIONS

TIME (24 HRS)	SPECIES[1]	ANIMAL OR SIGN	NUMBER	SUSPECTED HISTORY (Y or N)	SEX AND GROUP COMPOSITION[2]	BEHAVIOUR/ACTIVITY[3]	PROEJCT LOCATION	COMMENTS

1. RADIO IN DANGEROUS WILDLIFE OBSERVATIONS IMMEDIATELY
2. SEX AND GROUP COMPOSITION: **1 =** Lone male; **2=** Lone female Group: **3 =** female with young; **4 =** male with female; **5 =** male and female with young
3. BEHAVIOUR/ACTIVITY: **1 =** Feeding; **2 =** Standing/Alert; **3 =** Walking; **4 =** Trotting; **5=** Running; **6 =** Lying Down

NECHALACHO PROJECT: **WILDLIFE SIGHTING LOG**

YEAR: PAGE: OF

WILDLIFE SIGHTINGS

DATE (D/M)	TIME (24 HRS)	SPECIES	NUMBER SEEN	PROEJCT LOCATION[1]	ACTIVITY[2]	YOUR NAME

1. PROJECT LOCATION: **1 =** Plant site; **2 =** Barge Laydown and handling area; **3 =** Tailings Management Facility; **4 =** Airstrip; **5 =** Upgraded roads; **6 =** Fuel storage tank area; **7 =** Other (identify).
2. ACTIVITY: **1 =** Feeding; **2 =** Standing/Alert; **3 =** Walking; **4 =** Trotting; **5=** Running; **6 =** Lying Down

MP #2 - DIRECT HABITAT LOSS MONITORING PROGRAM

MP #2 MP #2 - Direct Habitat Loss Monitoring Program

CATEGORY:	Field Investigation	**REVISION NO.:**	00	**PAGE:**	1 of 9
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

This work method is intended to provide Avalon's environmental staff with procedures to carry out the Direct Habitat Loss Monitoring Program, as a component of the WWHPP. Deviation from these procedures must be in collaboration with and approved by Avalon's Superintendent of Environment and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR).

1.0 INTRODUCTION AND OBJECTIVES

The Avalon DAR predicted the direct loss of wildlife habitat through clearing/flooding land and building infrastructure; activities which primarily occur during the construction phase. Following the construction phase, the Project footprint will remain nearly stable, with only an incremental expansion inside the constructed Tailings Management Facility (TMF) as operations progress.

A total of 179 hectares (ha) of wildlife habitat was predicted to be directly lost as a result of the Project (Attachment MP #2A and #2B), making this habitat no longer available or accessible to wildlife until progressively or finally rehabilitated at mine closure. Indirect habitat loss, or the alteration of wildlife habitat from sensory disturbances (e.g., noise, smell, human presence), dust accumulation, or availability of prey species, is not considered in this monitoring program.

The objectives of this monitoring program are to track the amount of habitat loss as a direct result of the Project, compare to predicated levels, and implement protective measures and/or adaptive management, if necessary. All contracts to include requirements to, and penalties for construction activities beyond the approved footprints. Any clearing beyond these identified footprints requires approval of the Environmental Superintendent.

Once construction clearing activities are complete, the monitoring program frequency will decrease to monthly during construction, and annually thereafter

2.0 RESPONSIBILITIES AND AUTHORITIES

Avalon's environmental staff is responsible for carrying out this monitoring program, reporting, and maintaining direct communications with the land surveyors (both pre and post-construction).

Surveying services will be contracted prior to Project construction, and survey markers will be erected delineating the perimeters of the Project footprint. With construction complete, surveying services will again be contracted to develop as-built drawings.

3.0 MONITORING LOCATIONS

The Project-related footprint includes but not limited to site roads, barge laydown and handling area, temporary dock, TMF, plant site, airstrip, and fuel storage tank area, and other small activity zones.

4.0 SCHEDULE

This monitoring program is to continue throughout the construction, operation, and reclamation phases of the Project, and will include:

- Weekly (at a minimum) monitoring inspections of footprint creep during clearing and site preparation activities.
- Monthly monitoring inspections of footprint creep during all other construction-related activities.
- Quarterly monitoring inspections of footprint creep during operations, and annually thereafter during reclamation.
- Weekly inspections and maintenance (if necessary) of survey markers throughout construction and operations.
- Safety meeting follow-up and employee/contractor reminders, as and when required based on the results of the monitoring program.
- Annual WWHPP report due by March 31, with the as-built drawings to be submitted with the final annual report.

5.0 METRICS TO BE MONITORED

During the construction phase of the Project, the following metrics are to be monitored:

Metrics[1]	Project Phases
	All
Incidents of footprint creep	√
Estimated area or percent of the Project footprint remaining to be realized	√
Total area of the Project footprint[2]	√
Total area of each ecosystem type directly impacted	√

[1]To be measured annually unless otherwise indicated; [2]To be measured at the end of construction/operation/ reclamation phases.

6.0 EQUIPMENT AND MATERIALS

- Measuring tape
- Radio and personal protective equipment
- Digital camera

- Datasheets
- Project footprint maps
- Reflective paint
- Extra survey markers
- Datasheets

7.0 METHODS

Methods to carry out this monitoring program include:

- Complete a daily monitoring inspection to limit footprint creep by ensuring construction activities remain within the delineated marked area(s). Record:
  - Date and time of inspection;
  - Estimated area of footprint creep in each main construction area:
    - Plant site
    - Barge laydown and handling area
  - Tailings Management Facility
  - Airstrip
  - Upgraded road(s)
  - Fuel storage tank area
  - Other

- Any observation of footprint creep must be reported to Avalon's Superintendent of Environment immediately.
- Notice if survey markers are maintained and remain visible until construction is complete, if not, rectify by adding reflective spray paint to the markers, increasing the height or girth of the markers, increasing the number of markers, or others as appropriate.
- Data entry into the standardized database and check for errors. No incidents of footprint creek must also be entered into the database as "no footprint creek" for that particular daily inspection. Photos, if any, to be downloaded and filed based on each daily inspection date.
- Estimate the area or percent of the Project footprint remaining to be realized annually based on visual inspection comparing the estimated delineated marked area(s) and constructed footprint area.
- Using the as-built drawings provided from the land surveyors (post-construction) report the total area of the Project footprint.
- Using Geographical Information System (GIS) software overlay the surveyed total Project footprint with the ecosystem type map to report the total area of each habitat type directly impacted.

8.0 REPORTING

Topics of discussion in the annual and comprehensive reports (also refer to Section 2.3 *Reporting and* Engagement) should include:

- Incidents of footprint creep.
- Summary of the monitored metrics.
- Appropriate local traditional and scientific knowledge and new industry Best Management Practices identified in the review and engagement processes.
- Adaptive management actions taken.

9.0 ADAPTIVE MANAGEMENT ACTION THRESHOLDS AND RESPONSES

After investigating for possible errors in measurements or calculations, the adaptive management process will be triggered if at least one the following action thresholds are reached:

- the surveyed footprint is greater than the predicted footprint prior to construction;
- footprint creep beyond the survey markers during construction; and
- the total footprint to date and the predicted footprint yet to be completed exceed predicted levels.

Adaptive management options may include:

- Any non-compliance identified during the monitoring program should be brought to the immediate attention of Avalon's Superintendent of Environment.
- Safety meeting follow-up and employee/contractor reminders.
- Increase monitoring frequency.
- Evaluate if this extra habitat loss represents any additional impacts to wildlife.
- Further investigate the cause and corrective protective measures.
- Limiting the size of any new footprints through design or innovation.
- Begin progressive reclamation (if appropriate).

Avalon shall operate in accordance with the approved WWHPP and shall annually review the Plan and make necessary revisions to reflect changes in construction, operations, reclamation or as directed by regulatory bodies. Revisions to the WWHPP must be submitted to regulatory bodies and First Nations organizations for approval.

10.0 RELEVANT PLANS, STANDARD OPERATING PROCEDURES, AND BEST MANAGEMENT PRACTICES

- Hazardous Materials Spill Contingency Plan: Response Procedures for Site Personnel;
- Erosion and Sediment Control Plan;
- Air Quality Monitoring Plan;
- Closure and Reclamation Plan; and
- BMP #6 Fire Prevention and Suppression Guideline.

11.0 ATTACHMENTS

1. Project Footprint Datasheet
2. Figure 2-1: Nechalacho Project Ecosystem Characterization and Footprint
3. Table MP #2A: Predicated Nechalacho Mine Site Footprint
4. Table MP #2B: Ecosystem Distribution within the Nechalacho Mine Site Footprint

DIRECT HABITAT LOSS MONITORING PROGRAM, NECHALACHO PROJECT: **PROJECT FOOTPRINT DATASHEET**

INSPECTION DATE (M/D/Y):		PAGE: OF
TIME START (24 HRS):	TIME END (24 HRS):	SURVEYORS:

WILDLIFE OBSERVATIONS

TIME (24 HRS)	PROEJCT LOCATION[1]	ESTIMATED FOOTPRINT CREEP (IF NONE, RECORD "NA")			MARKER CONDITION	PHOTO NUMBER(S)	COMMENTS:
		LENGTH (m)	WIDTH (m)	AREA (LENGTH X WIDTH) (m^2)			
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		
					NEEDS/ED REPAIR: ☐ YES; ☐ NO FIXED: ☐ YES; ☐ NO		

ADDITIONAL COMMENTS (e.g., communications with equipment operators):

1. PROJECT LOCATION: **1 =** Plant site; **2 =** Barge Laydown and handling area; **3 =** Tailings Management Facility; **4 =** Airstrip; **5 =** Upgraded roads; **6 =** Fuel storage tank area; **7 =** Other (identify).

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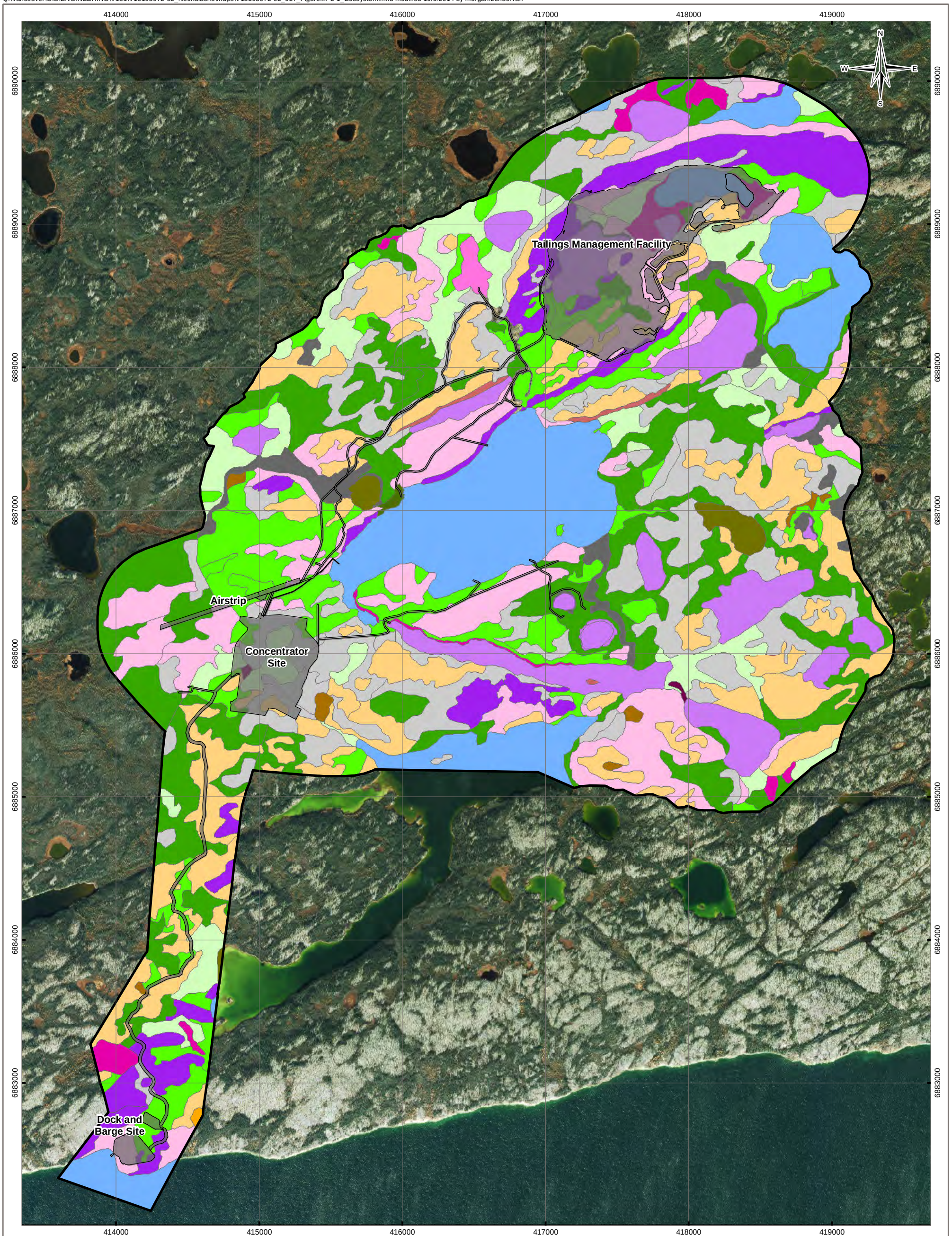


LEGEND

- Local Study Area
- Infrastructure

Ecosystem Map Unit

- BF - black spruce-feathermoss-crowberry upland forest
- BG - black spruce-cloudberry-sphagnum moss bog forest
- BT - black spruce-tamarack-water sedge fen
- LA - lake
- LL - labrador tea-reindeer lichen-black spruce bog
- LW - lichen-bearberry woodland
- MI - mine
- OW - shallow open water
- PA - paper birch-aspen-willow forest
- PD - pond
- RL - bedrock-lichen-juniper-saxifrage
- RO - bedrock
- RW - rural/camp
- RZ - road surface
- SP - spruce-paper birch-toadflax forest
- SS - scrub birch-sweet gale-bog
- WA white spruce-green alder-prickly rose forest
- WB - water sedge-buckbean-arrow grass fen
- WH - white spruce-horsetail-glow moss forest

NOTES
Base data source: Stantec (2009) with additional areas mapped by EBA (2010), Imagery supplied by Avalon (October 2010)

STATUS
ISSUED FOR USE

NECHALACHO PROJECT

Nechalacho Project Ecosystem Characterization and Footprint

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	AVALON RARE METALS INC.

Scale: 1:25,000
500 250 0 500
Metres

FILE NO. V15103072-02_017_FigureMP2-1_Ecosystem.mxd

PROJECT NO.	DWN	CKD	APVD	REV
V15103072-02.17	MEZ	XXX	KL	0

OFFICE	DATE
Tt EBA-VANC	October 6, 2014

TETRA TECH EBA

Figure MP2-1

Table MP #2A: Predicted Nechalacho Mine Site Footprint

Footprint Component	Estimated Area (ha)	Proportion of Footprint (%)
Tailings Management Facility	112.4	62.8
Roads	18.8	10.5
Concentrator Plant	33.6	18.8
Polishing Pond	2.3	1.3
Airstrip	3.3	1.8
Pipelines and Pumps	3.1	1.7
Seasonal Dock Facility	5.5	3.1
Total	**179**	**100.0**

(Avalon 2011)

Table MP #2B: Ecosystem Distribution within the Nechalacho Mine Site Footprint

Broad Habitat Type	Ecosystem Type[1]	Estimated Footprint Area (ha)	Ecosystem Proportion of Footprint (%)
Anthropogenic	Exposed Soil (ES)	0.3	0.2
	Rural/Camp (RW)	0.1	0.0
	Road (RZ)	1.3	0.7
Bedrock-Lichen	Lichen – bearberry woodland (LW)	25.9	14.5
	Bedrock – lichen – juniper - saxifrage complex (RL)	7.9	4.4
Mixed Upland	Spruce – paper birch – toadflax forest (SP)	25.8	14.4
Open Water	Lake (LA)	12.6	7.1
	Open Water (OW)	1.1	0.6
	Ponds (PD)	18.9	10.6
Riparian Shrub	Scrub birch – willow – water sedge riparian shrub (SW)	0.004	0.002
Rock	Rock Outcrop (RO)	0.4	0.2
Sedge Fen	Water sedge – buckbean – arrow grass fen (WB)	8.2	4.6
Shrub Fen	Scrub birch – sweet gale – bog rosemary fen (SS)	1.6	0.9
Shrub Wet	Black spruce – cloudberry – *Sphagnum* moss bog forest (BG)	7.9	4.4
	Labrador tea – reindeer lichen – black spruce bog (LL)	3.9	2.2
Spruce Upland	Black spruce – feathermoss – crowberry upland forest (BF)	18.7	10.5
	White spruce – green alder –	30.1	16.8

Table MP #2B: Ecosystem Distribution within the Nechalacho Mine Site Footprint

Broad Habitat Type	Ecosystem Type[1]	Estimated Footprint Area (ha)	Ecosystem Proportion of Footprint (%)
	prickly rose forest (WA)		
Spruce Wet	White spruce – horsetail – gloss moss forest (WH)	0.5	0.3
Treed Fen	Black spruce – tamarack – water sedge fen (BT)	13.8	7.7
Total		**179**	**100.0**

[1]Stantec Inc. 2010. Thor Lake Rare Earth Metals Baseline Project Environmental Baseline Report: Volume 5 – Vegetation Resources. Final Report. Report prepared for Avalon Rare Metals Inc., Toronto, ON.

MP #3 – TMF REMOTE CAMERA MONITORING PROGRAM

MP #3 MP #3 - TMF Remote Camera Monitoring Program

CATEGORY:	Field Investigation	**REVISION NO.:**	00	**PAGE:**	1 of 8
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

This work method is intended to provide Avalon's environmental staff with procedures to carry out the TMF Pond Remote Camera Monitoring Program, as a component of the WWHPP. Deviation from these procedures must be in collaboration with and approved by Avalon's Superintendent of Environment and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR).

1.0 INTRODUCTION AND OBJECTIVES

Although the tailings within the Tailings Management Facility (TMF) are expected to be inert and any water within the TMF pond is expected to be suitable for general wildlife use, the health of waterfowl/waterbirds (e.g., Horned Grebes) was identified as a concern during the public engagement process.

The objectives of this monitoring program are to track the number of breeding waterfowl/waterbirds occupying the TMF Pond during spring migration, summer breeding, and fall migration, determine relative index of reproductive success, and inform adaptive management decisions, if necessary.

2.0 RESPONSIBILITIES AND AUTHORITIES

Avalon's environmental staff is responsible for carrying out this monitoring program including the purchase, installation/removal, and maintenance of two remote cameras and the visual scans of the TMF Pond, and reporting.

3.0 MONITORING LOCATIONS

Monitoring will target the water pond (TMF Pond) within the TMF.

4.0 SCHEDULE

This monitoring program is to commence once the TMF begins operation, and will include the:

- Annual installation and operation of the remote cameras beginning by May 10 or when the TMF Pond is ice-free.
- Thereafter, monthly inspections of the cameras while in operation.
- Annual retrieval of the remote cameras no earlier than September 10.
- Annual WWHPP report due by March 31.
- Every third year the comprehensive WWHPP report due by March 31.

- After six consecutive years of monitoring, should there be no evidence of health impairment with waterfowl/waterbirds occupying the TMF Pond and metrics measured in the Aquatic Effects Monitoring Plan are below Moderate Action Levels, Avalon reserves the right to conduct the TMF Pond Remote Camera Monitoring Program every third year.

5.0 METRICS TO BE MONITORED

Once the TMF is in operation, the following metrics are to be monitored:

Metrics[1]	Project Phases	
	Operation	Reclamation
Species and total waterfowl/waterbirds occupying the TMF Pond	√	√
Breeding and productivity on the TMF Pond	√	√
Illness or mortality on or near the TMF Pond	√	√
Other wildlife occurrence at the TMF Pond	√	√

[1]To be measured annually for a minimum of six years, then every three years if there is no evidence of health impairment of the waterfowl/waterbirds occurring in the TMF Pond and the metrics measured in the Aquatic Effects Monitoring Plan are below Moderate Action Levels.

6.0 EQUIPMENT AND MATERIALS

- Two remote cameras
- Binocular(s) and/or spotting scope
- Radio
- Spare camera batteries
- Camera downloading cable/Universal Serial Bus (USB) flash drive
- Personal protective equipment
- Field guide(s)
- Digital camera and datasheets

7.0 METHODS

This monitoring plan will be carried out via two sampling methods: 1) Remote camera monitoring and 2) visual scans and will include the following procedures:

Remote Camera Monitoring:

- Install two Reconyx remote cameras (or equivalent) at the TMF Pond in areas that: 1) provide appropriate vantage points to document use across the greatest area of the TMF Pond; 2) is not regularly accessed by Project-related activities; and 3) accessible by environmental staff throughout the monitoring period.
- Program cameras to take three consecutive photos every half hour from dawn till dusk.
- After installation, check camera operation after 24 hours. If functioning, go to next step. If not functioning, repair and repeat until functioning.
- Leave to capture waterfowl/waterbird occupancy in the TMF Pond.
- Inspect the cameras monthly to ensure functional operation, replace batteries, and download memory cards, if required.
- Visual interpretation of the photos and the management of photos in a standardized database including (at a minimum):
    - the photo number, photo date and time collected;
    - species (if discernable from the photos) or species group (e.g., loon, dabbling duck, goose);
    - number, sex, and group composition to include the number of pairs (adult male and female in close association), lone individuals, grouped males (two or more adult males together), and other groups (three or more individuals in close association);
    - number of young seen in each brood;
    - suspicions of illness (e.g., unusual behaviour, unusual feather loss); and
    - other wildlife species occupying the TMF Pond.
- Particularly watch for and report Horned Grebes occupying the TMF Pond.
- Data entry into the standardized database and check for errors, including times and dates of camera setup, monthly checks, and removal.

Visual Scans:

- Bi-monthly (every two weeks) visual scans of the entire TMF Pond during open water conditions with binoculars and/or spotting scope for a minimum of 15 minutes in the early to mid-morning to document:
    - Day and time of visual scan start and end;
    - weather conditions at the time of the visual scan;

  - the number of and species occupying the TMF Pond;
  - for each species observed, report the sex and group composition to include the number of pairs (adult male and female in close association), lone individuals, grouped males (two or more adult males together), and other groups (three or more individuals in close association).
  - the number of young in each brood;
  - apparent health of birds;
  - incidental signs of vegetation stress (if any) in or immediately at the waters edge; and
  - photo number, if any taken.
- Particularly watch for and report Horned Grebes occupying the TMF Pond.
- Data entry into the standardized database and check for errors. No wildlife or wildlife sign observations must also be entered into the database as "no wildlife and wildlife sign" for that particular visual scan. Photos, if any, to be downloaded and filed based on each visual scan date.
- Any observation of Horned Grebe(s), suspected waterfowl/waterbird illness, and incidents of mortality (not due to predation) must be reported to Avalon's Superintendent of Environment immediately.
- Any suspected waterfowl/waterbird illness or mortality potentially related to conditions at the TMF Pond must be reported to ENR within 24 hours of the observation.

8.0 REPORTING

Topics of discussion in the annual and comprehensive reports (also refer to Section 2.3 *Reporting and* Engagement) should include:

- Summary of the monitored metrics and their trends (if any) over time.
- Appropriate local traditional and scientific knowledge and new industry Best Management Practices identified in the review and engagement processes.
- Adaptive management actions taken.

9.0 ADAPTIVE MANAGEMENT ACTION THRESHOLDS AND RESPONSES

The adaptive management process will be triggered if at least one the following action thresholds are reached:

- Suspicion of waterfowl/waterbird illness or mortality potentially due to conditions at the TMF Pond.

Adaptive management options may include:

- Wildlife Officer site visit to determine potential waterfowl/waterbird illness and/or laboratory necropsy of the carcass.

- Modify the monitoring plan design (e.g., frequency, methods).
- Review pre-treatment water quality in the TMF and investigate potential causes of toxicity if any, and assess opportunities for reduction.
- Install scare cannon(s) or other applicable deterrent(s) to discourage waterfowl/waterbird use of the TMF Pond, in consideration of other implications in this WWMPP.
- Work in consultation with Environment Canada and ENR to determine the most appropriate protective measure(s) to implement.

Avalon shall operate in accordance with the approved WWHPP and shall annually review the Plan and make necessary revisions to reflect changes in construction, operations, reclamation or as directed by regulatory bodies. Revisions to the WWHPP must be submitted to regulatory bodies and First Nations organizations for approval.

10.0 RELEVANT PLANS, STANDARD OPERATING PROCEDURES, AND BEST MANAGEMENT PRACTICES

- Aquatic Effects Monitoring Plan;
- Hazardous Materials Spill Contingency Plan: Response Procedures for Site Personnel;
- Erosion and Sediment Control Plan;
- SOP #8 - Encountering Wildlife Carcasses

11.0 ATTACHMENTS

1. Visual Scan Field Datasheet
2. Remote Camera #1 Datasheet
3. Remote Camera #2 Datasheet

TAILINGS POND REMOTE CAMERA MONITORING PROGRAM, NECHALACHO PROJECT: **VISUAL SCAN FIELD DATASHEET**

DATE (M/D/Y):	START TIME (24 HRS):	END TIME (24 HRS):
OBSERVER(S):		PAGE _____ OF _____
Cloud cover (%):	Air Temperature (°C)	Precipitation:

Wind (beaufort scale): ☐ 0 (calm); ☐ 1 (smoke drifts); ☐ 2 (wind felt on face); ☐ 3 (leaves/twigs const. moving); ☐ 4 (moderate breeze, raising dust and loose papers); ☐ 5 (small trees swaying); ☐ 6 (large branches moving)

Species	Number Observed (*use tally marks*)						Photo Number/Comments
	Lone Female(s)	Lone Male(s)	Pair(s)	Groups			
				Brood	Males	Other	

SUSPICIOUS ILLNESS: ☐ YES; ☐ NO OR SUSPICIOUS MORTALITY: ☐ YES; ☐ NO

If yes, species:
Number observed:
Description:

Photo No.:

SIGNS OF VEGETATION STRESS: ☐ YES; ☐ NO

If yes, description:

Photo No.:

Any suspected waterfowl/waterbird illness or mortality potentially related to conditions at the Tailings Pond must be reported to ENR within 24 hours of the observation.

TAILINGS POND REMOTE CAMERA MONITORING PROGRAM, NECHALACHO PROJECT: **REMOTE CAMERA #1 DATASHEET**

		CAMERA #1 PAGE:	OF
GPS LOCATION:		LOCATION DESCRIPTION:	
INSTALL DATE (M/D/Y):	INSTALL TIME (24 HRS):	INSTALLED BY:	
24 HOUR INSTALL CHECK: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:	
REMOVAL DATE (M/D/Y):	REMOVAL TIME (24 HRS):	REMOVED BY:	

CAMERA INSPECTIONS

1. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
2. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
3. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
5. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
6. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
7. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:

TAILINGS POND REMOTE CAMERA MONITORING PROGRAM, NECHALACHO PROJECT: **REMOTE CAMERA #2 DATASHEET**

		CAMERA #2 PAGE:	OF
GPS LOCATION:		LOCATION DESCRIPTION:	
INSTALL DATE (M/D/Y):	INSTALL TIME (24 HRS):	INSTALLED BY:	
24 HOUR INSTALL CHECK: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:	
REMOVAL DATE (M/D/Y):	REMOVAL TIME (24 HRS):	REMOVED BY:	

CAMERA INSPECTIONS

1. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
2. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
3. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
5. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
6. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:
7. DATE (M/D/Y):	PHOTOS DOWNLOADED: ☐ YES; ☐ NO BATTERIES REPLACED: ☐ YES; ☐ NO	ISSUES ENCOUNTERED:	CHECK BY:

MP #4 – WASTE MANAGEMENT MONITORING PROGRAM

MP #4 MP #4 - Waste Management Monitoring Program

CATEGORY:	Field Investigation	**REVISION NO.:**	00	**PAGE:**	1 of 9
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

This work method is intended to provide Avalon's environmental staff with procedures to carry out the Waste Management Monitoring Program, as a component of the WWHPP. Deviation from these procedures must be in collaboration with and approved by Avalon's Superintendent of Environment and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR).

1.0 INTRODUCTION AND OBJECTIVES

The Avalon DAR predicted wildlife (particularly red fox, wolves, wolverines, black bears, Common Ravens, and gulls) attraction to the Project, resulting in an increase of human-wildlife encounters, risk to people, and associated wildlife relocation or mortality. Wildlife may become attracted to mines as a source of food, shelter or warmth (e.g., under buildings), and security (i.e., from predators, insects). Many wildlife species have a keen sense of smell, and may be attracted to a variety of food items present around the Project including human food and food packaging, petroleum and glycol based products, and grey water. Upon receiving one food reward, wildlife can become increasingly problematic at the Project.

A Waste Storage and Transfer Facility (WSTF) will be established on site for the temporary storage and transfer of waste materials prior to shipment off site or to the incinerator. The incinerator is housed inside a building with a concrete floor, with walls and a roof, and is not open to the elements. Organics from the WSTF are transported to the incinerator, and hazardous and recyclable wastes are stored indoors at the WSTF in sealed containers for shipment off-site to existing municipal waste management facilities.

The objectives of the Waste Management Monitoring Program are to check that the Waste Management and Incineration plans are being followed, attractants are properly managed, and protective measures or other adaptive management is actively implemented.

2.0 RESPONSIBILITIES AND AUTHORITIES

Avalon's environmental staff and trained waste management operators are responsible for carrying out this monitoring program, reporting, and informing Avalon's Superintendent of Environment weekly on the results of the monitoring investigation.

3.0 MONITORING LOCATIONS

Monitoring to target Avalon's WSTF and incinerator areas, and secondarily all other active Project sites (e.g., roads, concentrator plant, grey water pipeline).

4.0 SCHEDULE

This monitoring program is to continue throughout the construction, operation, and reclamation phases of the Project, and will include:

- Daily Waste Management Facilities cleaning by waste management staff.
- Daily Wildlife Attractant Check by waste management staff.
- Weekly inspections or audits by environmental staff or waste management supervisor until two months of consecutively clean inspections are observed. Monthly inspections are to continue only after two months of consecutively clean inspections are reported from the weekly monitoring program. If two consecutive inspections indicate non-compliance, the frequency of the monitoring program is to convert back to weekly inspections until two months of consecutively clean inspections attained.
- Monthly Recyclable Materials Audit.
- Recognition of waste management staff of job well done.
- As and when required safety meeting follow-up and employee/contractor reminders based on the results of the monitoring program, including recognition of waste management staff for meeting inspection/audit standards.
- Annual WWHPP report due by March 31.
- Every third year the comprehensive WWHPP report due by March 31.

5.0 METRICS TO BE MONITORED

During the construction, operation, and reclamation phases of the Project, the following metrics are to be monitored:

Metrics	Project Phases		
	Construction	Operation	Reclamation
Litter and improperly stored attractants in the WSTF, near incinerator, and across the Project	√	√	√
Conditions of the grey water pipes	√	√	√
Improper sorting of waste inside the beverage container recyclable material waste bags	√	√	√
Wildlife and wildlife sign near the WSTF and incinerator	√	√	√

6.0 EQUIPMENT AND MATERIALS

- Datasheets
- Radio
- Personal protective equipment
- Field guide(s)
- Digital camera

7.0 METHODS

The Waste Management Monitoring Program includes three separate approaches: 1) Waste Management Facilities Surveillance; 2) Wildlife Attractant Check; and 3) Recyclable Materials Audit. General methods to carry out this monitoring program include:

1. Waste Management Facilities Inspections/Audit:

- Walk the Waste Management Storage Facility and incinerator areas to check that they are litter free. Record the survey date, start and end times.
- Record the type and amount of improperly stored waste materials that have the potential to attract wildlife (food and food packaging, beverage recyclables, oil products and oil impacted waste). Report the amount of improperly stored waste in the following categories:
  - None;
  - Low (1 piece);
  - Moderate (2 to 5 pieces);
  - High (6 to 10 pieces); and
  - Very High (>10 pieces).
- Collect and properly dispose of improperly stored waste, if safe to do so, or notify Avalon's responsible authority to collect and dispose of the items.
- Record the general condition of the storage bins (e.g., lids secure) and buildings (e.g., doors securely closed).
- Document the number and species of wildlife and wildlife sign near the WSTF and incinerator areas.
- Take photos and record the photo number.
- Data entry into the standardized database and check for errors. No improperly stored waste must also be entered into the database as "no improperly stored waste" for that particular surveillance event. Photos, if any, to be downloaded and filed based on the surveillance date.

Wildlife Attractant Check:

- Walk alongside the grey water pipes and at the sewage treatment plant to visually monitor for leaks. As a temporary solution to leaking grey water, use a small amount of bleach or lye crystals into the grey water to reduce its attractiveness to wildlife until permanently fixed. If leaks observed, immediately inform Avalon's Superintendent of Environment to notify Avalon's responsible authority to correct the leak.
- Walk the Project site and record the number and type of improperly stored waste. Collect and properly dispose of improperly stored waste, if safe to do so, or notify Avalon's responsible authority to collect and dispose of the items.

- Walk around work sites and garages and record the number and type of improperly stored greases, lubricants, glycol-based antifreezes, fuels, and other chemicals (and cleaning rags) that attract wildlife.
- Monitor frequent raven and gull perching locations.
- Take photos and record the photo number.
- Data entry into the standardized database and check for errors. No improperly stored waste or grey water spills must also be entered into the database as “no improperly stored waste” or “no grey water spills” for that particular surveillance event. Photos, if any, to be downloaded and filed based on the surveillance date.

Recyclable Materials Weekly Audit:

- Audit check of approximately 10 percent (%) of the beverage container recyclable material waste bags, prior to their storage inside the WSTF, for improper disposal of stored waste that has the potential to be an olfactory attractant (e.g., food and food packaging waste). Although beverage containers themselves are an olfactory attractant, the addition of food and food packaging waste inside the building waiting for transport off site may become an additional attractant, particularly in summer months when the rot process quickens. Audit checks involve an external examination of the contents of these transparent bags (without opening the bag) and shifting items within. Report the amount of improperly stored waste in the following categories:
  - None;
  - Low (1 piece);
  - Moderate (2 to 5 pieces);
  - High (6 to 10 pieces); and
  - Very High (>10 pieces).
- Report the type of improperly stored waste in the following categories:
  - Food and food packaging;
  - Paper and paper like (e.g., cardboard, boxboard, tissue paper);
  - Oil products and oil impacted waste; and
  - Other.
- Record the number of bags investigated.
- Take photos and record the photo number.
- Data entry into the standardized database and check for errors. No improperly stored waste must also be entered into the database as “no improperly stored waste” for that particular audit event. Photos, if any, to be downloaded and filed based on the audit date.

- Collect and properly dispose of improperly stored waste, if safe to do so, or notify Avalon's responsible authority to collect and dispose of the items.

8.0 REPORTING

Topics of discussion in the annual and comprehensive reports (also refer to Section 2.3 *Reporting and* Engagement) should include:

- Descriptions of any non-compliance issues encountered.
- Summary of the monitored metrics and their trends over time.
- Appropriate local traditional and scientific knowledge and new industry Best Management Practices identified in the review and engagement processes.
- Adaptive management actions taken.

9.0 ADAPTIVE MANAGEMENT ACTION THRESHOLDS AND RESPONSES

The adaptive management process may commence if the following triggers are reached:

- An individual bear, fox, wolf, or wolverine frequency seen at the Project site;
- A individual animal gaining access to or potential access to an attractant on the Project site; and
- Increasing trends of monitoring metrics.

Adaptive management options may include:

- Inform Avalon's Superintendent of Environment of non-compliance event/issue that may or may have resulted in wildlife being exposed to a meaningful food reward (e.g., a bag of organics, cardboard boxes used in the transport of foods, employee/contractor packed lunch).
- Safety meeting follow-up and employee/contractor reminders or re-training.
- Modify the monitoring plan design (e.g., frequency, methods).
- Further investigate the cause and corrective protective measures.
- Reduce wildlife attraction through design or innovation, some examples include:
    - Minimize the width of horizontal supports on Project infrastructure;
    - Install anti-bird spikes in locations of repeated use, this may include areas with horizontal surfaces or near heat sources;
    - Install anti-nest spikes or angled surfaces near hear sources; and
    - Reduce hiding cover within the Project infrastructure by removing wildlife access to small recesses.

Avalon shall operate in accordance with the approved WWHPP and shall annually review the Plan and make necessary revisions to reflect changes in construction, operations, reclamation or as directed by regulatory bodies. Revisions to the WWHPP must be submitted to regulatory bodies (e.g., ENR, MVEIRB, EC) and First Nations organizations for approval.

10.0 RELEVANT PLANS, STANDARD OPERATING PROCEDURES, AND BEST MANAGEMENT PRACTICES

- Waste Management Plan;
- Incinerator Plan;
- Hazardous Materials Spill Contingency Plan: Response Procedures for Site Personnel;
- SOP #3 - Reducing Wildlife Attraction
- SOP #6 - Problem Wildlife
- BMP #4 - Bear Response Guideline

11.0 ATTACHMENTS

1. Waste Management Facilities Inspection/Audit Datasheet
2. Wildlife Attractant Check Datasheet
3. Recyclable Materials Weekly Audit Datasheet

DATE (M/D/Y):		PAGE: OF
WASTE MANAGEMENT FACILITIES INSPECTION DATASHEET		
TIME START (24 HRS):	TIME END (24 HRS):	SURVEYORS:

LOCATION	IMPROPERLY STORED WASTE (CHECK)					TYPE OF IMPROPERLY STORED WASTE[1]	CONDITION OF STORAGE BINS/BUILDINGS	SPECIES	ANIMAL OR SIGN	NUMBER	PHOTO(S)
	NONE	LOW (1 PIECE)	MODERATE (2-5 PIECES)	HIGH (6-10 PIECES)	VERY HIGH (>10 PIECES)						
WASTE MANAGEMENT STORAGE FACILITY							SATISFACTORY: YES ☐; NO ☐ DESCRIPTION:				
INCINERATOR							SATISFACTORY: YES ☐; NO ☐ DESCRIPTION:				
COMMENTS:											

1. TYPE OF WASTE: 1 = Food and food packaging; 2 = beverage recyclables; 3 = oil products and oil impacted waste; 4 = sewage/grey water; 5 = other (describe)

DATE (M/D/Y):		PAGE: OF
WILDLIFE ATTRACTANT CHECK DATASHEET		
TIME START (24 HRS):	TIME END (24 HRS):	SURVEYORS:

PROEJCT LOCATION[1]	TYPE OF IMPROPERLY STORED WASTE[2] NUMBER	CORRECTIVE ACTIONS	PHOTO(S)
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY):	
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY):	
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY):	
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY)::	
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY):	
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY):	
		NEEDS ATTENTION: ☐; PICKED UP: ☐ CLEANED/TREATED: ☐; OTHER (IDENTIFY):	

1. PROJECT LOCATIONS: **1 =** Plant site; **2 =** Barge Laydown and handling area; **3 =** Tailings Management Facility; **4 =** Airstrip; **5 =** Roads; **6 =** Fuel storage tank area; **7 =** Other (identify).
2. TYPE OF WASTE: 1 = Food and food packaging; 2 = beverage recyclables; 3 = oil products and oil impacted waste; 4 = sewage/grey water; 5 = other (describe)

DATE (M/D/Y):		PAGE: OF
RECYCLABLE MATERIALS AUDIT DATASHEET		
TIME START (24 HRS):	TIME END (24 HRS):	SURVEYORS:

AUDIT BAG NUMBER	IMPROPERLY STORED WASTE (CHECK)					TYPES OF IMPROPERLY STORED WASTE[1]	PHOTO(S)	COMMENTS:
	NONE	LOW (1 PIECE)	MODERATE (2-5 PIECES)	HIGH (6-10 PIECES)	VERY HIGH (>10 PIECES)			

1. TYPE OF WASTE: 1 = Food and food packaging; 2 = paper and paper-like; 3 = oil products and oil impacted waste; 4 = other (describe)

MP #5 - CARIBOU SURVEILLANCE MONITORING PROGRAM

MP #5 MP #5 - Barren-ground Caribou Monitoring Program

CATEGORY:	Field Investigation	**REVISION NO.:**	00	**PAGE:**	1 of 2
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

This work method is intended to provide Avalon's environmental staff with procedures to carry out the Barren-Ground Caribou Monitoring Program, as a component of the WWHPP. Deviation from these procedures must be in collaboration with and approved by Avalon's Superintendent of Environment and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR).

1.0 INTRODUCTION

The Project is located at the extreme limits of the Bathurst barren-ground caribou herd, and therefore, caribou may be expected to rarely occur within the Project footprint. Nonetheless, Avalon is committed to reducing potential negative effects on caribou should they occur in the Project area. Therefore, should caribou be present, a caribou monitoring program must be initiated as soon as practical and as per the following.

2.0 RESPONSIBILITIES AND AUTHORITIES

Avalon's environmental staff is responsible for immediately informing Avalon's Superintendent of Environment and initiating the WEMP process following detailed instructions outlined in the WEMP.

3.0 MONITORING LOCATIONS

Once a caribou is observed at any location within the Project footprint, the WEMP process will commence.

4.0 METRICS TO BE MEASURED

Metrics to be measured are outlined in the WEMP.

5.0 METHOD

For consistency across the Project region, all methods must follow those outlined in the WEMP.

6.0 SCHEDULE AND DURATION

This monitoring program is applicable throughout the construction, operation, and reclamation phases of the Project.

7.0 ADAPTIVE MANAGEMENT ACTION THRESHOLDS AND RESPONSES

Refer to the WEMP.

8.0 REPORTING

Refer to the WEMP.

9.0 RELEVANT PLANS, STANDARD OPERATING PROCEDURES, AND BEST MANAGEMENT PRACTICES

SOP #1 - Wildlife Observations and Procedures

SOP #5 - Uncommon and Rare Species Observations

APPENDIX B

STANDARD OPERATING PROCEDURES

SOP #1 – Wildlife Observations and Procedures

SOP #2 – Wildlife on Roads or Airstrip

SOP #3 – Reducing Wildlife Attractions

SOP #4 – Bear Response Procedures

SOP #5 – Uncommon and Rare Species Observations

SOP #6 – Problem Wildlife

SOP #7 – Encountering Wildlife Carcasses

SOP #1 – WILDLIFE OBSERVATIONS AND PROCEDURES

SOP #1 SOP #1 - OBSERVATIONS AND PROCEDURES

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1 of 3
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to provide direction to all on-site employees and contractors for avoiding or reducing their impacts to wildlife while on the Project site and assisting Avalon in their monitoring of Project-related effects on wildlife.

This procedure applies to all wildlife and wildlife sign observed on the Project site at any time.

2.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure;
- Reporting wildlife observations in the Wildlife Sightings Log; and
- Taking reasonable precautions to avoid disturbing wildlife on the Project site.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure as required;
- Maintaining Wildlife Sighting Logs;
- Reporting wildlife observations and interactions following these procedures; and
- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;
- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

3.0 PROCEDURES

3.1 Observing Wildlife or Their Sign

All wildlife shall be left undisturbed to the extent practical.

No employee/contractor shall purposely disturb, harass, chase, injure, or feed any wildlife.

The Wildlife Sightings Log must be used by all on-site personnel to document their wildlife observations and interactions at the Nechalacho Project. The procedure for using the Wildlife Sighting Log is as follows:

1. Avalon's environmental staff posts the Wildlife Sighting Log datasheet on various bulletin boards around the Nechalacho Project;
2. On-site personnel and contractors are to use the posted Wildlife Sighting Log datasheets to record wildlife and wildlife sign sightings (with exception common small birds and small mammals, such as mice or squirrels) at and around the site;
3. If a bear or other dangerous wildlife is observed, alert others of the animals location via radio and refer to SOP #5 *Bear Response Procedures*;
4. Environment staff frequently check the Wildlife Sighting Logs for observations of dangerous wildlife, sensitive wildlife (e.g., Species At Risk) and their residents (e.g., nest, den);
5. Environment staff informs Environment and Natural Resources (ENR) and/or Environment Canada (EC) of the first confirmed caribou or Species at Risk sightings for the season and as soon as practical (refer to SOP #5 *Uncommon and Rare Species Observations*). Subsequent reporting requirements to be discussed at that time;
6. Environment staff frequently checks that spare Wildlife Sighting Log datasheets are available, as required;
7. When a Wildlife Sighting Log datasheet page is full, environment staff enter the data into the standardized wildlife database and file the original copies of the logs; and
8. Environment staff summarizes and evaluates the wildlife observations from the Wildlife Sighting Logs in the annual and comprehensive monitoring reports.

3.2 Observing a Nest or Den

No employee/contractor shall disturb, destroy, or collect a nest or egg on the Project site

Employees and contractors shall avoid all known nest and den sites

Many wildlife species known to occur at the Project site reuse nests and dens in consecutive years, and can be sensitive to disturbances during the nesting and denning periods. Nests and dens of a number of species are protected under the NWT *Wildlife* Act, federal *Migratory Birds*

Convention Act, the *Species at Risk* (NWT) *Act*, and/or the federal *Species at Risk Act*. To avoid or reduce negative impacts to nests and dens and wildlife at their residents, Avalon requires the following procedures be respected in the event of observing a nest or den:

1. All employees or contractors that see a nest or den are to report their observation in the Wildlife Sighting Log;
2. All employees and contractors that see a nest or den are to notify Avalon's environment staff and describe and/or direct them to its location (also refer to SOP #5 *Uncommon and Rare Species Observations*);
3. Environment staff are to document if the nest or den belongs to a Species at Risk;
4. All Project employees and contractors must immediately report wolf, black bear, or wolverine dens (or suspected dens) discovered within 500 m of the Project footprint to Avalon's Superintendent of Environment;
5. Avalon's Superintendent of Environment or designate notifies ENR immediately of any Species at Risk, wolf, black bear, or wolverine dens/nests discovered within 500 m of Project site, and collectively, they determine the appropriate course of action;
6. Environment staff may determine if eggs are present in a discovered nest by monitoring bird behavior at the nest site should the nest be found on Project infrastructure;
7. Environment staff may monitor Common Raven and gulls attempting to nest on Project infrastructure, and to discourage nesting attempts, consistently remove nesting material only prior to egg laying (due to protection under the NWT *Wildlife* Act and the federal *Migratory Birds Convention Act*);
8. Environment staff are to contact ENR immediately for further direction should wildlife become established (i.e., active nest or den) on Project infrastructure or in areas that pose a danger to wildlife; and
9. Environment staff may consider protective measures to prevent upland breeding birds and raptors from nesting on Project infrastructure using anti-bird spikes, where necessary.

SOP #2 – WILDLIFE ON ROADS OR AIRSTRIP

SOP #2 SOP #2 - WILDLIFE ON ROAD OR AIRSTRIP

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1 of 3
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to provide direction to all on-site employees and contractors for avoiding or reducing their impacts to wildlife while driving vehicles/equipment on the Project site and assisting Avalon in their monitoring of Project road and airstrip related effects on wildlife.

This procedure applies to all wildlife observed while in operation of a Project vehicle or equipment, at any time.

2.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure and posted speed limits;
- Reporting wildlife observations in the Wildlife Sightings Log;
- Giving all wildlife the right-of-way; and
- Taking reasonable precautions to avoid disturbing wildlife on the Project site.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure as appropriate;
- Reporting wildlife observations and interactions following these procedures; and
- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;
- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

Avalon's airstrip operations authority is responsible for:

- Ensuring inbound aircrafts are alerted of the presence of large mammals and large-bodied birds on or within 100 m of the Project airstrip.

3.0 PROCEDURES

3.1 Observing Wildlife On Roads

Employees and contractors shall respect speed limits and give wildlife the right-of-way

Project-related activities, including vehicle and equipment operations have the potential to disturb, harass, injure, or kill wildlife. Restricting vehicle use to designated roads and prohibiting recreational off-road use of vehicles are a few of Avalon's protective measures to avoid and reduce impacts to wildlife and wildlife habitat. To further avoid or reduce negative impacts to wildlife, Avalon requires the following procedures to be respected in the event of observing wildlife while in operation of a motor vehicle:

1. Employees or contractors are to give all wildlife the right-of-way on all roads and Project areas;
2. Drivers are to stop the vehicle a minimum of 200 m distance from wildlife (if practical, and when safe to do so) and turn off headlights until the animal has passed;
3. Drivers are to avoid using the horn to encourage wildlife to pass;
4. Drivers and all passengers are to remain in the vehicle/equipment at all times;
5. Drivers are to alert others of the animals location via radio, particularly if a caribou or bear;
6. On-site personnel and contractors are to use the posted Wildlife Sighting Log datasheets (refer to SOP #1 *Wildlife Observations and Procedures*) to record the wildlife sighting (with exception common small birds and small mammals, such as mice or squirrels);
7. Environment staff is to inform ENR of the first confirmed caribou sightings that season and as soon as practical. Ongoing reporting requirements to be discussed;
8. Refer to SOP #7 *Encountering a Wildlife Carcass* if a carcass is discovered along or near the road; and
9. Environment staff summarizes and evaluates the wildlife observations from the Wildlife Sighting Logs in the annual and comprehensive monitoring reports.

3.2 Observing Wildlife on the Airstrip

Procedures to avoid and reduce impacts to wildlife from aircraft and airstrip operations, and promote aircraft safety include:

1. When safe to do so, Avalon's airstrip operations authority is to drive the length of the airstrip approximately 15 to 30 minutes prior to aircraft arrival to conduct a visual check for wildlife on and within 100 m of the airstrip;
2. Avalon's airstrip operations authority is to notify the travel radio operator of the presence of wildlife, and will alert the inbound aircraft;
3. Avalon' airstrip operations authority is to monitor wildlife presence on or near the airstrip;
4. When necessary (e.g., emergency situations) the airstrip operations authority may, with consent from Avalon's environment staff, attempt to herd wildlife away from the airstrip on foot or by vehicle. Once wildlife has moved 100 m away from the airstrip, herding actions will cease. If wildlife do not move away from the airstrip, the airstrip operations authority is to notify the travel radio operator and alert the inbound aircraft to not take off, or if already inbound, not to land at the Project until clearance from the travel radio operator; and
5. At the earliest opportunity, Avalon's airstrip operations authority is to report the wildlife observation on the Wildlife Sighting Log and, if herding actions were carried out, is to report the event in Avalon's Near Miss reporting system.

3.3 Wildlife Hit on Road

Should wildlife be accidentally hit on the road, the following procedures shall be followed:

1. All on-site personnel are to stop, record the time, species hit, weather conditions, presence of predators, and location of collision; all data are to be provided to the environment staff;
2. Drivers are to immediately notify Avalon's environment staff via radio should any accidental wildlife-vehicle/equipment collision occur (even if animal does not appear injured);
3. If it is a large and/or potentially dangerous animal, remain in the vehicle until environment staff arrive or provide further direction;
4. All on-site personnel are to report the wildlife observation on the Wildlife Sighting Log, and Avalon's Incident Report form; and
5. Environment staff to direct the handling and disposal of the animal following SOP #7 *Encountering Wildlife Carcasses*.

SOP #3 – REDUCING WILDLIFE ATTRACTIONS

SOP #3 SOP #3 - Reducing Wildlife Attractions

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1 of 3
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

Wildlife attractants improperly stored and managed at the Project site can lead to severe wildlife effects, such as habituation, relocation, injury or mortality (of wildlife and staff), and disease transmission. The purpose of this procedure is to provide direction to all on-site employees and contractors for reducing wildlife attractants and their accessibility to wildlife can minimize negative impacts to wildlife, and assist Avalon in their monitoring of Project-related effects on wildlife.

This procedure applies to all wildlife potentially attracted to the Project or Project infrastructure, at any time.

2.0 SCOPE

This procedure applies to all Avalon employees and contractors at the Nechalacho Mine and Concentrator Plant Site.

3.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure;
- Reporting wildlife observations in the Wildlife Sightings Log; and
- Taking reasonable precautions to avoid attracting wildlife to the Project site.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure;
- Reporting wildlife observations and interactions following these procedures; and
- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;

- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

4.0 PROCEDURES

Wildlife may become attracted to mines as a source of food, shelter or warmth (e.g., under buildings), and security (i.e., from predators, insects). Two primary approaches, when applied consistently, can be effective in reducing wildlife attraction to the Project: 1) proper waste management and 2) applicable project design. Procedures for employees and contractors to follow to assist Avalon with reducing wildlife attractants at the Project include:

4.1 Waste Management

Waste (e.g., food and food packaging, greywater, petroleum products) stored at the Project in a manner that is likely to attract wildlife is a violation of the NWT Wildlife Act (S-89.b).

Vigilance and strict management of improperly stored waste is critical to avoid and minimize negative wildlife-Project interactions including wildlife attraction. To do so, Avalon requires the following standard operating procedures be respected across the Project site:

1. All employees and contractors shall not purposely litter, feed, or leave food out for wildlife;
2. All employees and contractors are to ensure that all wildlife attractants (e.g., food, petroleum products) are stored inside buildings, vehicles, and wildlife-proof containers;
3. At no time shall food and food wastes (including beverage containers) be left in areas accessible to wildlife (e.g., back of vehicles);
4. All employees and contractors are to notify Avalon's environment staff of the location and type of improperly storage of waste they discover;
5. Environmental staff are to investigate the cause, pick up or initiate the corrective action, and implement effective protective measures against reoccurrence;
6. On-site personnel and contractors are to use the posted Wildlife Sighting Log datasheets to record wildlife and wildlife sign sightings (with exception common small birds and small mammals, such as mice or squirrels) at and around the site; and
7. Environment staff summarizes and evaluates the wildlife observations from the Wildlife Sighting Logs in the annual and comprehensive monitoring reports.

4.2 Project Design

Procedures for employees and contractors to follow to assist Avalon with reducing wildlife attractants includes:

1. All employees and contractors shall look for and report to the environment staff points of compromise where wildlife have attempted to or tunneled under buildings, stair, or other Project infrastructure;
2. All employees and contractors shall report any signs of wildlife nesting or denning or (attempts to) on Project infrastructure immediately to environmental staff;
3. On-site personnel and contractors are to use the posted Wildlife Sighting Log datasheets to record wildlife and wildlife sign sightings (with exception common small birds and small mammals, such as mice or squirrels) at and around the site; and
4. Environment staff summarizes and evaluates the wildlife observations from the Wildlife Sighting Logs in the annual and comprehensive monitoring reports.

SOP #4 – BEAR RESPONSE PROCEDURES

SOP #4 SOP #4 - Bear Response Procedures

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1of 2
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

Bears and other potential wildlife pose a threat to employee and contractor safety while on site. The purpose of this procedure is to provide instruction for all on-site employees and contractors of an approach to respond to bear encounters while on the Nechalacho Project.

This procedure applies primarily to bears; however, it may be secondarily used for other dangerous wildlife encountered at the Project. Refer to SOP #6 *Problem Wildlife* should on-site employees encounter a problem or aggressive bear.

2.0 SCOPE

This procedure applies to all Avalon employees and contractors at the Nechalacho Project.

3.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure;
- Taking and understanding of Avalon's Bear Safety training program (at site orientation);
- Reporting wildlife observations in the Wildlife Sightings Log; and
- Taking reasonable precautions to avoid bears and other dangerous wildlife on the Project site.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure;
- Holding a valid Firearms Possession and Acquisition Licence (PAL) and taking actions to deter a bear, if appropriate;
- Reporting and notifying ENR of any bear encounter in camp or within 100 m of camp, and any deterrent actions taken;
- Maintaining Wildlife Sighting Logs;
- Reporting wildlife observations and interactions following these procedures; and

- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;
- Ensuring staff with appropriate training is available on site at all times;
- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

4.0 PROCEDURES

An encounter is defined as a bear within 1 kilometre of the Project. If a bear is encountered while on foot:

1. Do not make sudden movements;
2. Back away slowly while keeping an eye on the bear, but avoid direct eye contact;
3. Alert others via radio of the bears location and direction of travel (if practical without stressing the bear) and remain in contact with environment staff until a safe area is reached (i.e., inside a vehicle or building);
4. Immediately after a bear encounter, and when safe to do so, employees and contractors are to complete the Bear Incident Checklist (see BMP #4 *Bear Incident Response Guideline*);
5. Upon filling out the Bear Incident Checklist, Avalon's environment staff is to notify ENR of the bear encounter at the earliest opportunity, and to inform ENR of any confirmed grizzly bear sightings, as soon as practical;
6. Employees and contractors are to fill out the posted Wildlife Sighting Log datasheets (refer to SOP #1 Wildlife Observations and Procedures) to record the bear sighting; and
7. Environment staff summarizes and evaluates the wildlife observations from the Wildlife Sighting Logs in the annual and comprehensive monitoring reports

SOP #5 – UNCOMMON AND RARE SPECIES OBSERVATIONS

SOP #5 SOP #5 - Uncommon and Rare Species Observations

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1of 4
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to provide direction to all on-site employees and contractors the procedures for reporting uncommon and rare species at the Project and assisting Avalon in their monitoring of Project-related effects on uncommon (e.g., barren-ground caribou and grizzly bear) and Species at Risk.

This procedure applies to all uncommon and Species at Risk (and their sign) observed on the Project site at any time.

2.0 SCOPE

This procedure applies to all Avalon employees and contractors at the Nechalacho Mine and Concentrator Plant Site.

3.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure;
- Recognizing uncommon and Species at Risk when observed;
- Immediately notify environment staff the species and location of observation;
- Reporting wildlife observations in the Wildlife Sightings Log; and
- Taking reasonable precautions to avoid disturbing uncommon and Species at Risk (and their residents, e.g., den or nest) occurring at the Project site.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure;
- Identifying uncommon and Species at Risk;
- Maintaining Wildlife Sighting Logs;
- Staying knowledgeable of new species, status rankings changes, and/or final publications of management and recovery plans for Species at Risk;
- Reporting wildlife observations and interactions following these procedures; and

- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;
- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

4.0 PROCEDURES

Observations of species that may be considered uncommon (e.g., barren-ground caribou, grizzly bear) or with special conservation status may be particularly sensitive to human disturbances. To date, no species expected to occur in the Project Development Area are listed under the *Species at Risk* (NWT) *Act*.

Species at Risk Potentially Occurring at the Nechalacho Project

Species	NWT Assessment[1]	COSEWIC Assessment (assessment date)[2]	SARA Listing[3]
Horned Grebe (*Podiceps auritus)*	Not Applicable	Special Concern (2009)	Not Status
Peregrine Falcon *(Falco peregrinus anatum/tundrius)*	Not Assessed	Special Concern (2007)	Special Concern (2012)
Short-eared Owl *(Asio flammeus)*	Not Assessed	Special Concern (2008)	Special Concern (2012)
Common Nighthawk *(Chordeiles minor)*	Not Applicable	Threatened (2007)	Threatened (2010)
Olive-sided Flycatcher *(Contopus cooperi)*	Not Applicable	Threatened (2007)	Threatened (2010)
Bank Swallow *(Riparia riparia)*	Not Applicable	Threatened (2013)	Not Status
Barn Swallow (*Hirundo rustica*)	Not Applicable	Threatened (2011)	Not Status
Rusty Blackbird *(Euphagus carolinus)*	Not Assessed	Special Concern (2006)	Special Concern (2009)
Little Brown Myotis (*Myotis lucifugus*)	Not Assessed	Endangered (2013)	Not Status
Grizzly Bear (*Ursus arctos*)	Not Assessed	Special Concern (2012)	Not Status
Wolverine *(Gulo gulo)*	Not Assessed	Special Concern (2003)	No Status

[1]Environment and Natural Resources (ENR). 2014. Species at Risk in the NWT: 2014. Yellowknife, NT. 84 pp.;
[2]Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2014. Wildlife Species Search. Web access: http://www.cosewic.gc.ca/eng/sct1/index_e.cfm [accessed September 2014].
[3]Environment Canada. 2012. Species at Risk Public Registry. Web access: http://www.sararegistry.gc.ca/sar/index/default_e.cfm [accessed September 2014].

On-site employees and contractors are to follow the procedures outlined in SOP #1 *Wildlife Observations and Procedures* should an uncommon or Species At Risk be observed (including their nests and dens), with the addition of the following:

- All uncommon and Species at Risk shall be left undisturbed;
- All caribou, grizzly bear, and Species at Risk are to be left alone. All on-site personnel are remain a minimum of 200 m from these species (when practical), and avoid contact with or disturbance to the species, its habitat, or its residence (e.g., nest, den);

- All on-site personnel are to record the species and number seen, its location, and its response to Project-related activities at the time of the observation, and provide this to Avalon's Superintendent of Environment;
- All observations of caribou, grizzly bear, and Species at Risk must be reported immediately to Avalon's Superintendent of Environment via radio or personal communications;
- If necessary, environment staff will confirm the species observation;
- If appropriate, environment staff will prohibit all Project-related activities to occur in the immediate area of the animal(s) until they have moved off;
- All observations of caribou will initiate the Monitoring Program #5 *Barren-ground Caribou Surveillance Monitoring Program*; and
- Avalon's Superintendent of Environment is to notify ENR of the species and number observed, its location, and its response to Project-related activities at the time of the observation and discuss actions and ongoing reporting needs.

SOP #6 – PROBLEM WILDLIFE

SOP #6 SOP #6 - Problem Wildlife

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1 of 5
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to describe the procedures to follow in the event of encountering problem or aggressive wildlife at the Project; however, this procedure must be considered in association with SOP #3 *Reducing Wildlife Attraction*. Wildlife may become a problem if they become habituated to the Project or have previously received a reward (e.g., food) at the Project site.

This procedure applies primarily to foxes, wolves, wolverines, or bears; however, it may be used for any dangerous wildlife encountered at the Project.

2.0 SCOPE

This procedure applies to all Avalon employees and contractors at the Nechalacho Mine and Concentrator Plant Site.

3.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure;
- Taking and understanding of Avalon's Bear Safety training program (at site orientation);
- Reporting wildlife observations in the Wildlife Sightings Log; and
- Taking reasonable precautions to avoid bears and other dangerous wildlife on the Project site.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure;
- Holding a valid Firearms Possession and Acquisition Licence (PAL) and taking actions to deter problem wildlife;
- Reporting and notifying ENR of any bear encounter and any deterrent actions taken;
- Maintaining Wildlife Sighting Logs;
- Reporting wildlife observations and interactions following these procedures; and

- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;
- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

4.0 PROCEDURES

A decision tree is provided in Section 4.3 that details procedures in bear responses and in the event of problem wildlife.

4.1 Encountering Problem Non-Aggressive Wildlife (e.g., fox)

1. On-site personnel and contractors are to alert others of the location and direction of travel of problem wildlife via radio;
2. On-site personnel and contractors are to immediately notify environment staff of the animal and its location;
3. Environment staff are to monitor the movement of problem wildlife on site and consider the individual animals history (e.g., has this animal been in camp before?);
4. Environment staff, in direct consultation with Avalon's Superintendent of Environment are to consider and implement an appropriate approach to managing individual problem animals on a case by case basis;
5. Environment staff may consult ENR for appropriate management approaches on a case-by-case basis;
6. A minimum of two Environment staff, with approval from Avalon's Superintendent of Environment or designate are to carry out deterrent actions (Section 4.2 *Deterring Actions*), if necessary;
7. Environment staff is to report the problem animal, any deterrent actions taken, and the animal behavior/response to ENR as soon as practical; and
8. Environment staff to investigate why the animal may have become attracted to the Project and evaluate adaptive management to minimize further occurrences;
9. Environment staff summarizes and evaluates the problem wildlife encounter, deterrent actions taken, and animal responses in the annual and comprehensive monitoring reports.

4.2 Deterring Actions

The goal of wildlife deterrent actions is to respond to wildlife situations using humane wildlife control methods that keep both humans and wildlife safe. All deterrent actions will start with the least intrusive method (e.g., arm waiving, shouting, bear horn, bear banger), and then

increase in intensity and addition of greater intrusive methods (e.g., herd with vehicle, rubber bullets). Each deterrent action will cease as soon as the animal moves away from the Project or activity area. Deterrent options are to be used to keep on-site personnel safe and to discourage problem wildlife from the Project.

Wildlife deterrent actions will be undertaken only by designated individuals (such as the environment or security staff). Training will include Bear Safety and Wildlife Deterrent Training specific to the key wildlife species that may be present in the Project area. This training will include basics in wildlife ecology and behaviour, prevention of wildlife-human encounters, contingencies for wildlife-human encounters, proper use of deterrents, and recording and reporting procedures.

For deterrents to be successful there must be:

1. Knowledgeable, trained personnel who can evaluate and select the most appropriate deterrent actions to be employed based on each wildlife situation;
2. Consistent application of appropriate deterrents;
3. The absence of food, shelter, and other rewards for animals at the Project; and
4. Direct consultation with ENR on applicable deterrent actions as required on a case-by-case basis, and communications regarding problem wildlife encounters.

Two trained environmental employees may carry out safe and appropriate animal deterrence together, such as hazing, controlled scare tactics (e.g., bear bangers, air horns, and rubber bullets).

Under the NWT Wildlife Act (S. 39(2)), any defense of life and property kills must be reported to ENR without delay.

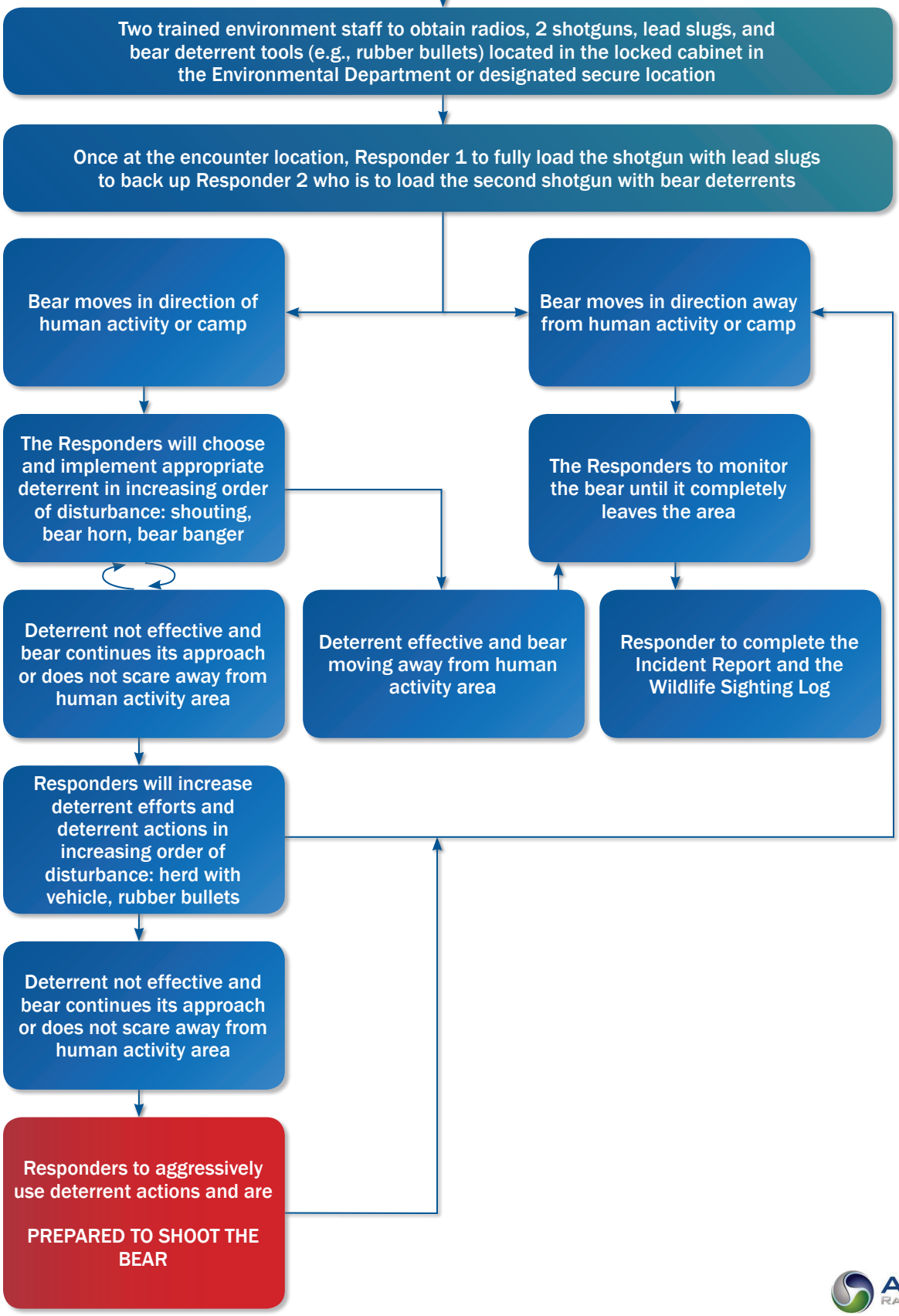
Only in the immediate protection of life and property may trained (proficient use of a firearm and certified firearm safety training) environment or security employees shoot an animal. If an animal is shot, Avalon's Superintendent of Environment is to immediately notify ENR (i.e., use ENR's 24 hour wildlife emergency line if outside regular work hours), begin an investigation to determine the cause and obtain photographs, and await further instructions from ENR on carcass removal.

4.3 Encountering Problem Dangerous or Aggressive Wildlife

This decision tree is adapted from a plan developed for the Gahcho Kué Mine[1] and shall be used when deciding appropriate responses to problem and aggressive wildlife.

[1] De Beers Canada Inc. 2014. Gahcho Kué Mine Wildlife and Wildlife Habitat Protection Plan. De Beers Group of Companies. 111 pp.

BEAR ENCOUNTER WITHIN 1 KM OF THE PROJECT



AVALON RARE METALS INC.

BEAR IN CAMP OR WITHIN 100 M OF CAMP

Sound the alarm and take safe refuge at the designated muster stations

Two trained environment staff to obtain radios, 2 shotguns, lead slugs, and bear deterrent tools (e.g., rubber bullets) located in the locked cabinet in the Environmental Department or designated secure location

Responder 1 to immediately load the shotgun with lead slugs. Responder 2 to load the second shotgun with bear deterrents once leaving the building.

Bear moves in direction of camp or human activity

Responders to ensure the bear has a safe escape route, and if have time and if safe to do so, use deterrents to scare away bear

Deterrent not effective and bear continues its approach or does not scare away from camp or human activity area

Risk to human life or property immenent

SHOOT TO KILL

Responder to follow the direction of ENR for carcass disposal

Bear moves in direction away from human activity or camp

The Responders to monitor the bear until it completely leaves the area

Deterrent effective and bear moving away from camp or human activity area

Responder to complete the Incident Report and the Wildlife Sighting Log and immediately notify ENR

AVALON RARE METALS INC.

SOP #7 – ENCOUNTERING WILDLIFE CARCASSES

SOP #7 SOP #7 - Encountering Wildlife Carcasses

CATEGORY:	QMS Management	**REVISION NO.:**	00	**PAGE:**	1 of 2
SUBCATEGORY:	Environment	**REVISION DATE:**		**APPROVED DATE:**	
				EXPIRY DATE:	October 2015

ALL ON-SITE PERSONNEL AND CONTRACTORS ARE REQUIRED TO FOLLOW THIS PROCEDURE.

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to provide direction to all on-site employees and contractors for the approach to be taken should a wildlife carcass be encountered (including safe removal), reporting requirements to Environment and Natural Resources (ENR), and how to assist Avalon in their monitoring of Project-related effects on wildlife.

This procedure applies to all wildlife carcasses discovered on the Project site at any time.

2.0 SCOPE

This procedure applies to all Avalon employees and contractors at the Nechalacho Project.

3.0 RESPONSIBILITIES

Avalon's employees and contractors are responsible for:

- Understanding and following this procedure; and
- Reporting wildlife carcasses immediately to environment staff and document the observation in the Wildlife Sightings Log.

Avalon's environmental staff is responsible for:

- Circulating and updating this procedure;
- Implementing carcass collection actions, when required;
- Maintaining Wildlife Sighting Logs;
- Reporting wildlife carcasses and investigate cause(s) following these procedures; and
- Implementing wildlife deterrent actions, when required.

Avalon's Superintendent of Environment or designate is responsible for:

- Ensuring this procedure is communicated to all on-site employees and contractors;
- Ensuring on-site employees and contractors have received appropriate training in this procedure; and
- Ensuring this procedure is implemented and amended, where appropriate.

4.0 PROCEDURE

Report any carcass found at the Project to the environment staff.

1. Do not approach any dead animal;
2. On-site personnel are to immediately contact environment staff of the species and location of the carcass;
3. On-site personnel and contractors are to use the posted Wildlife Sighting Logs and Incident Report form to record wildlife carcasses discovered at and around the site;
4. Environment staff is to inform ENR of any carcasses of caribou, moose, Species at Risk, bear, wolf, fox, and wolverine immediately;
5. Environment staff is to remove small mammal and bird carcasses (using personal protective equipment) at least 25 meters from roadways and active work areas. Large carcasses should remain in place until further direction from ENR and the area be cordoned off from Project-related activities (when practical);
6. Environment staff is to investigate the cause of caribou, moose, Species at Risk, bears, wolves, and foxes fatalities, obtain photographs, and await further direction from ENR;
7. Environment staff to evaluate protective measures; and
8. Environment staff summarizes and evaluates carcass observations from the Wildlife Sighting Logs in the annual and comprehensive monitoring reports.

APPENDIX C

REGULATORY AGENCY BEST MANAGEMENT PRACTICES

BMP #1 – Flying Low

BMP #2 – Camp Waste and Wildlife Attraction Guideline

BMP #3 – Safety in Grizzly and Black Bear Country

BMP #4 – Bear Incident Response Guideline

BMP #5 – Guideline for Dust Suppression

BMP #6 – Fire Prevention and Suppression Guideline

BMP #1 – FLYING LOW

Please:

- obey Transport Canada regulations and do not fly below 1,000 feet;
- find out where outfitter camps are located and avoid them during hunting season;
- avoid barren-ground caribou calving grounds during calving season;
- do not take-off or land in a calving area during calving season;
- do not chase or harass wildlife by flying too close; and
- respect our wildlife – keep to a safe altitude.

**Remember,
flying close enough
to an animal
so that it runs away
is too close!**

If geological survey or mineral exploration work is planned at any time, but especially during outfitting or calving seasons, please contact the regional office of Environment and Natural Resources for information before flying.

Mackenzie Mountains and Mackenzie Valley:

Sahtu Region .....(867) 587-3500
Dehcho Region .....(867) 695-7450
South Slave Region .....(867) 872-6400

Tundra:

Inuvik Region.....(867) 777-7308
North Slave Region.....(867) 873-7184
South Slave Region .....(867) 872-7450

Visit the Wildlife Division web site
of Environment and Natural Resources
at http://wildlife.enr.gov.nt.ca.

Northwest Territories Environment and Natural Resources

June 2007

Flying Low?

A variety of wildlife, quality guides and outfitters, spectacular scenery and solitude that only a location away from human habitation can offer…

The Northwest Territories is a popular destination for big game hunters and eco-tourists alike. But their experience can be ruined by low-flying aircraft that disturb wildlife.

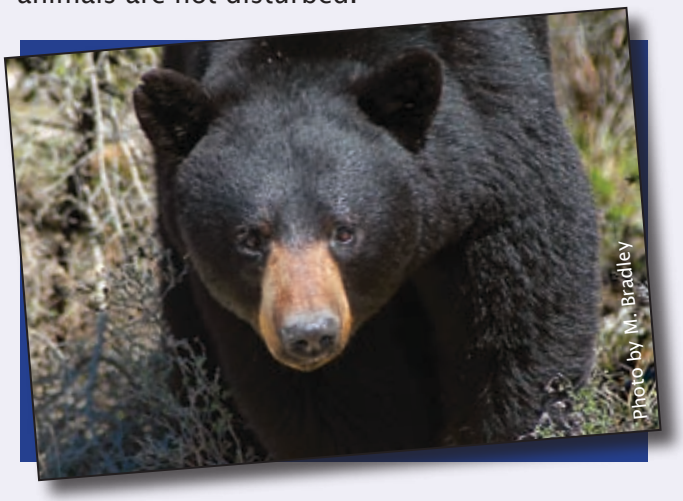
Increased exploration and development throughout the NWT also means increased air traffic. Pilot encounters with wildlife are becoming more frequent. If you are a fixed wing or rotary pilot, please respect our wildlife and keep to an elevation that does not disturb them.

Wildlife are Protected Under NWT Law

Section 38 of the NWT *Wildlife Act* protects wildlife by making it illegal to disturb or harass wildlife. Flying close enough to an animal that it runs away is flying too close!

In addition, Transport Canada regulations stipulate that aircraft may not fly lower than 1,000 feet above ground.

Please keep your aircraft at a safe elevation so animals are not disturbed.



In the Mackenzie Mountains

Big game hunters pay sizable fees for the chance to take home a trophy animal from the Mackenzie Mountains. Much of the hunting in this area is done on foot or on horseback and it is a time consuming process. Sound is amplified by the mountains and low flyovers can frighten an animal into flight, causing hours, or even days, of stalking to be wasted.

Wildlife that are affected by low level flyovers in the Mackenzie Mountains include Dall's sheep, mountain goat, mountain caribou and moose.

During the mid-July to end of September hunting season, please be cautious and avoid outfitter areas.

In the Mackenzie Valley

Boreal caribou are a threatened species found throughout the Mackenzie Mountains. Unlike barren-ground caribou, during the May calving period, boreal caribou go into hiding to have their calves. Low flying is especially harmful, stressing the female, which can cause separation from calves and lead to calf death. If electromagnetic surveys are going to be conducted in April or May, please contact the regional ENR office for information.

On the Tundra

During Hunting Season

Hunters also pay large fees for a hunting experience on the tundra. In late summer and early fall, outfitters have active barren-ground caribou sport hunting camps. Aircraft must remain at least 1,000 feet above ground.

During the mid-August to end of October hunting season, please be cautious and avoid outfitter areas.

During Calving Season

Caribou are a valuable resource to the people of the Northwest Territories. From the end of May to the end of June, female barren-ground caribou come together at herd-specific locations on the tundra to give birth to their calves. Low flyovers, take-offs and landings in these areas are especially harmful as they can stress the cows, which can cause separation from calves and increased calf mortality.

Avoid barren-ground calving grounds from mid-May to early July. This is especially important during times of low barren-ground caribou numbers. Please contact the regional office of Environment and Natural Resources in your area.

Other Wildlife

Grizzly bears, pelicans, whooping cranes, polar bears, muskoxen, black bears, eagles and other wildlife are also disturbed by low flying aircraft. Please respect our wildlife and keep to a safe altitude.

BMP #2 – CAMP WASTE AND WILDLIFE ATTRACTION GUIDELINE

Camp Waste & Wildlife Attraction Guideline

To prevent or reduce attracting wildlife and to discourage wildlife habituation ENR North Slave Regional Office (NSR) strongly encourages that the recommendations listed below be implemented to ensure human safety and to protect our natural environment, including wildlife at a camp or cabin.This guideline is intended for small scale campsites an recreational cabins including:

- Exploration camps
- Tourism outfitters & commercial companies
- Residential & recreational cabin owners

Camp Design

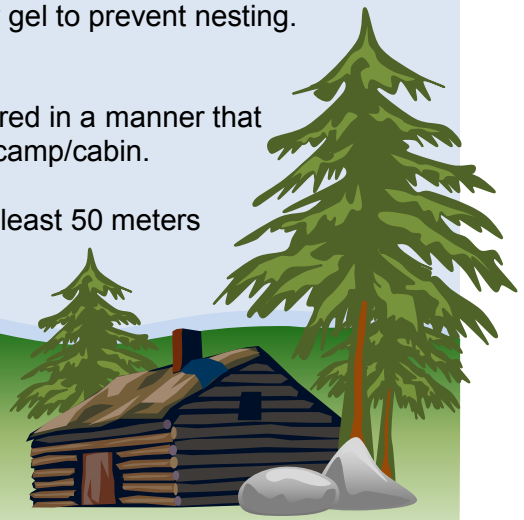
To prevent wildlife from accessing a camp/cabin and discourage habituation, a camp/cabin should be situated away from known or possible bear activity (previous camp/cabin, berry patches, dens, etc.) and designed in a manner that eliminates or reduces the potential for human and wildlife interaction.

- Clear brush to increase visibility and eliminate blind spots.
- Kitchen, latrine, food/waste storage, incinerator, composting site and garden should be at least 50 meters from sleeping area.
- Temporary cooking areas (kitchen, fire pits, BBQs) should be located down-wind from the sleeping area.
- All structures should be well spaced and the sleep tents or trailers arranged in a line rather than circular with doors facing the kitchen.
- There should be no food or cooking in the sleeping area.
- Properly install and maintain an electric fence around the camp or at minimum around incinerator, composting site and garden.
- Skirting around infrastructure that extends approx. 1m+ underground to prevent wildlife tunnelling.
- Whenever possible, keep doors and windows closed, cover openings/crawl spaces, seal cracks, screen chimney caps and place spikes or tacky gel to prevent nesting.

Food Storage

Amount of food at each camp/cabin will vary but food should be stored in a manner that will eliminate any food rewards if wildlife was to gain access to the camp/cabin.

- Store all food in the kitchen or in a central location that is at least 50 meters away from the sleeping area.
- Cooking and eating area(s) should be thoroughly cleaned after every meal.
- If the camp is to become vacant for more than a week, food should be stored in sealed animal proof container.



Domestic Waste

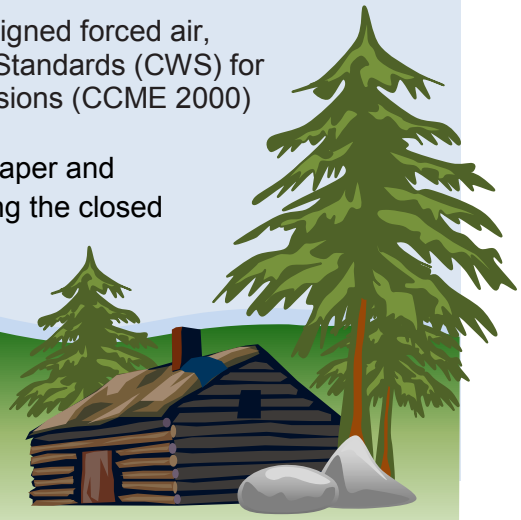
Inadequate storage, lack of onsite treatment and/or improper disposal of domestic waste (food & food contaminated waste) are the most common activities that contribute to the release of odours which may result in human/wildlife conflicts.

- Purchase bulk products to reduce amount of domestic waste produced.
- Implement a camp waste segregation system (recyclables, combustible, non-combustible and hazardous wastes) appropriate to the volume of waste produced.
- Domestic waste should not be stored in plywood boxes or in sheds as odours tend to permeate the wood and linger. Waste should be stored in a central area in a sealed animal proof container until final disposal.
- The sealed animal proof containers should be cleaned daily with bleach.
- Non-combustibles such as metal, glass and plastic should be cleaned with bleach and stored in a manner not to attract wildlife until transported back to an approved facility.
- Burying domestic waste is ineffective; the preferred method of disposal is backhauling domestic waste to an approved facility such as an approved landfill or bottle depot in a timely manner.

Burning/Incineration

An alternative method of camp waste disposal but it should be considered when no other options are available. There are additional hazards associated with this method that may still result in wildlife attraction, forest fires and air contamination.

- Designate a person or trained staff member to be responsible for the daily duties involved with burning/incineration.
- Burning in a "modified burn barrel" is recommended as an alternative only to open burning for timely disposal for cabin/camp waste.
    - To ensure a high temperature and complete burn, NSR suggests that there be approx.1/3 wet with 2/3 dry waste per bag;
    - Burn a maximum of two bags per day; and
    - Install a fine screen on the chimney for reducing sparks.
- Larger scale exploration camps require a commercially-designed forced air, fuel-fired incinerator capable of meeting the Canada-Wide Standards (CWS) for Dioxins and Furans. (CCME 2001), CWS for Mercury Emissions (CCME 2000) and the NWT Ambient Air Quality Guidelines.
- Camp waste suitable for open burning is untreated wood, paper and cardboard. A permit to burn will be required if burning during the closed season (May 1 - Sept 30).
- Residual waste such as ash needs to be collected, stored in a sealed animal proof container and transported back to an approved facility site for disposal.



Grey Water (dishes, showers, laundry, etc.)

- Bleach should be added to dish water and/or a grease trap installed.
- Disposed of in a natural depression/sump/pit a minimum of 30 meters from the high water mark.
- Disposal site should be covered and treated with lime or crystal lye daily.

Black Water (Sewage)

- Honey bags are stored in a manner that is inaccessible to wildlife and transferred to an approved facility for disposal in a timely fashion.
- Ensure that pits have sufficient depth and treated with lime or crystal lye daily.

Animal/Fish Parts

- Clean away from camp and dispose of entrails a minimum of 3km away from camp area and on an island, if possible.
- In the NWT, fish entrails can be disposed of in water as an alternative to moving them away from the camp area.
- Any surface used for cutting or cleaning should be cleaned immediately with bleach.
- Do not leave smoking/drying fish or meat unattended.

Other Attractants

- Both the cooking (kitchen, fire pits, BBQs) and eating area(s) should be thoroughly cleaned after every meal.
- Do not leave bloody hunting clothes or items that smell like fish near the sleeping area.
- Pet food should be stored indoors in a sealed animal proof container and pets fed indoors, if possible.
- Any oils, gas or grease should be stored in a manner that is inaccessible to wildlife.

Reporting Wildlife Incidences (sightings, encounters, injuries, mortalities)

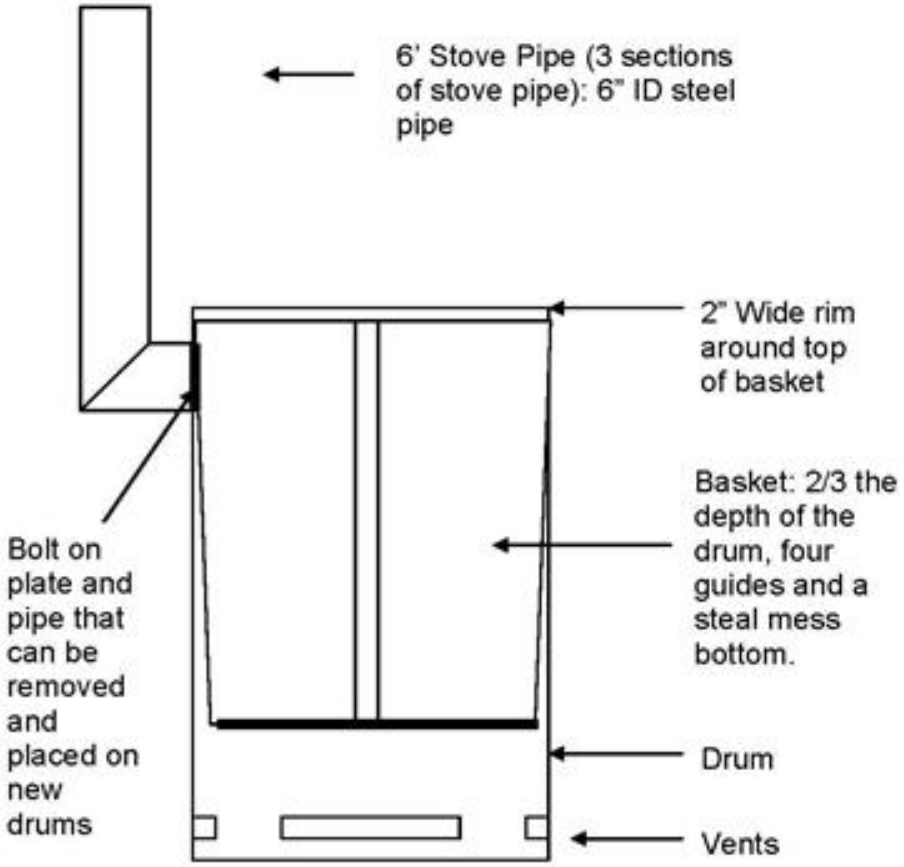
- Incidences should be reported at your earliest opportunity.
- Timely reporting allows ENR to provide advice and assistance in deterring nuisance wildlife before they become habituated and must be destroyed.
- Any defence of life and property kills must be reported immediately.

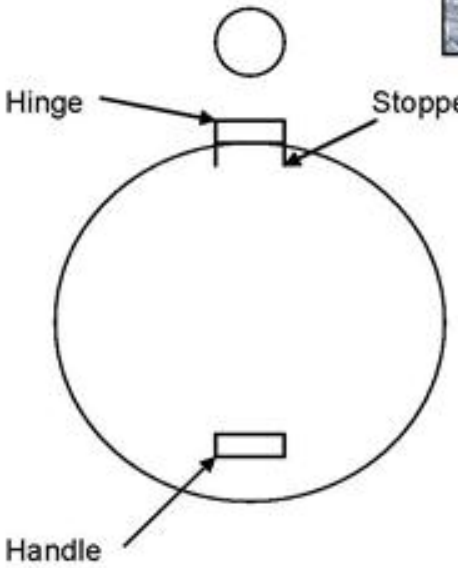
If you have additional questions, a report to file, or an emergency, please contact:

- 24hr Wildlife Emergency number at **(867) 873-7181**
- North Slave Regional ENR Office at **(867) 873-7184** (8:30am – 5:00pm)
- ENR Tlicho Area Office in Behchoko at **(867) 392-6511** (8:30am – 5:00pm)

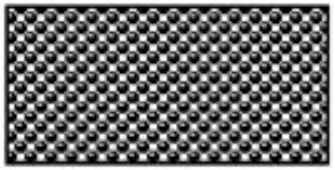
BMP #3 – SAFETY IN GRIZZLY AND BLACK BEAR COUNTRY

MODIFIED BURN BARREL

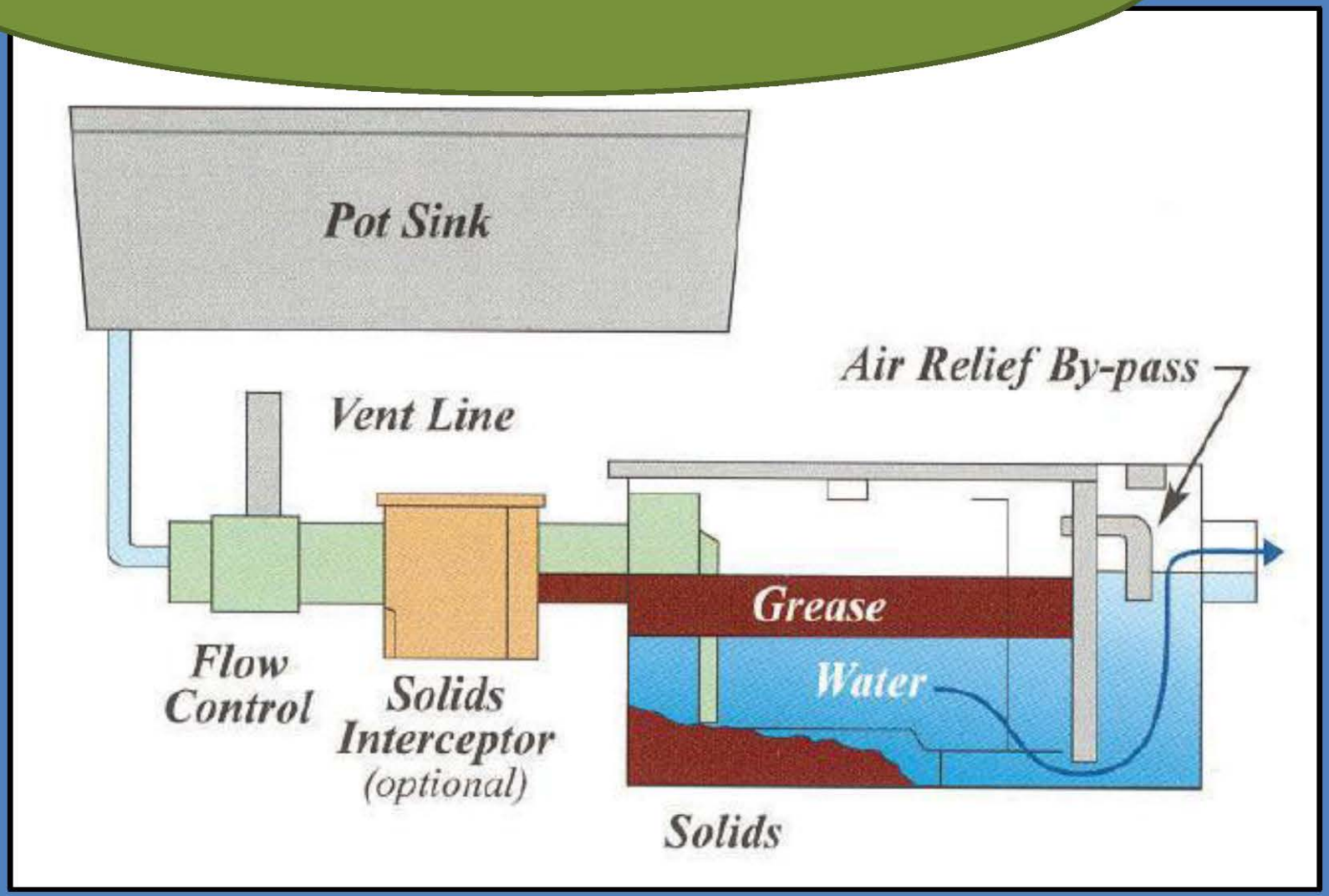




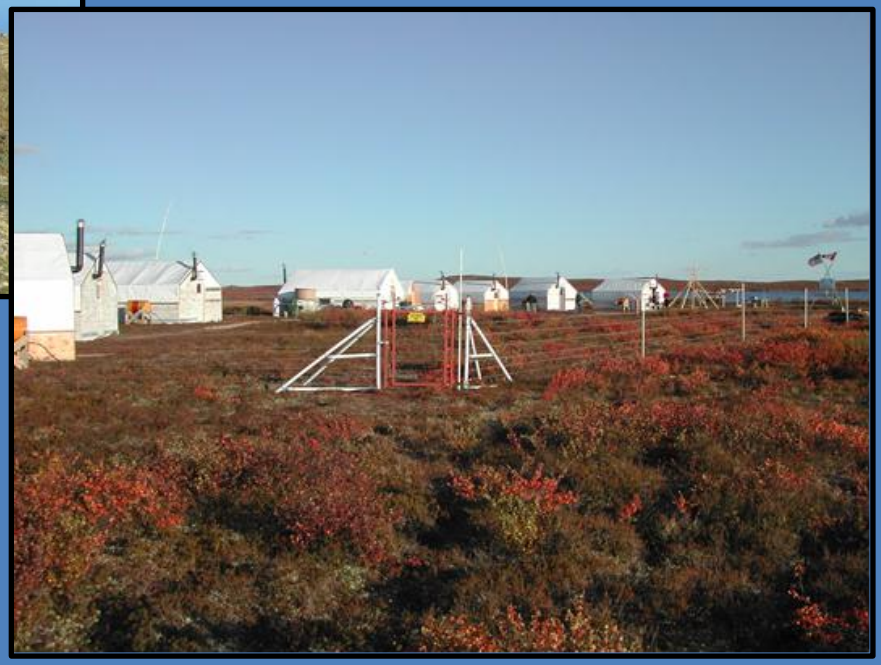
Example of basket bottom plate pattern



GREASE TRAP

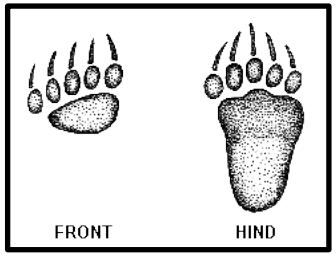

Pot Sink
Air Relief By-pass
Vent Line
Grease
Water
Flow Control
Solids Interceptor (optional)
Solids

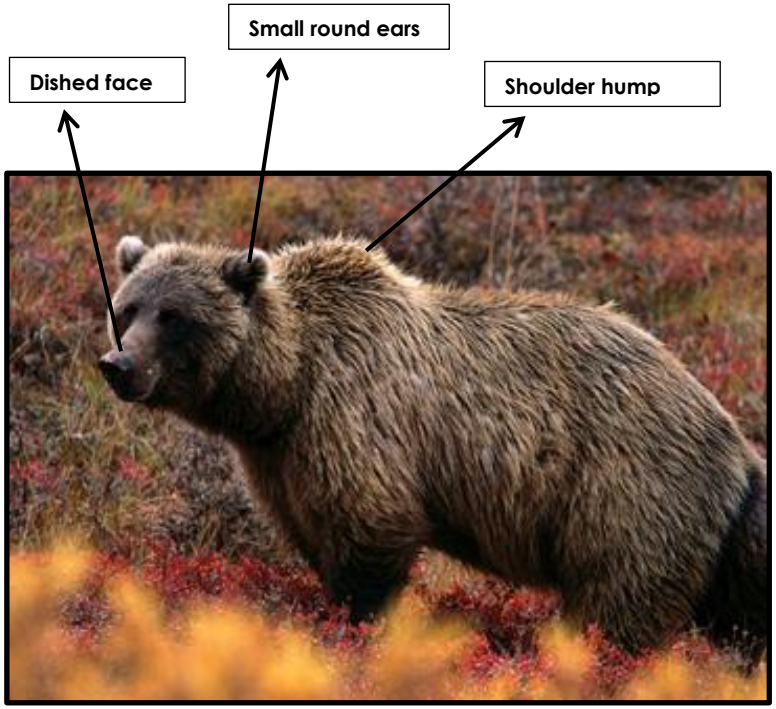
ELECTRIC FENCE



GRIZZLY BEAR

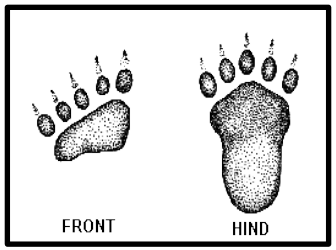
2 – 4" long, light claws

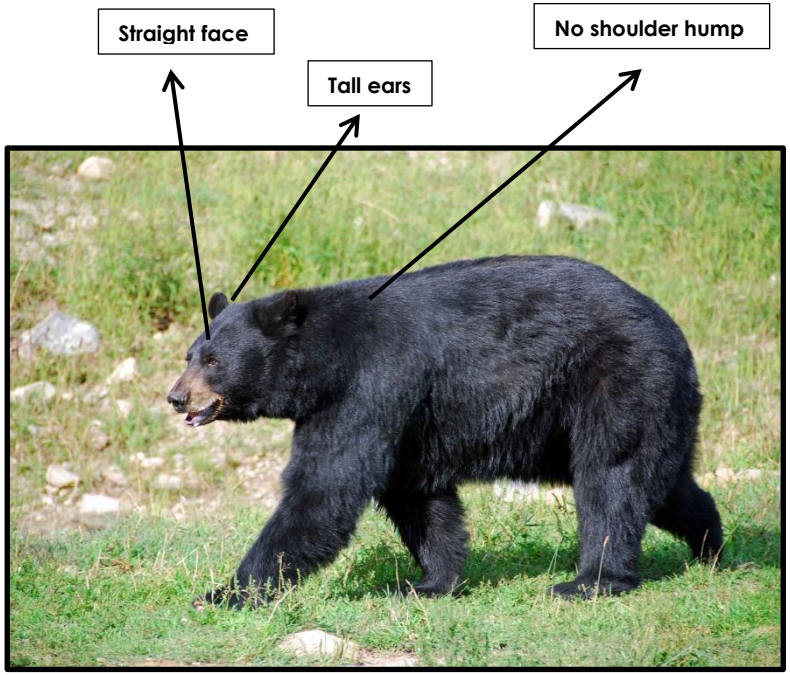




BLACK BEAR

1 ½" short, dark claws





If You Encounter a Bear...

- Remember the 3 S's... Stop, Stand still, Stay calm.
- Ensure others know that a bear is in the vicinity.
- Do not run.
- Leave the bear an open avenue of escape.

...at a DISTANCE

- Alert the bear to your presence – speak in low tones, slowly wave your arms.
- Quietly walk back the way you came or make a wide detour.
- Keep an eye on the bear.
- Stay downwind.
- Consider using warning shots, noisemakers.

...that is NEARBY

- Do not shout or make sudden movements.
- Avoid direct eye contact.
- Back away slowly.
- Climb at least four metres up a tree to escape a grizzly. (Ineffective against black bears).

Deterrents...

- Include... 12 gauge cracker shells, air horns, flares, and chemical repellents such as pepper spray.
- Are not completely effective against every bear in every situation.
- Should not make you less careful to avoid bear conflicts.
- Are potentially dangerous – use with extreme caution.

If a Bear Charges...

- Many charge are bluffs – the bear will often veer to the side at the last minute.
- Use a chemical repellent only at close range.
- If you have a firearm and contact appears unavoidable, shoot to kill.
- Play dead only during a grizzly bear attack (lie on your side, curl into a ball with your legs tight to your chest, hands clasped behind your neck).

If you must shoot a bear in self-defense, report the kill to a Renewable Resource Officer as soon as possible. If an Officer is not immediately available, skin the bear and preserve the hide. The hide must be turned in to an Officer. You may not keep any part of a bear killed in self-defense.

For Further Information...

For further information, contact any Environment and Natural Resources Office:

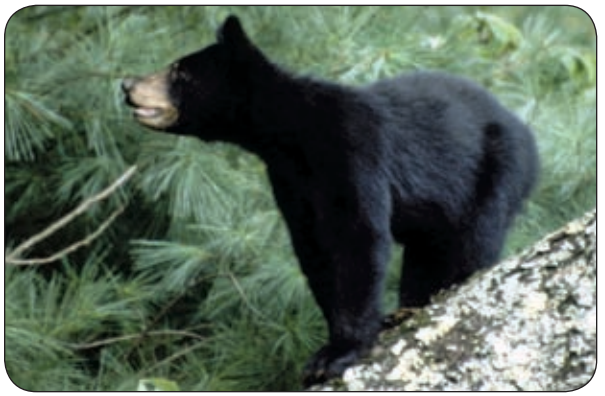
Area Code (867)

Aklavik	978-2248
Deline	589-3421
Fort Good Hope	598-2271
Fort Liard	770-4311
Fort McPherson	952-2200
Fort Providence	669-3002
Fort Resolution	394-4596
Fort Simpson	695-7433
Fort Smith	872-6400
Hay River	875-5554
Inuvik	678-6670
Lutsel K'e	370-3141
Norman Wells	587-3500
Behchokǫ̀	392-6511
Tsiigehtchic	953-3605
Tulita	588-3441
Tuktoyaktuk	977-2350
Ulukhaktok	396-4505
Yellowknife	873-7181

Northwest Territories Environment and Natural Resources

May 2009

Safety in Grizzly and Black Bear Country



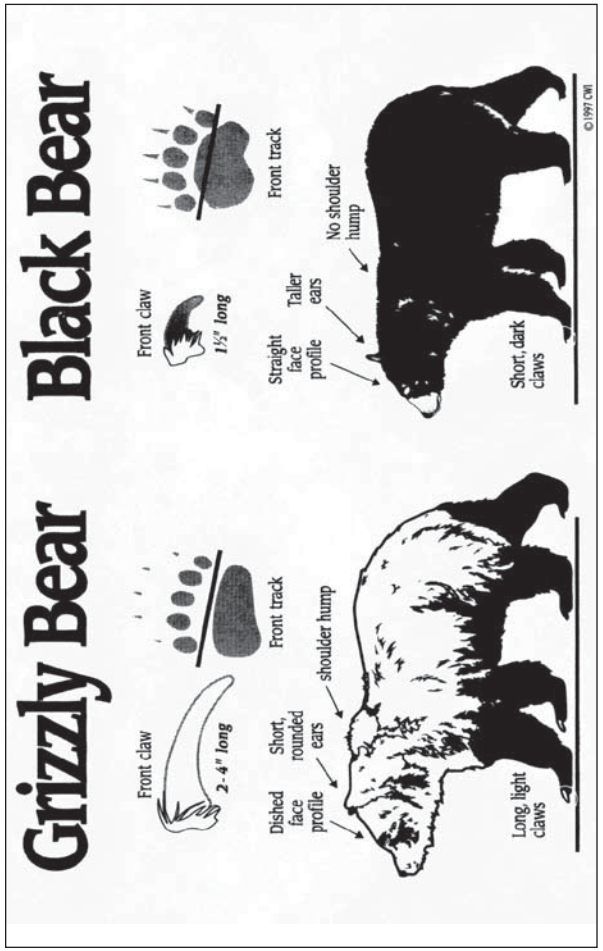
Black Bear

Welcome to Bear Country

Grizzly and black bears can be found throughout the Northwest Territories. They are an important part of the northern ecosystem.

Northerners are committed to maintaining healthy populations of all wildlife, including grizzly and black bears. Treat them with respect. Remember that you are in a bear's territory.

What's the Difference Between...?



While You are Travelling...

- Always be alert.
- Travel in groups.
- Travel only during daylight.
- Avoid carrying strong smelling foods.
- Make noise where visibility is limited.
- Avoid bear feeding areas such as flood plains, berry patches and areas rich in horsetails and other grasses.
- Avoid bear travel areas like shorelines, trails along the water or near berry patches.
- Watch for fresh bear droppings and tracks.
- Carry bear deterrents.

If You are Camping...

- Avoid camping in areas frequented by bears.
- Always sleep inside a shelter (tent, cabin, etc.).
- Don't keep food in tents or areas of camp other than the cook tent.
- Keep a clean camp - wash all dishes and utensils after every meal.
- Avoid cooking greasy foods.
- Burn all garbage every day or take it to a bearproof disposal site. Burying garbage does not eliminate odors.
- If you're going to leave the campsite:
  - bearproof your camp – store food and other attractants (dish detergent, toothpaste, etc.) in an inaccessible place.
  - let someone know where you are going.
  - take a partner and bear deterrents with you.

Grizzly Bears

If You are Fishing...

- Be cautious near streams or lakes - bears frequent these areas.
- Clean fish away from camp and store them underwater.
- Burn fish guts away from camp.
- Store fish-cleaning knifes away from camp.
- Don't wear clothes that smell like fish to bed.

If You are Hunting...

- Avoid hunting late in the day and returning to camp in the dark.
- Stay alert when dressing game or handling meat and only do so away from camp.
- Avoid shooting more than your party can pack out in a single load.
- If you must leave meat in the field, leave it near a visible landmark with a clear approach route and cover it with a tarp to discourage scavengers.
- Don't keep bloodied clothes in your tent.

BMP #4 – BEAR INCIDENT RESPONSE GUIDELINE

2013

Bear Incident Response Guideline

Photo by Dean Cluff/ENR

North Slave Region

Environment & Natural Resources

Northwest Territories Environment and Natural Resources

ENR North Slave Region
Bear Incident Response Guideline

Implementation of these guidelines will allow ENR North Slave Regional office a greater ability to provide advice and assistance in preventing harm to humans, bear(s) or property. In addition, it will provide guidance on safely deterring bears that find themselves in areas of development, tourism camps or cabins with the aim of preventing habituation and unnecessary destruction.

Report any incidents such as sightings, encounters, injuries and/or mortalities to the ENR Regional Contacts listed below:

Wildlife Emergency (On Call Officer)	(867) 873-7181 (24 Hours)
North Slave Regional Office	(867) 873-7184 (8:30 am to 5:00 pm)
Tlicho Area Office	(867) 392-6511 (8:30 am to 5:00 pm)

The Department's *Safety in Grizzly and Black Bear Country* brochure contains basic precautions and safety tips to keep in mind while you are in bear country. ENR understands that there may be some variation due to geographic conditions which may limit the actions you are able to take.
http://www.enr.gov.nt.ca/_live/documents/content/Bear_Safety.pdf

BEAR AWARENESS TRAINING

ENR North Slave Regional office supports the NWT Mine Health and Safety Regulations (s.15.05), which requires that all field personnel involved in mineral exploration undertake bear-safety training. However, human/wildlife incident prevention is a key component to the training.

Training of personnel in preventing and responding to wildlife incidents can reduce the likelihood of injury to personnel and wildlife. Therefore, all field personnel working on the project must receive bear awareness training from a professional trainer.

The training should include:

1. Recognizing the causes of human/wildlife conflicts;
2. How to prevent and respond to bear incidents;
3. Proper storage, transfer and disposal of camp waste; and
4. Proper use and safe application of deterrents.

INCIDENT PREVENTION

Refer to the ENR North Slave Regional ***Camp Waste and Wildlife Attraction Guideline.*** This resource will provide guidance on how to reduce or prevent attraction from bears to your camp, cabin or work site.

INCIDENT RESPONSE

Small scale exploration and tourism camps should prepare a Bear Response Standard Operating Procedure (SOP) that can be used in the field. The SOP will allow all members on site to have knowledge of how to reduce or prevent any loss of life or property if there is a bear within the vicinity of your camp area or work site. A SOP may include such things as:

a) Response team
b) Equipment
c) Action level
d) Emergencies
e) Reporting Requirement

1. *SIGHTING - Bear in the general vicinity (>1km)*

1. If it is within sight of your camp/cabin and it is safe to do so, use the *Bear Incident Checklist* to record information regarding your observations.
2. Report the bear to the ENR North Slave Regional contacts listed above.
3. Continue to monitor, if necessary.

2. *ENCOUNTER - Bear In Camp (<1km)*

1. If safe to do so; take a quick note of the location, direction of travel and general behaviour of the bear(s).
2. Sound the bear alarm.
3. Phone the ENR North Slave Regional contacts listed above for guidance on necessary next steps to ensure human/wildlife safety and protection of property.
4. Stay indoors or in your vehicle. DO NOT APPROACH THE BEAR.
5. Keep all doors and windows closed.
6. If necessary and safe to do so; continue to monitor the behaviour and movement until either the bear leaves on its own, deterrence is successful or response personnel arrive.
7. Report status of bear encounter to the ENR North Slave Regional contacts listed above when safe to do so.

3. *Bear Injury*

1. Any injuries a bear may have obtained from direct or indirect contact with the camp or persons must be reported to the appropriate ENR North Slave Regional contact listed above.
2. Use the *Bear Incident Checklist* to record observations and any events that may have lead up to the injury and any other actions taken.

4. *Bear Mortality*

1. A bear may be destroyed if human life is in danger or destruction of property is imminent.

2. Mortalities must be reported to the appropriate ENR North Slave Regional contact listed above immediately. Under the NWT Wildlife Act, the responsible party is required to:

    a) Skin the bear leaving the claws and head attached.
    b) Preserve the hide by freezing and/or salting it and store it in a cool place. Turn in the hide, the skull, evidence of sex and any other biological samples requested when filing the report to the nearest ENR North Slave office or to an ENR Renewable Resource Officer.

If possible, the attached *Bear Incident Checklist* should be completed prior to calling ENR. It is critical that as much information as possible be provided at this point in order for ENR to provide appropriate advice and guidance.

DENNING BEARS

A. For exploration camps, if a bear is located in, at or near a den site, work in the area must halt. All employees should safely retreat from the area and report the incident to the Site Supervisor and/or Wildlife Monitor and the appropriate ENR North Slave Regional contact listed above for further advice and assistance.

B. For cabin owners, if a bear is located in, at or near a den site, safely retreat from the area and report the incident to the appropriate ENR North Slave Regional contact listed above for further advice and assistance.

C. Staff from ENR will be required to assess the den site and may implement measures to ensure both human safety and that the bear(s) remain undisturbed. This may include the establishment of a buffer zone of at least 300 meters around the den.

D. Work inside the buffer zone may not be permitted until after den emergence.

ENR North Slave Region
Bear Incident Checklist

Office Use Only
File#:
Date reported:
Name:

- Fill out or check all that apply

1. **Complainant Details:**				
Name, job title and affiliation:				
Contact information:				
Location of complainant: *(coordinates, lake or property name)*				
Other on-site contact information: *(wildlife monitors/site supervisors)*				
2. **Bear Incident Details**				
Date/Time:		**Location:** *(coordinates, lake or property name)*		
Type of bear incident:	□ sighting	□ encounter	□ injury	□ mortality *Ear tag/tattoo #*
	□ Other, explain:			
Number of bears:		**# of cubs**		
Type:	□ black	□ grizzly	□ unknown	
Sex :	□ male	□ female	□ unknown	
Age Class:	□ cub (<1)	□ juvenile	□ adult	□ unknown
Behaviour:	□ fearful	□ not fearful	□ aggressive	□ other
General Observations	□ moving toward site	□ moving away from site	□ at site	
Other observations: *(i.e. walking, resting, eating, mortality, injury, den site, number of cubs, etc.)*				
Has bear(s) been involved in a previous incident:	□ No □ Yes	**If yes, explain:**		
Did the bear obtain a reward	□ No □ Yes	**If yes, explain:**		
Any property damage or loss of life:	□ No □ Yes	**If yes, explain:**		

3. **Detection/Deterrent:**				
Detection system on site:	□ Alarm	□ Dog	□ Motion detector	□ Other:
Deterrence on site:	□ Bear boards	□ Auditory *(Yelling/Flares/Alarm/Horn/Bell/ Whistle/Cracker shells)*	□ Projectile *(Rubber Bullets/Firearms)*	
	□ Electric Fence	□ Chased *(Dog, vehicle)*	□ Other:	
Was deterrence used:	□ No □ Yes	**Explain:**		
Was the deterrence successful:	□ No □ Yes	**Explain:**		
Present status of bear with dates:	□ at large	□ captured	□ deterred	□ other

4. Additional Comments	

BMP #5 – GUIDELINE FOR DUST SUPPRESSION

Guideline for Dust Suppression

June 2013

Guideline for Dust Suppression

1 Introduction

The purpose of this guideline is to make you aware of the procedures you must follow before applying a dust suppressant in the Northwest Territories. The Environment Division (ED) of the Department of Environment and Natural Resources (ENR) has currently approved three dust suppressants for use on Commissioner's Land in the NWT. This publication provides guidance for applying these products and a process for approving other dust suppression products.

Section 2.2 of the *Environmental Protection Act* gives the Minister of Environment and Natural Resources the authority to develop, coordinate and administer these guidelines (see Appendix A).

1.1 Definitions

Approved Product	A product approved by ED for dust suppression.
Commissioner's lands	Lands in the NWT that have been transferred by Order-in-Council to the Government of the Northwest Territories. This includes highways, block land transfers and most lands within municipalities.
Leachate Test	Leachate Extraction Procedure - Canadian General Standards Board (CGSB) #164-GP-1-MP (or as amended) or equivalent.
PCB	Polychlorinated biphenyl.
Roadway	The traveled surface of a road, from shoulder to shoulder; it does not include the side slopes or ditches.
Set	The point at which the product becomes stable, according to the manufacturer's specifications.
Used Oil	Any oil from an industrial or non-industrial source that has become unsuitable for its intended purpose due to the presence of impurities or the loss of original properties.

1.2 Why are Dust Suppressants Used?

Reasons for using dust suppressants include:

Safety	Untreated roads may lead to more accidents. Accident potential is increased due to loss of visibility.
Health	Dust particles may become a health hazard when they become trapped in the lungs.
Vegetation	Large amounts of dust may induce changes in vegetation due to increased heat absorption and decreased transpiration.
Aquatic Resources	High levels of dustfall into aquatic systems may adversely affect aquatic plants and fish that are not adapted to high levels of sedimentation.
Road Maintenance Costs	Treated roads can lower road maintenance costs by reducing gravel loss and blading time.
Aesthetics	Dust produces an immediate visual impact that may affect residents who live near dust prone roads.

An Ambient Air Quality Guideline established under the *Environmental Protection Act* sets standards respecting the maximum desirable levels of dust in ambient air in the NWT. Measured as total suspended particulate (TSP), the standards for dust over 24 hours are 120 micrograms per cubic metre ($\mu g/m^3$) and averaged over a year are 60 $\mu g/m^3$. These standards apply to the whole of the NWT. They define the long term goal for air quality to protect unpolluted parts of the Territory and for the continuing development of control options in polluted areas.

1.3 Roles and Responsibilities

Although the *Environmental Protection Act* does not require permits for the application of dust suppressants in the NWT, all suppressants must first be approved by ED. While general conditions are provided for approved dust suppressants, additional conditions may be required on a case by case basis.

The responsible party, being the landowner, road authority or municipal authority, must make provisions to notify the public and contact ENR before applying suppressants. The responsible party must also verify that the products are approved for use and properly applied by the applicator. If the product migrates from the roadway and is deemed to violate the *Environmental Protection Act*, the person(s) responsible must be prepared to take appropriate remedial measures.

Applicators are also accountable for their actions. Applicators are responsible for ensuring that the product is approved for use in the NWT, is correctly applied to the designated area and does not migrate off the site. Applicators, manufacturers and retailers must provide information about new products to ED for approval before their use in the NWT (section 3).

> ***It is important to remember that the responsible party (the landowner, road authority or municipal authority) is liable for any activity they authorize. Contamination of the environment and subsequent remediation of the site is ultimately their responsibility (see Appendix A).***

2 General Dust Suppression Guidelines

There are many aspects to consider before you apply a dust suppressant in the NWT. The following are general guidelines to be followed:

2.1 Notification for Use of Approved Products

The following parties must be notified:

Property Owner	Any application of a dust suppressant should be conducted according to an agreement between the applicator and the responsible road authority or property owner. A written agreement is recommended.
ENR	Before any application, provide the local Renewable Resource Officer with the following information: the location of the site, the product(s) used and a timetable for the work.
Public	Notify the affected public before any application. This can be through signs, public notices or media announcements.

2.2 Approved Products

Calcium chloride and DL10 are currently the only approved dust suppressants in the NWT. Appendix B contains a list of approved products and information regarding the application of these products.

Other products cannot be used in the NWT until they have been approved by ED.

Used oil cannot be used as a dust suppression/road stabilizing product or added to other dust suppression products.

2.3 Application Procedures

Directions	Follow the manufacturer's specifications or other tested and approved procedures.
Roadway	The application shall be limited to the roadway, driveway or parking lot.
Rate	Carefully monitor the application rate to ensure adequate coverage without pooling or runoff of products. The amount of dust suppressant applied should not exceed the minimum amount required to effectively suppress dust.

Incorporation	Products must be bladed or incorporated into the road immediately upon application, to ensure the product does not migrate off the roadway.
Surplus	There should be no evidence of excess product on the roadway.
Migration	The material must not migrate or run off the traveled portion of the roadway.

2.4 Environmental Concerns

2.4.1 General

Contaminants	Dust suppressants must conform with the manufacturer's specifications and must not contain concentrations of contaminants that would not normally be found in the suppressant.
PCB Concentration	Materials that contain more than 2 parts per million (ppm) of PCB are considered unacceptable and shall not be applied as a dust suppressant.

2.4.2 Water

Proximity to Water	Ensure that dust suppressants do not enter and contaminate waterbodies, including surface and groundwater. Do not allow the product to leave the roadway.
Sensitive Environments	Application rates near sensitive environments, (e.g. marshes), must be closely monitored. Remember, environmental restoration is the responsibility of the landowner, road authority or municipal authority.
Flooding	Do not apply products to areas of roads that are subject to flooding.
Imminent Precipitation	Do not apply products if precipitation is occurring, or forecast to occur before the product sets or cures.

2.5 Spill Contingency Plan

Provide EPS with a contingency plan, if required by the *Spill Contingency Planning and Reporting Regulations*, under the *Environmental Protection Act*.

Be prepared to respond to spills, including any product that migrates off the roadway.

3 New Products

Products that have not been approved by ED must undergo an assessment before being approved for use as a dust suppressant. The following information is required before such an assessment can be done:

Manufacturer's Information	Manufacturer's specifications and application procedures.
Laboratory Analysis	All new products must be characterized by an accredited laboratory.
Material Safety Data Sheets (MSDS)	Complete Workplace Hazardous Material Information System (WHMIS) data sheets.
Toxicity Tests	Toxicity tests should be provided for LC-50 and LD-50.
Leachate Tests	(see section 3.1)
Other Requirements	Provide a proposed schedule of field tests to confirm product efficiency and appropriate application rates. Provide any other materials, tests or analysis carried out on the substance. Provide copies of approvals from other jurisdictions. Laboratory or testing costs are the responsibility of the person(s) applying for approval.

3.1 Leachate Toxicity Testing

New, non-approved dust suppressant products may be required to undergo the leachate extraction procedure to determine toxicity of the product. Testing should be carried out on a sample consisting of the material, at the standard application

rate, and on a representative sample of road material. Such a leachate toxicity test can be undertaken by a variety of reputable commercial laboratories. Leachate extraction procedure CGSB #164-GP-1-MP, or an acceptable equivalent, must be used (see Appendix C).

4 Conclusion

This is a brief introduction to dust suppressant application in the NWT.

For more information, please contact:

Environment Division
Environment and Natural Resources
600, 5102-50 Avenue
Yellowknife, NT, X1A 3S8
phone (867) 873-7654 fax (867) 873-0221

Remember that this document is to inform you of the procedures you must follow before applying dust suppressants in the NWT. If you have any questions or comments, contact the Environment Division before beginning a dust control program.

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Appendix A

Environmental Protection Act

The following is a subset of the *Environmental Protection Act*. The complete act can be obtained from the Environmental Protection Service, Department of Resources, Wildlife and Economic Development.

1. In this Act,

"contaminant" means any noise, heat, vibration or substance and includes such other substance as the Minister may prescribe that, where discharged into the environment,

(a) endangers the health, safety or welfare of persons,
(b) interferes or is likely to interfere with normal enjoyment of life or property,
(c) endangers the health of animal life, or
(d) causes or is likely to cause damage to plant life or to property;

"discharge" includes, but not so as to limit the meaning, any pumping, pouring, throwing, dumping, emitting, burning, spraying, spreading, leaking, spilling, or escaping;

"environment" means the components of the Earth and includes

(a) air, land and water,
(b) all layers of the atmosphere,
(c) all organic and inorganic matter and living organisms, and
(d) the interacting natural systems that include components referred to in paragraphs (a) to (c).

2.2. The Minister may

(a) establish, operate and maintain stations to monitor the quality of the environment in the Territories;
(b) conduct research studies, conferences and training programs relating to contaminants and to the preservation, protection or enhancement of the environment;
(c) develop, co-ordinate and administer policies, standards, guidelines and codes of practice relating to the preservation, protection or enhancement of the environment.

5. (1) Subject to subsection (3), no person shall discharge or permit the discharge of a contaminant into the environment.

(2) **REPEALED.** R.S.N.W.T. 1988,c.117(Supp.),s.8.

(3) Subsections (1) does not apply where the person who discharged the contaminant or permitted the discharge of the contaminant establishes that

(a) the discharge is authorized by this Act or the regulations or by an order issued under this Act or the regulations;
(b) the contaminant has been used solely for domestic purposes and was discharged from within a dwelling-house;
(c) the contaminant was discharged from the exhaust system of a vehicle;
(d) the discharge of the contaminant resulted from the burning of leaves, foliage, wood, crops or stubble for domestic or agricultural purposes;
(e) the discharge of the contaminant resulted from burning for land clearing or land grading;
(f) the discharge of the contaminant resulted from a fire set by a public official for habitat management of silviculture purposes;

(g) the contaminant was discharged for the purposes of combating a forest fire;
(h) the contaminant is a soil particle or grit discharged in the course of agriculture or horticulture; or
(I) the contaminant is a pesticide classified and labeled as “domestic” under the *Pest Control Products Regulations* (Canada).

(4) The exceptions set out in subsection (3) do not apply where a person discharges a contaminant that the inspector has reasonable grounds to believe is not usually associated with a discharge from the excepted activity. R.S.N.W.T. 1988,c.75(Supp.),s.5;c.117(Supp.),s.8.

5.1 Where a discharge of a contaminant into the environment in contravention of this Act or the regulations or the provisions of a permit or licence issued under this Act or the regulations occurs or a reasonable likelihood of such a discharge exists, every person causing or contributing to the discharge or increasing the likelihood of such a discharge, and the owner or the person in charge, management or control of the contaminant before its discharge or likely discharge, shall immediately

(a) subject to any regulations, report the discharge or likely discharge to the person or office designated by the regulations;
(b) take all reasonable measures consistent with public safety to stop the discharge, repair any damage caused by the discharge and prevent or eliminate any danger to life, health, property or the environment that results or may be reasonably expected to result from the discharge or likely discharge; and
(c) make a reasonable effort to notify every member of the public who may be adversely affected by the discharge or likely discharge. R.S.N.W.T. 1988,c.75(Supp.),s.5; c.117(Supp.),s.9.

6. (1) Where an inspector believes on reasonable grounds that a discharge of a contaminant in contravention of this Act or the regulations or a provision of a permit or licence issued under this Act or the regulations has occurred or is occurring, the inspector may issue an order requiring any person causing or contributing to the discharge or the owner or the person in charge, management or control of the contaminant to stop the discharge by the date named in the order.

7. (1) Notwithstanding section 6, where a person discharges or permits the discharge of a contaminant into the environment, an inspector may order that person to repair or remedy any injury or damage to the environment that results from the discharge.

(2) Where a person fails or neglects to repair or remedy any injury or damage to the environment in accordance with an order made under subsection (1) or where immediate remedial measures are required to protect the environment, the Chief Environmental Protection Officer may cause to be carried out the measures that he or she considers necessary to repair or remedy an injury or damage to the environment that results from any discharge.

Appendix B

Approved Dust Suppression Products and Application Information

Calcium Chloride

This is a commonly used product in the NWT. It is available in granular and liquid form. Because it is hygroscopic and deliquescent, it draws moisture from the air and will control dust if applied frequently enough.

Road surface conditions and traffic volume dictate the amount, timing and frequency of calcium chloride application. With normal application procedures and concentrations, it is generally non-toxic with rapid dissolution in the environment. However, calcium chloride can wash away in heavy rain. For more information read: *Calcium Chloride as a Dust Suppressant,* (see section 5).

Toxicity to Plants	Calcium chloride is toxic to some plants. Keep the product on the roadway.
Application Rate	Apply minimum amounts as it can cause roads to become slippery.
Applicator Competence	Ensure application personnel are informed of corrosive nature of the product (can be harmful to eyes and skin with direct contact).
General Guidelines	Follow all other general dust suppressant guidelines listed in section 2.

Appendix B (cont'd.)

DL10

DL10 is an asphalt product that is mixed with water and a soap solution. DL10 should be applied to one side of the road at a time, and then allowed to set for approximately three hours. Braking may be difficult on freshly treated road, so a pilot car may be necessary to direct traffic during the application. Vehicles should travel no faster than 20 km/hr through areas where the application has not set.

Fresh DL10 can be washed off using soap and water. If it is allowed to dry, a solvent may be required.

General Guidelines Follow all general dust suppressant guidelines listed in section 2.

Appendix C

Leachate Extraction Procedure Test and Equivalents (see bibliography section for complete documentation).

The Environment Division may require new products to undergo the following test:

> CGSB #164-GP-1-MP Leachate Extraction Procedure Canadian General Standards Board (or as amended).

Or one of these equivalent tests:

> Schedules III and IV - Environmental Quality Act - Hazardous Waste Regulation- Gazette officielle du Quebec.
>
> Schedule 4 - British Columbia Waste Management Act - Special Waste Regulation, Government of British Columbia.
>
> Schedule 4 - Regulation 347 (formerly Reg. 309), Government of Ontario.

If you would like to be placed on a mailing list to receive guideline amendments or for public consultation on Environment Division legislation please fill this out and mail or fax to:

Environment Division
Department of Environment and Natural Resources
Government of the Northwest Territories
600, 5102 - 50th Avenue
Yellowknife, NT, X1A 3S8
Fax: (867) 873-0221

Mailing List for Environmental Protection Service Information

Name: _____

Title: _____

Address:_____

_____

_____

Phone/Fax Number_____

BMP #6 – FIRE PREVENTION AND SUPPRESSION GUIDELINE

Forest Fire Prevention

And

Suppression Guidelines

For

Industrial Activities

Forest Fire Prevention and Suppression Guidelines for Industrial Activities

These ***Forest Fire Prevention and Suppression Guidelines for Industrial Activities*** (Guidelines) are issued as directions necessary for the carrying out of the ***FOREST PROTECTION ACT R.S.N.W.T. c.F-10*** under the authority of the **Forest Supervisor** pursuant to section 19(1) of the ***FOREST PROTECTION ACT R.S.N.W.T. c.F-10.***

The Government of the Northwest Territories provides forest fire management services on forested areas, including settlement areas within land claim agreements and within the terms of those agreements. The Guidelines have been prepared to provide direction to forest managers and industrial operators for forest fire prevention and suppression, in areas where operations are taking place during the **closed season** (***FOREST PROTECTION ACT, R.S.N.W.T. c.F-10***, section 10)

The intent of the Guidelines is threefold. First, industrial operations must be conducted so that they do not contribute to the seasonal forest fire load. Second, industrial operations must be able to control and extinguish any fires that occur as a result of their operations. Finally, industrial operators must be able to respond to wildfires that may affect human life and the property of their operations.

Please ensure that these guidelines receive appropriate consideration in operations under your jurisdiction or management.

R P Bailey

Robert P. Bailey
Forest Supervisor

FOREST FIRE PREVENTION AND SUPPRESSION GUIDELINES FOR INDUSTRIAL ACTIVITIES

Table of Contents

FOREST FIRE PREVENTION AND SUPPRESSION GUIDELINES FOR INDUSTRIAL ACTIVITIES

INTRODUCTION

The Government of the Northwest Territories provides forest fire management services on forested areas, including settlement lands within land claim agreements, and within the terms of those agreements. The following Guidelines have been prepared to provide direction to forest managers and industrial operators for forest fire prevention and suppression, in areas where operations are taking place during the closed season from May 01 to September 30. These Guidelines are issued under Subsection 19(1) of the *FOREST PROTECTION ACT.*

The intent of these Guidelines is threefold. First, industrial operations must be conducted so that they do not contribute to the seasonal forest fire load. Secondly, industrial operations must be able to control and extinguish any fires that occur as a result of their operations. Finally, industrial operators must be able to respond to wildfires that may effect human life and the property of their operations.

If there is a conflict between these Guidelines and the *FOREST PROTECTION ACT* (FPA), the FORE*ST MANAGEMENT ACT* (FMA), the *MACKENZIE VALLEY RESOURCE MANAGEMENT ACT* (MVRMA), or the regulations made under those Acts, the Acts and or regulations will prevail to the extent of any inconsistencies.

PART 1 – APPLICATION, AUTHORITY AND DEFINITIONS

1. Application

(1) PART 2 - PERSONNEL AND EQUIPMENT, PART 3 - FIRE PREVENTION, and PART 4 - FOREST FIRE SUPPRESSION apply

(a) from May 1 to September 30 each year or where ordered closed, and

(b) to persons and industrial activities in or within 1000 metres of a forest area.

2. Authority

(1) These Guidelines are issued as directions necessary for carrying out the FPA under the authority of the Forest Supervisor pursuant to section 19(1) of the FPA.

3. Definitions

The following terms apply to the Guidelines:

Closed District – means an area declared to be a closed district under paragraph 19(1)(f) of the FPA.

Closed Season – means the period beginning on May 1 and ending on September 30 as referred to in subsection 10(1) or the period established in an order made under subsection 10(2) of the FPA.

Fire Danger Rating – the process of systematically evaluating and integrating the individual and combined factors influencing fire danger represented in the form of fire danger indexes.

Fire Environment – the surrounding conditions, influences, and modifying forces of topography, fuel, and fire weather that determine fire behavior.

Fire Equipment Cache – A supply of fire fighting tools and equipment in planned quantities or standard units at a strategic point for the exclusive use in fire suppression.

Fire Extinguisher – means a fully charged and operable fire extinguisher bearing the Underwriter's Laboratories of Canada (ULC) label that rates the extinguisher as suitable for use on class A, B or C fires.

Fire Hazard – a general term to describe the potential fire behavior, without regard to the state of weather-influenced fuel moisture content, and/or resistance to fireguard construction, for a given fuel type. Such an assessment is based on physical fuel characteristics.

Fire Preparedness Plan – a plan outlining the condition or degree of being able and ready to cope with an anticipated fire situation.

Fire Prevention – activities designed to prevent the occurrence of fires caused by people. Fire prevention activities include public and school education, media campaigns, preparation of community forest fire management and protection plans, and the reduction of fire hazards and risks.

Fire Risk – the probability or chance of fire starting determined by the presence and activities of causative agents (i.e. potential number of ignition agents).

Fire Suppression – all activities concerned with controlling and extinguishing a fire following its detection and may include initial attack, sustained attack, limited action, delayed action, or observation and monitoring.

Fire Watcher – a designated person at a worksite to provide surveillance for forest fires as a result of work at that worksite.

Forest Area –any uncultivated land that, by reason of the existence of trees, grass or other vegetation on the land, possesses timber, forage, recreational, wildlife or other value.

Forest Fire – any wildfire or prescribed fire that is burning in a forested area.

Forest Officer – a forest officer appointed under subsection 17(1) of the FPA, members of the RCMP, or wildlife officers under the Wildlife Act as referred to in subsection 17(2) of the FPA.

Forest Supervisor – means the Forest Supervisor appointed pursuant to Section 16 of the FPA.

Fuel Break – an existing barrier or a change in fuel type or conditions, or a strip of land that has been modified or cleared, that acts as a buffer to prevent the spread of fire.

Heavy Equipment – crawler tractors, skidders, excavators or other similar equipment.

Hot Work – any work generating significant amounts of heat and includes the cutting, grinding, welding, the heating of metals and flaring of gases.

Industrial Activity - includes land clearing, timber harvesting, timber processing, mechanical site preparations and other silviculture treatments, gas or oil well operations, mining, highway maintenance and construction, engineering operations, plant harvesting, manufacturing, milling, railroad operations, trenching, the use of explosives and any prescribed activity within.

Initial Attack – the action taken to halt the spread or potential spread of a fire by the first fire-fighting force to arrive at the fire.

Large Engine – an engine having a power greater than 7.5 kW (10 hp) used in an industrial activity, excluding a water-borne engine, an engine in a vehicle primarily used for the transportation of people, or an engine in a helicopter.

Owner – in relation to an industrial activity means a person who has the right to conduct the industrial activity if the industrial activity is conducted on private land; or a licensee or permittee if the industrial activity is conducted on Crown Land in a Forested Area.

Permit – a permit issued under Section 21 of the FPA.

Person in Charge – a person who is present at the worksite and who is in charge of industrial activities conducted at the worksite, or a person who has been authorized by the owner to represent the owner at the worksite.

Pile – an accumulation of waste material not larger than 25 square metres (m^2) as referred to in section 18 of the *Exemption List Regulations* under the MVRMA.

Portable Pump Unit - means a water pump, not affixed to another machine, that is capable of maintaining a pressure of 1000 kPa (145 psi) while delivering 135 litres of water per minute from 30 metres of hose with

(a) a nozzle having a 9.5 mm (3/8") opening,

(b) a suction hose,

(c) at least 450 metres of discharge hose having a diameter not less than

  (i) 38 mm, (1 1/2") unlined, or

  (ii) 25 mm, (1") lined, and

(d) the tools and accessories necessary to operate and maintain the water pump and hoses.

Property – land or real estate, including both private and public land or real property.

Small Engine - an internal combustion engine having a power of 7.5 kW (10 hp) or less, excluding a water-borne engine or an engine in a vehicle primarily used for the transportation of people.

Sump – a depression in the ground constructed for the purpose of storing water.

Water Delivery System – a system consisting of a water supply, a water pump or equivalent means of pressurizing water, the ancillary hoses, attachments, and tools necessary for the operation and maintenance of the system, that can deliver to any place on a worksite or burn area,

(a) water at a pressure of 280 kPa (40 psi) and a rate of 90 litres per minute through a 9.50 mm (3/8") bore nozzle opening for 50 minutes or

(b) a 2500 litre stationary or mobile supply of water, of which 0.5 per cent is liquid surfactant concentrate that, when used with a pump, hose and nozzle, is capable of producing foam that will extinguish a fire in ordinary combustibles such as wood, paper or forest products.

Windrow – an accumulation of waste material not more than 330 metres in length and not more that 15 metres in width.

Worksite – in the case of an industrial activity other that timber harvesting, the site at which the work is performed, or in the case of timber harvesting, an area of land within which an operation relating to timber harvesting is performed.

PART 2 – PERSONNEL AND EQUIPMENT

4. Fire Watcher

(1) A Fire Watcher is required in all industrial operations to

(a) watch for sparks and fires,

(b) report any fires to a Forest Officer, a peace officer or the Person in Charge at the worksite at which the fire watcher is engaged, and

(c) assist in fighting any fire that occurs in the area being watched by the fire watcher.

(2) If the fire watcher reports a fire, the Person in Charge of an industrial activity must immediately report the forest fire to a Forest Officer, peace officer or person answering a forest fire reporting number.

(3) A Person in Charge of an industrial activity must ensure that a fire watcher has access to the following:

(a) one round-nosed shovel,

(b) one Pulaski tool or mattock,

(c) one hand-tank pump containing at least 18 litres of water, and

(d) a radio or telephone that can be used to report a fire and request assistance.

5. Fire fighting tools – general

(1) If the number of persons who normally work at a worksite is three (3) or less, the person carrying out the industrial activity must ensure that the following fire fighting tools are kept at the worksite:

(a) one round-nosed shovel,

(b) one Pulaski tool or mattock, and

(c) one hand-tank pump containing at least 18 litres of water.

(2) If the number of persons normally working at a worksite is more than three, the person carrying out the industrial activity must ensure that the following fire fighting tools are kept at the worksite:

(a) one round-nosed shovel, Pulaski tool or mattock for each person,

(b) one hand-tank pump containing at least 18 litres of water for every 3 persons, to a maximum of 8 hand-tank pumps.

(3) For the purpose of Guideline (2), the number of round-nosed shovels must, as nearly as possible, equal the combined number of Pulaski tools and mattocks.

6. Fire fighting tools - Large Engines

(1) A Person in Charge of an industrial activity must ensure that every Large Engine used in an industrial activity has the following fire fighting tools attached to it:

(a) one round-nosed shovel,

(b) one Pulaski tool or mattock,

(c) one fire extinguisher with a ULC rating of at least 1-A, 5-B,C, and

(d) one fire extinguisher with a ULC rating of at least 3-A, 10-B,C or an integral vehicle fire suppression system.

7. Fire fighting tools - Hot Work

(1) A Person in Charge of an industrial activity must ensure that the following fire fighting tools are kept at each worksite where Hot Work is performed:

(a) two fire extinguishers each with a ULC rating of at least 3-A, 10-B, C,

(b) one round-nosed shovel, and

(c) two hand-tank pumps containing at least 18 litres of water each.

8. Fire fighting tools – explosives

(1) If explosives are used in an industrial activity the Person in Charge must ensure that the following fire fighting tools are kept at the place from which the blast will be controlled:

(a) two round-nosed shovels and

(b) two hand-tank pumps containing at least 18 litres of water each.

9. Fire fighting tools – helicopters

(1) If one or more helicopters are normally used in an industrial operation to move personnel and equipment to and from a worksite, the Person in Charge must ensure that there is a landing spot kept near the worksite for the exclusive use of each helicopter, and that the helicopter is equipped with a water bucket that is

(a) of a type designed and adapted for aerial fire fighting,

(b) capable of being attached to a helicopter,

(c) capable of being both filled and emptied from a helicopter while the helicopter is airborne, and

(d) operated by pilots who are knowledgeable about the use of water buckets.

10. Water Delivery Systems

(1) A Person in Charge of an industrial activity that includes an activity in Risk Classification A or B under Schedule 1 must ensure that each worksite has

(a) one Water Delivery System if there are normally 4 to 10 workers working at the worksite, or

(b) two Water Delivery Systems if there are normally 11 or more workers working at the worksite.

(2) For the purpose of Guideline 10(1), if more than one activity is carried on at a worksite, the number of persons working at the worksite is considered to be the sum of the number of persons working at each activity.

(3) A Person in Charge of an industrial activity that is a sawmill must ensure that the sawmill has at least one Water Delivery System.

(4) If a Water Delivery System is required, the Person in Charge of the industrial activity must ensure that at least one person with the knowledge and competence to operate and maintain the Water Delivery System is at the worksite.

(5) If it is unreasonable to provide the Water Delivery System, notwithstanding Guideline 10(1), because of the terrain, size of a worksite, or the lack of available surface water on site, a portable pump unit and a water source of at least 4,500 litres may be substituted.

11. Fire Equipment Cache

(1) The Person in Charge of an activity in Risk Classification A or B under Schedule 1 must ensure that extra equipment is kept at a central Fire Equipment Cache where it can be delivered to any place on each worksite of the industrial activity within 1 hour.

(2) The quantity of extra equipment required by Guideline 11(1) is set out in Columns 2 to 5 of Schedule 2 opposite Column 1, which lists the number of persons who normally work at the worksite.

(3) For the purpose of Guideline 11(2), the number of persons in Column 1 of Schedule 1, is the sum of the persons normally working at all of the worksites referred to in Guideline 11(1). For this purpose, if more than one industrial activity is carried out at a worksite, the number of persons working at the worksite is considered to be the sum of the number of persons normally working at each activity.

PART 3 - FIRE PREVENTION

12. Large Engines

(1) A person must not operate a Large Engine unless it is equipped with a safe and effective device for arresting sparks that is

(a) an integral part of the exhaust system, and

(b) in good repair.

(2) A person must not operate a Large Engine that operates in a stationary capacity unless the site has been cleared of combustible material for a distance of at least three metres in each direction from the Large Engine.

(3) A Person in Charge of an industrial activity must ensure that a large engine meets the requirements under Guideline 12(1) and that combustible material is cleared as required under Guideline 12(2).

13. Small Engines

(1) A person must not operate a Small Engine unless

(a) the muffler on the Small Engine is maintained in good repair, and

(b) there is available at all times a Fire Extinguisher charged with at least 0.225kg (0.5lb.) of fire extinguishing chemical.

(2) A person must not operate a Small Engine if the ability of the muffler to reduce hot carbon emissions has been lessened by modification of the muffler, a spark arrestor or by redirection of the emissions.

(3) A Person in Charge of an industrial activity must ensure that a Small Engine is equipped with a muffler that meets the requirements under Guidelines 13(1)(a) and 13(2) and that a Fire Extinguisher is available as required under Guideline 13(1)(b).

14. Hot Work

(1) A person must not perform Hot Work unless a Fire Watcher is present.

(2) The Fire Watcher required under Guideline 14(1) must, in addition to the requirements of Guideline 14(1), remain at the site of the Hot Work for 30 minutes after the Hot Work has ceased, unless a longer period is required under Schedule 3.

(3) Subject to Guideline 14(1), a Fire Watcher is not required if all combustible material is removed for at least ten metres from the place where the Hot Work is performed.

15. Sawmills

(1) At least once in every calendar year, a Person in Charge of a sawmill must dispose of all combustible waste produced by the operation of the sawmill.

16. Combustible material

(1) A Person in Charge of a place that is a camp, mine, sawmill, refuse disposal site or timber processing facility must ensure that an area that extends inward 15 metres from the perimeter of the place is kept clear of combustible material.

(2) A Person in Charge of an industrial activity must ensure that all combustible material cleared from the area referred to in Guideline 16(1) is disposed of at least once in every calendar year.

17. Explosives

(1) A person must not use explosives at the site of an industrial activity unless a Fire Watcher remains at the site where the explosives are used for at least 30 minutes after the explosives have been detonated, unless a longer period is required under Schedule 3.

18. Restrictions on industrial activities

(1) A Person in Charge of an industrial activity must ensure that the activity is conducted in accordance with the requirements set out in Columns 3 and 4 of Schedule 3**,** that are opposite the industrial activity's Risk Classification in Column 2 and Forest Fire Danger Rating in Column 1.

(2) The person carrying out the industrial activity must

(a) determine the industrial activity's Risk Classification from Schedule 1 and

(b) unless exempted by a Forest Officer, obtain the Forest Fire Danger Rating from a Resources, Wildlife and Economic Development (RWED) Regional Duty Officer.

(3) A Forest Officer or RWED Regional Duty Officer can determine the Forest Fire Danger Rating for the industrial activity from data provided by the most representative weather stations.

PART 4 - FOREST FIRE SUPPRESSION

19. Requirement for a Fire Preparedness Plan

(1) The person who is the holder of a license or permit authorizing an industrial activity on Northwest Territory lands must, before carrying out an industrial activity in Risk Classification A or B in Table 1 of Schedule 1,

(a) submit a Fire Preparedness Plan to a Forest Officer for the person's area of operation; if the activity is to be carried out on the area between May 1 and September 31.

(b) obtain a copy of the RWED Regional Duty Officer roster and applicable contact numbers for the purposes of obtaining information and reporting fires.

20. Content of Fire Preparedness Plan

(1) A person who is required under Guideline 19 to prepare a Fire Preparedness Plan, must ensure that the Fire Preparedness Plan specifies the following:

(a) the number of people, types of equipment and the anticipated location of the people and equipment during the carrying out of the industrial activity,

(b) the names of key personnel and how they may be contacted, including the owner and Person-in-Charge,

(c) the names of personnel, who meet the prescribed training qualification,

(d) the tools and equipment available in a Fire Equipment Cache if a cache is required under Guideline 11(1) for that type of industrial activity,

(e) the location of the weather stations that will be used to monitor the weather at the site of the industrial activity,

(f) a schedule of industrial activity including proposed location and timing,

(g) operating procedures in the event of a fire, and

(h) activities which will be undertaken to prevent wildfires.

21. Requirement for a Permit to Burn

(1) A person who lights, fuels or makes use of one or more open fires to burn accumulations of waste material for resource management purposes must do so in accordance with the following conditions:

(a) before any fires are ignited

(i) the person lighting, fueling or making use of the open fires must obtain a Permit to Burn, and

(ii) a fuel break must be established around the fire to prevent the fire from escaping;

(b) during ignition and until all risk of the fires escaping is eliminated there must be at least two adult persons at the burn area who actively patrol to prevent the fire from escaping, and who are equipped with the following:

(i) a round nose shovel,

(ii) either an axe or a Pulaski, and

(iii) a Water Delivery System or a piece of Heavy Equipment that is suitable for fighting fires on the burn area that

(A) is capable of being delivered to the burn area within 1 hour, if the Fire Danger Rating is Moderate or less, or

(B) is located on the burn area, if the Fire Danger Rating is greater than Moderate.

(2) If a fire escapes or threatens to escape from the burn area, in addition to any other requirements of the *FOREST PROTECTION ACT*, the person lighting, fueling or making use of the open fire must provide the requirements specified in one or more of the following paragraphs, in any combination necessary to limit or prevent the escape of the fire

(a) the number of adult persons with suitable fire fighting tools, that are necessary to limit or prevent the escape of the fire,

(b) one Water Delivery System, or

(c) two pieces of heavy equipment suitable for fire fighting on the burn area.

(3) All fires must be extinguished within the specified time under which the Permit to Burn is issued.

22. Initial fire suppression

(1) For the purposes of the *FOREST PROTECTION ACT*, a person carrying out an industrial activity must take appropriate action when a fire is first discovered to

(a) contain or limit the spread of the fire,

(b) extinguish the fire if possible, and

(c) report the fire to the nearest RWED Regional Duty Officer.

(2) The person must commit, if necessary to meet the requirements of Guideline 22(1),

(a) all employees of the person who are working in the area of operation, and

(b) all tools and equipment required by and under this Guideline, and

(c) any other tools and equipment that are available to the person, including helicopters normally used in the industrial activities to move personnel and equipment to and from the area of operation.

23. Site rehabilitation

(1) A person who carries out emergency fire control or fire suppression operations must stabilize all fire access trails, fire guards and other fire suppression works to ensure that natural drainage patterns are maintained and surface soil erosion is minimized.

(2) Without limiting Guideline 23(1), a person carrying out rehabilitation must include the following activities:

(a) stabilization and re-vegetation of soil disturbed or exposed by Heavy Equipment,

(b) disposal of slash and debris,

(c) stabilization and restoration of the stream channels and stream beds to its original alignment and cross-section, and

(d) stabilization of sump and dam locations.

SCHEDULE 1 FOREST FIRE RISK CLASSIFICATION

I. The activities of industrial operations have the risk classifications assigned to them in Table 1.

II. If an industrial operation includes more than one component activity, each activity is subject to this regulation.

III. An activity not specifically listed in Table 1 is deemed to be risk classification A.

Table 1 - Risk Classification by Activity

Risk Classification A (High)	Risk Classification B (Moderate)	Risk Classification C (Low)
Blasting Bucking – power saw Bucking – tree processor Log barking Log skidding – ground system Log yarding – cable logging Metal cutting, grinding or welding Pipeline construction Rail grinding Sawmilling Silviculture – using small engines Silviculture – using large engines Trail building – using small engines Tree felling	Bucking - at landing Firewood cutting Land clearing Log forwarding Log yarding – helicopter Mining exploration Right of way clearing or maintenance Trenching Wood chipping Wood processing Road right of way grass mowing	Bitumen processing - portable plant Bridge building Drilling Equipment transportation Excavating Fencing Gas or oil well operation Gas Flaring Gravel processing, loading and hauling Guiding, packing or trapping Log sorting or reloading Log hauling Log loading Log scaling Log dumping Mining operations Plant harvesting Power line construction Prospecting Quarrying Railway construction or maintenance Ranch operation Road construction or maintenance Silviculture - using hand tools Surveying or engineering Timber cruising Tourist resort operation Trail building - using hand tools

SCHEDULE 2 QUANTITIES OF EQUIPMENT REQUIRED FOR A FIRE EQUIPMENT CACHE

Column 1 Number of persons	Column 2 Portable Pump Units	Column 3 Shovels	Column 4 Pulaski tools / Mattocks	Column 5 Hand-tank Pumps
1 – 10	0	0	0	0
11 – 20	1	4	4	2
21 – 40	2	6	6	4
41 – 60	3	10	8	6
61 – 80	4	14	10	8
81 – 100	5	20	12	12
101+	6	22	14	14

SCHEDULE 3 RESTRICTIONS ON INDUSTRIAL OPERATIONS

Column 1 Fire Danger Rating (FWI)	Column 2 Risk Classification	Column 3 Restriction	Column 4 Duration
Moderate (6 – 12)	**A or B**	After 3 consecutive days of Moderate maintain a fire watch after work for 1 hour	Until the fire danger class falls below Moderate.
High – Very High (13 – 24)	**A**	Maintain a fire watch after work for 1 hour	Until the fire danger class falls below Moderate.
		After 3 consecutive days of High or greater, cease activity between 1300 and 1900 hours each day	Until the fire danger class falls to Moderate for 2 consecutive days, or until the fire danger class falls to Low.
	B	Maintain a fire watch after work for 1 hour	Until the fire danger falls below Moderate
Extreme (25+)	**A**	Maintain a fire watch after work for 1 hour.	Until the fire danger class falls below Moderate
		After 2 consecutive days of Extreme, cease all activity all day.	Until the fire danger class falls below Extreme, then resume the activity except between the hours of 1 p.m. and 9 p.m. local time, or until the fire danger class falls to Moderate.
	B	Maintain a fire watch after work for 1 hour	Until the fire danger class falls below Moderate
		After 3 consecutive days of Extreme, cease activity between 1300 and 2100 hours each day	Until the fire danger class falls to High for 3 consecutive days, or until the fire danger class falls to Moderate.

SCHEDULE 4 FIRE EQUIPMENT STANDARDS

(Some pump units that are presently available.)

Pump	PSI (3/8" nozzle)	Max Output Vol. Litres/Hour	Max Output Vol. Litres/Min @ 3/8" Nozzle
Ariens 945	N/A	7600*	N/A
Tanaka QCP 121	N/A	6960*	N/A
Tanaka TCP 210	N/A	7600*	N/A
Shindaiwa GP25	35	8800*	N/A
Yamaha YP20G	N/A	32,400***	N/A
Wajax Mini Mark TD48D	55	14,400**	270
Wajax Mark 26	110	20,000**	200
Wajax Mark 3	170	21,600**	240
Hale XL 2000	N/A	135,000****	N/A

Pressure outputs are Manufacture free-flow discharge estimates based on *1" Discharge hose, **1 1/2" Discharge hose, ***2" Discharge hose, ****3" Discharge hose.

APPENDIX D

Statutory Requirements for Wildlife in the NWT

Statutory Requirements for Wildlife in the NWT

July 2019

Government of
Northwest Territories

DISCLAIMER

This document is provided as an aide to developers drafting WMMPs to highlight those sections of the Northwest Territories *Wildlife Act* and *Species at Risk (NWT) Act* that most commonly apply to development activities. This is not an exhaustive list and other sections of these Acts may apply. The developer is responsible for familiarizing themselves with these Acts and current regulations.

The developer is also responsible for ensuring their activities comply with relevant federal legislation, including the Migratory Birds Regulations under the *Migratory Birds Convention Act* and the federal *Species at Risk Act*.

Wildlife Act

Topic	Section of *Wildlife Act*	Notes
Birds and nests	**51.** (1) Subject to section 17, no person shall, unless authorized by a licence or permit to do so, destroy, disturb or take (a) an egg of a bird; (b) the nest of a bird when the nest is occupied by a bird or its egg; or (c) the nest of a prescribed bird.	s. 5.3 and Schedule B of the Wildlife General Regulations sets out prescribed birds to include raptors from the following families: • Falconiformes • Strigiformes • Accipitriformes 51. (1) (c) of the NWT *Wildlife Act* does not specify the nest has to be active and applies year round.
Wildlife abodes	**51.**(2) Subject to section 17, no person shall, unless authorized by a licence or permit to do so, break into, destroy or damage a den, beaver dam or lodge, muskrat push-up or hibernaculum.	As per s. 5.4 (1) and (2) of the Wildlife General Regulations, this applies to naturally-occurring bats roosts. This section applies to any occupied or unoccupied den, beaver dam or lodge, muskrat push-up or hibernaculum.
Disturbance and harassment	**52.** Subject to section 17, no person shall, unless authorized by a licence or permit to do so, (a) engage in an activity that is likely to result in a significant disturbance to big game or other prescribed wildlife; or (b) unnecessarily chase, fatigue, disturb, torment or otherwise harass game or other prescribed wildlife.	"big game" means species of wildlife prescribed as big game, or an individual of a species of big game; Schedule A – Part 1 of the Wildlife General Regulations, sets out the species prescribed as big game, and Schedule B sets out prescribed wildlife for the purpose of paragraphs 52 (a) and (b) of the Wildlife Act.
Chasing Wildlife	55. Notwithstanding any other provision of this Act or the regulations, a person may chase wildlife away from a dwelling place, camp, work site, municipality or unincorporated community, or its immediate vicinity, if doing so is necessary to prevent injury or death to a person or damage to property.	"wildlife" means (a) all species of vertebrates and invertebrates found wild in nature in the Northwest Territories, and individuals of those species, except (i) fish as defined in section 2 of the *Fisheries Act* (Canada), and (ii) other prescribed species and subspecies, (b) species of wildlife referred to in paragraph (a) that are domesticated or held in captivity, and individuals of those species, and (c) prescribed species or subspecies of vertebrates and invertebrates, and individuals of those species or subspecies.

Defence of life and property	**56.** (1) Notwithstanding any other provision of this Act or the regulations but subject to subsection (4), a person may harvest and consume wildlife or take and consume the eggs of birds if it is necessary to prevent starvation of a person. (2) Notwithstanding any other provision of this Act or the regulations but subject to subsection (4), a person may kill wildlife if it is necessary to prevent injury or death to a person. (3) Notwithstanding any other provision of this Act or the regulations but subject to subsection (4) and any regulations specified as applying in respect of this section, a person may kill wildlife if it is necessary to prevent damage to property. (4) Subsections (1), (2) and (3) do not provide a defence to a contravention of this Act or the regulations for a person who resorts to harvesting or killing wildlife as a result of his or her mismanagement.	
Reporting	**57.** Subject to the regulations, a person shall, as soon as is practicable, report the harvest or kill of big game or other prescribed wildlife to an officer, if (a) under section 56, the person harvested big game or other prescribed wildlife to prevent starvation, or killed big game or other prescribed wildlife to prevent injury or death to a person or damage to property; and (b) the harvest or kill would, but for subsection 56(1), (2) or (3), be a contravention of this Act or the regulations.	Section 7 of the Wildlife General Regulations describes what information must be included in the report.
Accidental kill or wounding	**58.** A person who, with a motorized vehicle, accidentally kills or seriously wounds big game or other prescribed wildlife on a highway as defined in section 1 of the *Motor Vehicles Act*, shall report the event to an officer within the time fixed in the regulations.	Sub-section 8(1) of the Wildlife General Regulations specifies that 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.
Feeding wildlife	**65.** (1) Subject to subsection (2), no person shall intentionally feed big game, fur-bearers or other prescribed wildlife. (2) Subsection (1) does not apply in respect of a person feeding wildlife lawfully kept in captivity or in circumstances permitted by the regulations.	Schedule A – Part 2 of the Wildlife General Regulations sets out the species prescribed as fur-bearers

Wildlife Attractants	**66.** (1) No person shall deposit, place or leave in, on or about land or premises food, food waste or another substance if there is a reasonable likelihood that it could attract big game or other prescribed wildlife to the land or premises and endanger a person, a domestic animal or wildlife. (2) Subsection (1) does not apply in respect of (a) the drying or caching of meat, pelts or hides, except in a manner contrary to regulations respecting the treatment, caching and identification of wildlife and parts of wildlife left temporarily on the land; (b) a person lawfully harvesting fur-bearers with bait; or (c) other persons and circumstances exempted by the regulations.	
Damage to habitat	**93.** (1) No person shall substantially alter, damage or destroy habitat. (2) A person who establishes that he or she acted with legal justification in altering, damaging or destroying habitat shall not be convicted of an offence under subsection (1).	"habitat" means the area or type of site where a species or an individual of a species of wildlife naturally occurs or on which it depends, directly or indirectly, to carry out its life processes;
Requirement for Wildlife Management and Monitoring Plan	**95.** (1) A developer or other person or body may be required, in accordance with the regulations, to prepare a wildlife management and monitoring plan for approval by the Minister, and to adhere to the approved plan, if the Minister is satisfied that a development, proposed development, or other activity is likely to (a) result in a significant disturbance to big game or other prescribed wildlife; (b) substantially alter, damage or destroy habitat; (c) pose a threat of serious harm to wildlife or habitat; or (d) significantly contribute to cumulative impacts on a large number of big game or other prescribed wildlife, or on habitat	Regulations.13.1-13.3 of the Wildlife General Regulations define prescribed species as territorially managed wildlife (not migratory birds or fish) assessed or legally listed as species at risk under federal or NWT legislation. Information on species at risk in the NWT can be found at the NWT Species at Risk website. Please consult the WMMP Guidelines www.enr.gov.nt.ca/en/services/legislation-and-regulations for information about when a WMMP is required and how to develop a WMMP.
Contents of the Wildlife Management and Monitoring Plan	**95**. (2) 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 and potential	

	impacts on habitat; (b) a description of measures to be implemented for the mitigation of potential impacts; (c) the process for monitoring impacts and assessing whether mitigative measures are effective; and (d) other prescribed requirements.	

Species at Risk (NWT) Act

Topic	Section of the Act or Regulations	Notes
Designated Habitat	**80.** No person shall destroy any part of designated habitat.	
Species conservation	**151.** (1) The Commissioner, on the recommendation of the Minister, may make regulations respecting the conservation of pre-listed species or listed species, including but not limited to (a) requiring the doing of things that may conserve the species; (b) prohibiting activities that may adversely affect the species; (d) imposing prohibitions against (i) killing, harming, harassing, capturing or taking an individual of a species,	For up-to-date information on Regulations and Permits issued under the Act go to nwtspeciesatrisk.ca/en/Regulations
Habitat conservation	**152.** The Commissioner, on the recommendation of the Minister, may make regulations respecting the conservation of habitat of pre-listed species or listed species or the area in which the habitat is located or the surrounding area, including but not limited to (a) requiring the doing of things that may conserve the habitat or area; (b) prohibiting activities that may adversely affect the habitat or area; (c) imposing prohibitions against damaging or destroying the habitat or area; (d) controlling, restricting or prohibiting any use of, access to, or activity in the habitat or area; and (e) controlling, restricting or prohibiting the release of any substances in or into the habitat or area.	For up-to-date information on Regulations and Permits issued under the Act go to nwtspeciesatrisk.ca/en/Regulations

Designating habitat	**153.** (1) The Commissioner, on the recommendation of the Minister, may, by regulation, designate habitat, or a component or combination of components of habitat, of a pre-listed species or a listed species.	For up-to-date information on Regulations and Permits issued under the Act go to nwtspeciesatrisk.ca/en/Regulations
Designated habitat	**154.** The Commissioner, on the recommendation of the Minister, may make regulations respecting the conservation of designated habitat or the area in which designated habitat is located or the surrounding area, including but not limited to (a) requiring the doing of things that may conserve the designated habitat or area; (b) prohibiting activities that may adversely affect the designated habitat or area; (c) imposing prohibitions against damaging the designated habitat or area; (d) controlling, restricting or prohibiting any use of, access to, or activity in the designated habitat or area; and (e) controlling, restricting or prohibiting the release of any substances in or into the designated habitat or area.	For up-to-date information on Regulations and Permits issued under the Act go to nwtspeciesatrisk.ca/en/Regulations