

Environmental Management Plan Care and Maintenance Operations Mount Nansen Site

March 12, 2018

**Government of Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines**

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1 Introduction

This environmental management plan (EMP) describes how environmental stewardship at the Mount Nansen Site (the Site) is managed by the Yukon Government (YG). YG's role is to manage contractors who perform care and maintenance operations, or other physical works and activities related to remediation. As part of this role, YG compels its contractors to implement relevant components of the EMP.

An EMP is a site-specific plan developed to ensure that appropriate environmental management practices are followed during care and maintenance operations at the Mount Nansen site.

This EMP has been developed to ensure:

- Identification of current and potential human health and safety and environmental risks of the project or site;
- Monitoring and mitigation of risks associated with the project or site;
- Application of best management practices to the project or site; and
- Compliance with federal and territorial legislation.

To meet its environmental objectives, YG has developed and will apply a number management plans that specify mitigation measures and monitoring activities. This document provides summary descriptions of the purpose or content of each management plan.

1.1 Documentation

The following EMP-relevant information will be maintained in a readily accessible format at the Site:

- All contents of this EMP;
- Accidents and spills investigation reports;
- Materials inventory (i.e. locations and quantities);
- Waste inventory (storage quantities);
- Monitoring reports;
- Permits and licenses;
- Potable water bacteriological analysis documentation; and
- Reports for all EMP related issues.

2 Spill Contingency Plan

The SCP provides a framework of responsibilities and response measures to be taken by staff and contractors when responding to spills. In the event of an accidental release of a deleterious substance, the implementation of the SCP describes the necessary steps that will be taken to minimize the effects on human health and safety and the environment.

The SCP includes the following information:

- The regulatory requirements as they relate to spills;
- Spill preparedness and prevention measures including training and site procedures;
- Location and inventory of spill kits and response materials; and
- Material Safety Data Sheets.

The SCP is provided in Appendix 1 of this EMP.

3 Sediment and Erosion Control Plan

The Sediment and Erosion Control Plan (SECP) Guidance Document describes measures to prevent the erosion of exposed erodible materials and the mobilization of sediment. It also describes measures for controlling sediment that is mobilized. These measures are essential to minimize potential effects to the environment. The SECP describes the approaches that will be taken to erosion and sedimentation concerns; it identifies standard prevention and control measures (based on best management practices [BMPs]); and ensures compliance with relevant federal and territorial legislation (i.e. acts and regulations), permits and licences. Activity/site specific plans will be developed by contractors in accordance with the SECP.

The SECP requires implementation of the following tasks prior to and during any activities that may expose erodible materials:

- Assessments of activities/works for their potential to cause the mobilization of sediments and erosion;
- Identification of mitigation measures to minimize erosion and control sediment for relevant activities/works and monitoring to ensure effectiveness (frequency dependent on magnitude and likelihood); and,
- Inspections to ensure the implementation of mitigation measures and compliance with relevant legislation, permits, licences and BMPs.

Standard erosion prevention measures identified in the SECP include:

- Minimize the non-essential areas of vegetation and soil disturbance;
- Minimize water flow quantity and velocity entering and flowing through work areas;
- Minimize the length of time that erodible materials are exposed;
- Minimize steepness and length of slopes of disturbed areas and stockpiled material;

- Minimize vehicle access routes and vehicle traffic in work areas;
- Avoid work during periods of high precipitation; and
- Avoid placing material stockpiles on slopes, near watercourses, and near drainage features;

Standard sediment control measures identified in the SECP include:

- Install rock, log or straw check dams where warranted to reduce the velocity of water flow, protecting the channel from erosion;
- Install geotextile sediment/silt fence to reduce velocity and capture sediment in channels thereby protecting downslope areas and preventing further movement of sediments;
- Install sediment traps and/or dewatering basins to pond sediment laden water in order to allow sediment to precipitate and clean water to either percolate or discharge through a passive overflow outlet;
- Install diversion ditches/berms to divert sediment laden water towards sediment/silt fence, sediment traps and/or dewatering basins; and
- Install interception ditches/berms to intercept and divert clean water away from disturbed areas.

The SECP Guidance Document is provided in Appendix 2 of this EMP. It should be noted that during the Care and Maintenance period (i.e. prior to overall site remediation activities commencing) there are not many site activities that are anticipated to require erosion or sediment mobilization control.

4 Waste Management Plan

The Waste Management Plan (WMP) outlines the handling, containment, storage, transportation, recycling and disposal procedures for the different types waste materials generated at the Site. These procedures comply with current permits and licences as well as applicable territorial and federal legislation.

Typical waste materials include:

- Domestic waste;
- Litter;
- Containers, drums, and barrels; and
- Waste oils and fluids.

The WMP identifies practices to mitigate the effects of waste generation; for example:

- Materials will be used efficiently in order to minimize waste generation;
- When possible, materials that are less harmful to the environment will be used;
- Waste materials will be separated as recyclable and non-recyclable; and
- Waste will be handled in such a way to avoid attracting wildlife.

The WMP is provided in Appendix 3 of this EMP.

5 Wildlife and Habitat Management Plan

The Wildlife and Habitat Management Plan (WHMP) describes the management approaches and best management practices (BMPs) that are used to prevent and/or minimize adverse effects on wildlife and wildlife habitat.

Examples of the mitigation measures found within the WHMP include:

- On-site communication of wildlife sightings to advise other personnel;
- Reduce footprint of works to the greatest extent possible;
- Implementation of speed limits to minimize dust and noise, and reduce collisions;
- Implementation of work that considers sensitive time periods;
- Prohibition against littering;
- Prohibition against approaching, feeding or otherwise harassing wildlife species;

The WHMP is provided in Appendix 4 of this EMP.

6 Health and Safety Manual

The objective of the Health and Safety Manual (HSM) is to protect health and safety, manage risks, and promote safety awareness to all personnel and the public. The OHSP complies with the requirements identified in *Yukon Occupational Health & Safety Act* and *Regulations* and describes specific rules, practices, procedures and protocols to be followed by all personnel to mitigate health and safety hazards. The plan also includes all necessary forms, specific to the work being performed. A hard copy of the HSM is located in the Bunkhouse.

The OHSP communicates the following responsibilities:

- Work being performed must meet all legislated health and safety requirements;
- Supervisors have the responsibility to provide healthy and safe work conditions and ensure that all employees under their direction are appropriately trained;
- Employees have the responsibility to work safely and to report all unsafe or unhealthy conditions; and
- Contractors are responsible for ensuring they meet legislated health and safety requirements and the rules, practices, procedures and protocols identified in the HSM are adhered to.

The HSM covers the following topics:

- Health and Safety Policy
- Hazard Assessment
- Safe Work Practices
- Safe Job Procedures
- Personal Protective Equipment

- Preventive Maintenance
- Training
- Inspections
- Incident Investigation & Reporting
- Emergency Preparedness
- Records and Statistics

It should be noted that the current Health and Safety Manual is the Denison Environmental Services' as they are the current care and maintenance site operator; any future site operator will be required to have a similar Health and Safety Manual.

7 Appendices

Appendix 1 – Spill Contingency Plan

Spill Contingency Plan
Care & Maintenance Operations
Mount Nansen

April 19, 2017

Government of Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines

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1 Introduction

The Spill Contingency Plan provides a framework of responsibilities and response measures to be taken by staff and contractors when responding to spills. In the event of an accidental release of a deleterious substance, the implementation of the Spill Contingency Plan will ensure that the necessary steps are taken to minimize the effects on human health and safety and the environment.

Under the Yukon *Environment Act*, Section 147, a spill is defined as follows:

“Spill” means a release of a substance (a) into the natural environment; (b) from or out of a structure, vehicle, or other container; and (c) that is abnormal in quantity or quality in light of all the circumstances of the release; or (d) in excess of an amount specified in the regulations.

“Substance” means a hazardous substance, pesticide, contaminant, or special waste.

1.1 Regulatory Requirements

The regulatory requirements in the Yukon, as it relates to spills, are stipulated under *Part 11 – Spills* and under the *Spills Regulations* of the Yukon *Environment Act*.

Spills Regulations

The Yukon *Spill Regulations* were developed pursuant to Section 147 of the Yukon *Environment Act* and came into force January 1, 1997. The regulations establish thresholds of various substances which, if quantities spilled are in excess of those amounts, constitute a spill under the Act. See Appendix A for the *Spill Regulations*.

The territorial regulations further require the reporting to the Yukon Spills Report Centre when such an event occurs. A report to the Yukon Spills Report Centre also constitutes a report to Environment Canada so only a single call is required. See Section 4.1 for further details.

With respect to the Mount Nansen site, the most common substances which could result in a potentially reportable spill are presented in Table 1.1 (below).

Table 1.1: Reportable Substances Commonly Found at the Mount Nansen Site

Common Name	Classification	Reportable Threshold
Propane	Flammable Gas (Division 1 of Class 2)	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error or deliberate action or inaction
Gasoline, Diesel Fuel, Heating Fuel, Bulk Oil, Waste Oil	Flammable Liquids (Class 3)	200 L
Contaminated Water	Class 8	Any amount of water containing concentrations of zinc, lead, total suspended solids or other materials in excess of allowable releasable concentrations. Any release of mine waters from a non-approved release point.

Contaminated Site Regulations

In the event of a spill, all remediation activities must be conducted in accordance with the *Contaminated Site Regulations* of the *Yukon Environment Act*. The *Contaminated Site Regulations* establishes cleanup standards, processes for identifying and investigating contaminated sites, and permits for managing contaminated material within the Yukon. See Appendix B for a guide to *Contaminated Site Regulations*.

Storage Tank Regulations

The Yukon *Storage Tank Regulations* were developed pursuant to Section 146 of the *Yukon Environment Act*. Section 5 of the regulations specifies above ground storage tank capacities that require a permit (i.e. petroleum product tank [4,000 L] and hazardous material tank [2,000 L]) and Section 8 specifies the requirement of a permit to remove, abandon or decommission tanks of these sizes. Section 11 specifies the inventory records that need to be maintained and the reporting requirements in the event of any discrepancies as stipulated in that section.

Transportation of Dangerous Goods Regulations

The *Transportation of Dangerous Goods Regulations* pursuant to *Transportation of Dangerous Goods Act* identifies the classification of various substances and outlines the federal restrictions with respect to the packaging, handling, placarding and transport of those substances.

2 Spill Preparedness and Prevention

2.1 Training

Spill prevention and response is included in the site worker orientation and reiterated at safety meetings. Employees participating in, or authorizing program activities involving spill prevention, containment or counter measures shall receive training such that they acquire the competence, knowledge (including regulatory requirements) and skill necessary for the safe and comprehensive performance of the duties assigned. Refresher training is conducted periodically according to legal requirements or at appropriate intervals, or at least once every year. A job-specific overview of the program shall be included in the standard training for new and transferred employees.

The site operator will regularly remind its employees of the importance of taking preventative actions to avoid spills, immediate reporting in the event of a spill and the need for quick response.

2.2 Management and Procedures

2.2.1 Petroleum Products

Petroleum products are effectively managed and losses due to spills or leaks are avoided through the following inspection activities:

1. Fuel tanks are manually dipped before and after fuel delivery. After adding product to the tank, a site operations representative will inspect the site to verify valves are properly shut off and any small leaks or spills during filling have been appropriately cleaned up.
2. Storage area inspections are conducted daily by site operations personnel and during the tank measurements, to detect any abnormal situations and determine the need to pump water from the secondary containment of the storage tanks. Fuel levels are recorded daily and submitted on a weekly basis.
3. Secondary containment of the diesel storage tanks is inspected on a daily basis and as required, has water removed, or snow during the winter months to ensure the volume of the containment area is not affected by precipitation. The diesel storage tanks are single-walled and have been grand-fathered for current use at the Mount Nansen site. The gasoline storage tank is double-walled and meets all current regulations.

Fuelling of heavy equipment on site is primarily conducted at the diesel containment and gasoline containment areas. If equipment requires re-fuelling away from these areas, procedures are followed to fuel away from freshwater systems (minimum 30 meters) such that any potential spills can be isolated and cleaned up well before it enters freshwater. All oil stored in the shop or on site (pails in generator sea cans for top-ups) is contained within its own secondary containment vessel to prevent spills. Special measures are taken for stationary equipment operating close to water to contain spills and facilitate immediate and effective clean up in the event of a loss of fuel (e.g. location must provide some protection to ensure a potential spill will not report directly to a waterbody). Daily inspections of equipment are conducted by site operations personnel prior to equipment use to further eliminate the potential for fuel spills. An inventory of spill response materials is maintained

to effectively deal with fuel spills up to 1,000 litres. These principles and measures are re-enforced with operations personnel through mechanisms such as daily ‘Tool Box’ meetings.

2.2.2 Contaminated Water

The potential for contaminated water escaping to fresh water systems constitutes a spill risk at the Mount Nansen site as the site is comprised of several water management structures. Over the years a number of actions have been undertaken at the site to prevent and reduce the likelihood of a spill. Some examples of these include:

- In 2014, the tailings dam crest was re-graded and upgrades were made to the emergency spillway; and
- The Dome Creek diversion channel is inspected daily and excavated as required to ensure proper flow of water without restriction.

As per Canadian Dam Association Dam Safety Guidelines (2007), an Emergency Response and Preparedness Plan (ERPP) and an Operations, Maintenance and Surveillance Manual (OMSM) are required for retaining structures. These documents provide detailed descriptions of measures taken at site to prevent and respond to emergencies at the site. A brief description of the ERPP and OMSM is provided below, although for further information these documents should be referred to.

Emergency Response and Preparedness Plan

The purpose of the ERPP is to provide a plan that includes mechanisms and processes for addressing potential failures of structures and equipment at the Mount Nansen Site. This ERPP describes the internal processes and procedures of a response to a failure or potential failure at the site. Having an ERPP in place enables site personnel to be prepared in the event of an emergency. The goals of the ERPP are to firstly prevent the occurrences of emergencies, and secondly to reduce the impact of emergencies. In both cases the goal is to protect human health and safety, and the environment.

Operations, Maintenance and Surveillance Manual

The OMSM provides a framework for actions in order to ensure the safe operation, maintenance, and surveillance of the tailings and seepage pond facilities at the Site.

3 Spill Response

3.1 Spill Response Procedure

Upon discovery of a spill, all personnel will take immediate action to notify others on site and, when appropriate, control and remediate the spill. Below are the steps that will be followed in the event of a spill.

Identification

1. Identify hazards, secure the area (i.e. extinguish fire or spark) and restrict access if necessary.
2. Contact site operations personnel; inform them of situation and request medical or fire assistance if necessary.
3. Identify the spilled material and if it is safe to approach.

Response

4. Stop or minimize product flow, if safe to do so.
5. Assess the severity of the spill and personal protective equipment (PPE) needs; if necessary refer to the MSDS for appropriate handling requirements.

Containment

6. Initiate product containment. Contain spill by:
 - a. Damming or diverting the spilled material;
 - b. Preventing wind dispersion or erosion by water; and/or
 - c. Apply absorbent materials (in spill kit).
7. Site Manager verifies provisions for personal safety, stoppage of product flow, and containment.

Remediation

8. Notify site manager to collect the samples required. A spill sampling kit is available at the office. To assess the impact of the spill:
 - a. If spill in water, water samples should be taken upstream and downstream during the spill and throughout the remediation process; and
 - b. If spill on land, soil samples following remediation of the spill site.

Spill sampling instructions are provided in Appendix C

9. Develop a remediation plan to restore the site, to the extent possible, to the same condition that it was in before the spill, in accordance with the *Contaminated Sites Regulation* (see Appendix B

and refer to complete *Contaminated Sites Regulation*). Steps that may be included in the remediation plan include:

- a. Site assessment to identify the areas, depths and concentrations of contaminants on the site.
- b. Selecting a restoration strategy (e.g. ex-situ or in-situ remediation).
- c. Applying for and receiving necessary permits (e.g. Relocation Permit, Land Treatment Facility Permit).
- d. Confirmatory Sampling to show that all contaminants have been removed or remediated.

10. Implement remediation plan as approved by the Project Manager and/or Site Manager.

Report

11. Report the spill as soon as possible to the Yukon Spill Report Line, at **867-667-7244** (i.e. should the volume meet or exceed reporting thresholds found in the Yukon *Spill Regulations* [Appendix A]). Be prepared to provide the following information:

- a. The location and time of the spill;
- b. The circumstances leading up to the spill;
- c. The type and quantity of material spilled;
- d. The details of any action taken at the spill site; and
- e. A description of the environment at the location of the spill (e.g. terrain, watercourses, etc.)

12. Notify as soon as possible other parties or members of the public who may be adversely affected by the spill.

13. Develop a detailed Spill Response Report including but not limited to the information indicated above and other relevant details and explanations. See Spill Report Form in Appendix D for further detail.

Debrief

14. Organize and conduct a post-incident debriefing and implement any required procedural changes.

3.2 Spill Kits and Material Safety Data Sheets

Material Safety Data Sheets (MSDS) contain detailed information about a specific product, including the risks of exposure, methods of storage and disposal, protective measures for exposed workers and emergency first aid procedures. Current MSDS must be maintained and accessible to all employees. The MSDS must be current (within 3 years) on all products in the workplace. The MSDS sheets for hazardous materials present at the Site are provided in Appendix E (Note only the table of contents has been included in this version of the document given the large size of the MSDS catalog for the site). A hazardous materials registry and Material Safety Data Sheets (MSDS) are regularly updated and kept at site for all stored hazardous substances and will be communicated to site employees and visitors in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

Spill response materials and supplies to effectively deal with spills are available at the following locations on site:

- Spill response materials and supplies in the Workshop;
- Small spill kits are available in each of the site trucks; and
- MSDS binder is available in the first aid room.

The spill kits at those locations contain response materials specific to the hazardous materials located in those areas. The workshop contains a larger quantity and variety of spill response materials. Refer to Appendix F for a list of contents of spill response kits. The smaller kits in the site vehicles primarily consist of absorbent pads and bags to contain and capture small spills.

This Spill Contingency Plan (along with the appendices) is available in the office at the bunkhouse and within the spill kit at the workshop.

Appendices

Appendix A – Environment Act - Spills Regulations

ENVIRONMENT ACT

Pursuant to section 147 of the *Environment Act*, the Commissioner in Executive Council orders as follows:

1. The annexed Spills Regulations are established.
2. The annexed Regulations shall come into force with effect from the 1st day of January, 1997.

Dated at Whitehorse, in the Yukon Territory, this 16th day of December, 1996.

Commissioner of the Yukon

LOI SUR L'ENVIRONNEMENT

Le Commissaire en conseil exécutif, conformément à l'article 147 de la *Loi sur l'environnement*, décrète ce qui suit :

1. Le Règlement sur les déversements ci-joint est établi.
2. Ce même règlement entre en vigueur le 1^{er} janvier 1997.

Fait à Whitehorse, dans le territoire du Yukon, ce 16 décembre 1996.

Commissaire du Yukon

SPILLS REGULATIONS

Definitions

1. In these regulations,

“Act” means the *Environment Act*; «*loi*»

“Federal Regulations” means the Transportation of Dangerous Goods Regulations (Canada) SOR/85/77 of January 18, 1985, as amended from time to time; «*règlement fédéral*»

“government officials” means federal, territorial or municipal government representatives responsible for responding to spill reports to the Yukon Spills Report Centre. «*fonctionnaires du gouvernement*»

Application

2.(1) These regulations do not apply to a release of gas without flaring where authorized by a licence issued under the *Yukon Oil and Gas Act*.

(2) These Regulations do not apply to ozone depleting substances listed in Schedule A of the Ozone Depleting Substances Regulations.

Spill thresholds

3. A spill in excess of the amounts specified in Schedule A is a spill under the Act.

Spill reporting

4. For the purposes of section 133 of the Act, a report to the Yukon Spills Report Centre will be considered a report to an environmental protection officer.

RÈGLEMENT SUR LES DÉVERSEMENTS

Définitions

1. Les définitions suivantes s'appliquent au présent règlement :

«fonctionnaires du gouvernement» Les représentants des gouvernements fédéral, provinciaux ou municipaux, responsables d'intervenir suite à un avis de déversement auprès du «Yukon Spills Report Centre»; «*government officials*”

«loi» S'entend de la *Loi sur l'environnement*; “*Act*”

«règlement fédéral» S'entend du Règlement sur le transport des marchandises dangereuses (Canada), DORS/85-77, du 18 janvier 1985, ainsi que ses modifications. “*Federal Regulations*”

Application

2.(1) Le présent règlement ne s'applique pas à un rejet de gaz sans torchage lorsqu'il est autorisé en vertu d'un permis émis conformément à la *Loi du Yukon sur le pétrole et le gaz*.

(2) Le présent règlement ne s'applique pas aux substances appauvrissant la couche d'ozone apparaissant à l'annexe A du Règlement sur les substances appauvrissant la couche d'ozone.

Seuils limites

3. Un déversement qui excède les quantités indiquées à l'annexe A est assimilé à un déversement en vertu de la Loi.

Rapport de déversement

4. Aux fins de l'article 133 de la Loi, un rapport de déversement au «Yukon Spills Report Centre» est assimilé à un rapport fait à un agent de protection de l'environnement.

SCHEDULE A

ITEM	COLUMN 1 - SUBSTANCE SPILLED	COLUMN 2 - SPECIFIED AMOUNT
1.	Explosives of Class 1 as defined in section 3.9 of the Federal Regulations	any amount
2.	Flammable gases, of Division 1 of Class 2 as defined in section 3.11(a) of the Federal Regulations	Any amount of gas from a container larger than 100L, or where the spill results from equipment failure, error or deliberate action or inaction
3.	Non-flammable gases of Division 2 of Class 2 as defined in section 3.11(d) of the Federal Regulations	Any amount of gas from a container larger than 100L, or where the spill results from equipment failure, error or deliberate action or inaction
4.	Poisonous gases of Division 3 of Class 2 as defined in section 3.11(b) of the Federal Regulations	any amount
5.	Corrosive gases of Division 4 of Class 2 as defined in section 3.11(c) of the Federal Regulations	any amount
6.	Flammable liquids of Class 3 as defined in section 3.12 of the Federal Regulations	200 L
7.	Flammable solids of Class 4 as defined in section 3.15 of the Federal Regulations	25 kg
8.	Products or substances that are oxidizing substances of Division 1 of Class 5 as defined in sections 3.17(a) and 3.18(a) of the Federal Regulations	50 kg or 50 L
9.	Products or substances that are organic compounds that contain the bivalent "-0-0-" structure of Division 2 of Class 5 as defined in sections 3.17(b) and 3.18(b) of the Federal Regulations	1 kg or 1 L
10.	Products or substances that are poisons of Division 1 of Class 6 as defined in sections 3.19(a) to (e) and 3.20(a) of the Federal Regulations	5 kg or 5 L
11.	Organisms that are infectious or that are reasonably believed to be infectious and the toxins of these organisms as defined in sections 3.19(f) and 3.20(b) of the Federal Regulations	any amount
12.	Radioactive materials of Class 7 as defined by section 3.24 of the Federal Regulations	any discharge or a radiation level exceeding 10 mSv/h at the package surface and 200 mSv/h at 1 m from the package surface
13.	Products or substances of Class 8 as defined by section 3.24 of the Federal Regulations	5 kg or 5 L

ITEM	COLUMN 1 - SUBSTANCE SPILLED	COLUMN 2 - SPECIFIED AMOUNT
14.	Miscellaneous products or substances of Division 1 of Class 9 as defined by sections 3.27(1) and 2(a) of the Federal Regulations	50 kg or 50 L
15.	Miscellaneous products or substances of Division 2 of Class 9 as defined in section 3.27(1) and 2(b) of the Federal Regulations	1 kg or 1 L
16.	Miscellaneous products or substances of Division 3 of Class 9 as defined in section 3.27(1) and 2(c) of the Federal Regulations	5 kg or 5 L
17.	Special waste as defined in section 1 of the Special Waste Regulations	amounts specified in s. 3(1)(b) of Special Waste Regulations
18.	A pesticide as defined in section 2 of the <i>Environment Act</i> , but not including those pesticides and fertilizers listed in Schedule 4 of the Pesticide Regulations	5 kg or 5L
19.	Pesticides and fertilizers listed in Schedule 4 of the Pesticide Regulations	any amount

ANNEXE A

ITEM	1^{ière} COLONNE - SUBSTANCE DÉVERSÉE	2^{ème} COLONNE - QUANTITÉ DÉTERMINÉE
1.	Explosifs de classe 1, tels que décrits à l'article 3.9 du règlement fédéral	Toute quantité
2.	Gaz inflammables de la division 1, classe 2, tels que décrits à l'alinéa 3.11 a) du règlement fédéral	Toute quantité de gaz à l'intérieur d'un récipient pouvant contenir plus de 100 litres, ou lorsque le déversement est le résultat d'une défectuosité de l'équipement, d'une erreur ou d'un acte ou d'une omission délibéré
3.	Gaz ininflammables de la division 2, classe 2, tels que décrits au règlement fédéral	Toute quantité de gaz à l'intérieur d'un récipient pouvant contenir plus de 100 litres, ou lorsque le déversement est le résultat d'une défectuosité de l'équipement, d'une erreur ou d'un acte ou d'une omission délibéré
4.	Gaz toxiques de la division 3, classe 2, tels que décrits à l'alinéa 3.11 b) du règlement fédéral.	Toute quantité
5.	Gaz corrosifs de la division 4, classe 2, tels que décrits au règlement fédéral	Toute quantité
6.	Liquides inflammables de la classe 3, tels que décrits à l'article 3.12 du règlement fédéral.	200 L
7.	Solides inflammables de la classe 4, tels que décrits à l'article 3.15 du règlement fédéral	25 kg
8.	Produits ou substances qui sont des matières comburantes de la division 1, classe 5, tels que décrits aux alinéas 3.17 a) et 3.18 a) du règlement fédéral	50 kg ou 50 L
9.	Des produits ou des substances qui sont des composés organiques qui contiennent la structure bivalente «-0-0-», de la division 2, classe 5, tels que décrits aux alinéas 3.17 b) et 3.18 b) du règlement fédéral	1 kg ou 1 L
10.	Produits ou substances toxiques de la division 1, classe 6, tels que décrits aux alinéas 3.19 a) à e) et 3.20 a) du règlement fédéral	5 kg ou 5 L
11.	Organismes infectieux ou dont il est raisonnable de croire qu'ils sont infectieux ainsi que leurs toxines, tels que décrits aux alinéas 3.19 f) et 3.20 b) du règlement fédéral	Toute quantité

ITEM	1 ^{ière} COLONNE - SUBSTANCE DÉVERSÉE	2 ^{ième} COLONNE - QUANTITÉ DÉTERMINÉE
12.	Matières radioactives, de la classe 7, telles que décrites à l'article 3.24 du règlement fédéral	Toute quantité d'un rejet ou de l'intensité de rayonnement radioactif supérieur à 10 millisievert par heure à la surface du colis et de 200 millisievert par heure à 1 m de la surface du colis
13.	Produits ou substances de la classe 8, tels que décrits à l'article 3.24 du règlement fédéral	5 kg ou 5 L
14.	Matières ou produits divers de la division 1, classe 9, tels que décrits au paragraphe 3.27(1) et à l'alinéa 2 a) du règlement fédéral	50 kg ou 50 L
15.	Matières ou produits divers de la division 2, classe 9, tels que décrits au paragraphe 3.27(1) et à l'alinéa 2 b) du règlement fédéral	5 kg ou 5 L
16.	Matières ou produits divers de la division 3, classe 9, tels que décrits au paragraphe 3.27(1) et à l'alinéa 2 c) du règlement fédéral	5 kg ou 5 L
17.	Déchets spéciaux, tels que décrits à l'article 1 du Règlement sur les déchets spéciaux.	Quantité déterminée à l'alinéa 3(1) b) du Règlement sur les déchets spéciaux
18.	Un pesticide tel que décrit à l'article 2 de la <i>Loi sur l'environnement</i> , à l'exception des pesticides et des engrais chimiques énumérés à l'annexe 4 du Règlement sur les pesticides.	5 kg ou 5L
19.	Les pesticides et les engrais chimiques énumérés à l'annexe 4 du Règlement sur les pesticides.	Toute quantité

Appendix B – Guide to the Contaminated Sites Regulation



Guide to the Contaminated Sites Regulation

The Contaminated Site Regulation establishes cleanup standards, processes for identifying and investigating contaminated sites, and permits for managing contaminated material within Yukon. This fact sheet gives a brief overview of some aspects of the regulation. To view the regulation and access other resources, visit our website at <http://environmentyukon.gov.yk.ca/contaminatedsites>.

Site Assessment Processes

A two step process is normally used to determine whether contamination exists at a site:

1. During a **Site Investigation** (or "Phase I Assessment"), information about the site – such as past and current activities, spills and material handling practices – is compiled. A list is then developed of possible contaminants that may be found on the site and areas where they might be located.
2. If potential areas of contamination are identified, a **Site Assessment** (or "Phase II Assessment") may be carried out. This involves sampling the soil or water in those areas and analyzing the samples for the possible contaminants identified in the Site Investigation. The goal of a Site Assessment is to identify the areas, depths and concentrations of contaminants on the site.

The Contaminated Sites Regulation contains soil and water standards that set out allowable levels of contaminants based on the risks they pose to human and environmental health. If concentrations of contaminants at a site exceed any of these standards, the site is considered a contaminated site.

If you have prepared or received a Site Investigation or Site Assessment report, you can submit it to Environment Yukon for review. We will evaluate the report and tell you if the work was conducted properly, and whether we agree with the report's recommendations.

Cleaning Up Contaminated Sites

Once a site is determined to be contaminated, the contaminants should be removed or contained to reduce the risk to human health and the environment. This process is called remediation or restoration.

A **Plan of Restoration** (or "Remedial Action Plan") is often developed to establish how contamination at a site will be cleaned up. The process of preparing this plan provides an opportunity to determine what cleanup standards are most appropriate and which method should be used to remediate the site.

Selecting Restoration Standards

Most sites are simply remediated until they meet the **numerical standards** listed in the Contaminated Sites Regulation. For typical sites, this approach is simple, fast, and relatively inexpensive. For some sites, however, it may not be practical to meet the standards established for typical sites. In such cases, there are a few other options.

1. **Site-specific numerical standards** can be developed by adjusting the generic standards to fit site-specific conditions.
2. In some cases, such as where soil has naturally high concentrations of heavy metals, the site can be cleaned up to meet the natural **background concentrations** of contaminants.
3. When the existing models can't sufficiently address the complexity of the site, **risk assessment** can be used to determine what actual hazards are created by the contamination, and what actions can be taken to reduce those hazards to acceptable levels.

Selecting a Restoration Strategy

Once the appropriate standards have been chosen, a strategy must be selected to clean up the site so that it meets those standards. Remedial strategies generally fall into one of three categories: ex-situ remediation, in-situ remediation, and risk management.

1. **Ex-situ remediation** refers to the removal of contaminants from the site so that they can be treated or disposed of at a facility designed for that purpose. The most common type of ex-situ treatment is removing contaminated soil to a land treatment facility, where it is contained and treated by encouraging bacteria in the soil to break down the contaminants.
2. **In-situ remediation** means treating contaminated soil or water without removing it from the environment. This option is often selected when removing all of the contaminated material would be unreasonably expensive or impractical. It often takes longer than ex-situ treatment, but can be more efficient for certain types of sites.
3. **Risk management** is a method of reducing the risk to human and environmental receptors without removing the contaminants. This may be done by constructing a barrier to stop the spread of contaminants, installing a ventilation system to remove harmful vapours, placing restrictions on land use to prevent exposure to the most sensitive receptors, or a variety of other approaches.

Confirmatory Sampling and Reporting

When remediation is complete, confirmatory sampling must be conducted to show that all contaminants have been removed or remediated. Depending on the nature of the site and the contamination, follow-up monitoring may also be required.

Once your site has been remediated, be sure to submit a final report to Environment Yukon so that the public registry of contaminated sites can be updated to show that your site is no longer contaminated.

Public Registry of Contaminated Sites

Environment Yukon maintains information on reported contaminated sites and spills in the Yukon. Contact the Environmental Programs Branch for information on a specific site.

Reporting Contaminated Sites

The Contaminated Sites Regulation does not require landowners to advise Environment Yukon if they find historical contamination, but many people choose to do so. Once you have reported the contamination, Environment Yukon can provide advice on how to deal with it appropriately, including site assessment procedures and disposal options. Also, many real estate transactions, financing institutions, and insurance companies now require confirmation that properties have been cleaned up to the appropriate standards.

The Environmental Programs Branch can assist landowners, vendors and purchasers in reviewing reports of contamination or cleanup and determining how the CSR applies to the site.

If you would like to report a suspected contaminated site, please contact your local Conservation Officer or the Environmental Programs Branch.

Permits and Protocols

Under the Contaminated Sites Regulation, permits are required to do any of the following:

- A **Relocation Permit** is required to move contaminated material from one site to another.
- A **Land Treatment Facility Permit** is required to construct or operate a facility to treat contaminated materials.
- A **Risk-based Restoration Permit** is required to implement the site-specific cleanup standards developed through the risk assessment process.

To apply for a permit, please download the appropriate application form from our website, and submit it to the Environmental Programs Branch for processing.

Even when a permit is not required, all work related to contaminated sites in the Yukon must adhere to the protocols adopted by Environment Yukon under the authority of the Contaminated Sites Regulation. For more information on these protocols and how they apply to your site, contact the Environmental Programs Branch or visit our website.

For more information on the Contaminated Sites Regulation, please contact:

Environmental Programs Branch
Environment Yukon
Box 2703 (V-8)
Whitehorse, Yukon Y1A 2C6

Phone: (867) 667-5683
Toll-free: 1-800-661-0408 ext. 5683
Fax: (867) 393-6205
Email: envprot@gov.yk.ca

Website: <http://environmentyukon.gov.yk.ca/contaminatedsites>

Appendix C – Spill Sampling Instructions

SPILL RESPONSE KIT SAMPLING INSTRUCTIONS

Take lots of photos of spill area.

Remember to fill out label on container with a waterproof pen – the most important areas are:

- Sample ID;
- Date sample collected; and
- Required Analysis.

General Water Analysis:

- Inorganic/Dissolved Metals: Fill 1 litre plastic bottle.
- Total Metals: Fill 125 ml AW (Acid Washed) bottle – add one vial of Nitric Acid.

Hydrocarbon Water Analysis:

- Diesel fuel/oil analysis: Fill 2 – 500 mL amber glass bottles, Sodium Bisulfate preservative already in the bottle.
- Gasoline: Fill two 40 ml clear glass vials (Sodium Bisulfate Preservative), there must be no headspace in the vial. Use 150 ml glass beaker to collect water and then pour into the glass vial.

Hydrocarbon Soil Analysis:

- Diesel fuel/oil analysis: Fill 2 – 125 mL glass jars to capacity.
- Gasoline: Fill 2 – 40 mL vials (Methanol Preservative), use a TerraCore sampler to deliver approximately 5 grams of soil into the vial. **Do not put extra sample label on the vials as they are pre weighed.** See attached outline from ALS on the use of a TerraCore sampler. Also collect a 125 ml glass jar for Moisture analysis
- Metals: Analysis can be performed out of the 125 ml glass jar collected above.

Samples must be kept cool prior to and when transporting the off-site laboratory for analysis. Samples will be flagged at the laboratory if the temperature is greater than 10 degrees Celsius. This is especially important for Hydrocarbon type samples

Appendix D – Spill Report Form

SPILL REPORT FORM

1. IDENTIFICATION

Date of Incident: Date: _____ Time: _____

Date of Discovery: Date: _____ Time: _____

Name of Product: (Attach copy of MSDS) _____

Location of Incident: (Attach Sketch, if helpful) _____

Type of Spill: (Check one)

1. Point Spill: _____ Approx. Area affected: _____ sq. ft/sq. m.

2. Linear Spill: _____ Length of area affected: _____ ft./m.

Volume of Spill: _____ (Estimate volume and identify units, i.e. Imperial gallons, litres, etc.)

Estimated rate of release: _____

Concentration: _____

Expressed in estimated % strength – 100% is not diluted.

2. DETAILS OF DISCOVERY

(Prepare, in point form, a chronological sequence of events leading up to the spill or its discovery. Include name, job titles of individuals complete with dates and times with each point)

A.

B.

C.

D. _____

E. _____

3. RISK ASSESSMENT

A) Was MSDS consulted? Yes: _____ No: _____

B) Personal Protective Equipment Required:

Is Employee Safety at Risk? Yes: _____ No: _____

C) Can Material enter a Water Course? Yes: _____ No: _____

D) Is Spill Easily Contained? Yes: _____ No: _____

CHECK ONE:

Spill is considered high-risk immediate action required _____

Call Emergency Response Team for initial response.

OR

Spill is considered low risk, no imminent danger: _____

Proceed with clean-up.

4. ACTION TAKEN UPON DISCOVERY

A) Initial Containment: Date: _____ Time: _____

Describe Methods:

Final Containment: Date: _____ Time: _____

Describe methods, if different than above:

Samples taken for analysis: Yes ___ No ___ Date _____ Time _____

5. DISPOSAL

Temporary Storage: Date: _____ Time: _____

Final Storage: Date: _____ Time: _____

Ultimate Disposal: Date: _____ Time: _____

6. REPORTING

Did the spill quantity exceed the spill reporting threshold as per the Yukon Spill Regulations? (copy attached): Yes _____ No _____

If the spill was of contaminated water, is there a potential that contaminant levels may exceed release criteria?: Yes _____ No _____

If the spill material entered a water body, did it occur to an unauthorized release point?: Yes _____ No _____

If answers to any of the above questions is yes, the event is a reportable spill. The Site Manager must report to the YG who will notify the required external agencies.

7. RECOMMENDED ACTION

Short Term: (To solve immediate problem) _____

Long Term: (To prevent a recurrence) _____

8. PERSONS INVOLVED

Name	Position	Organization (AR, other)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

9. REPORT CIRCULATION: (In Order – Please Sign)

Shift Supervisor: Date: _____ Time: _____
Comments: _____

Site Superintendent: Date: _____ Time: _____
Comments: _____

Site Manager: Date: _____ Time: _____
Comments: _____

Appendix E – Material Safety Data Sheets

NOTE: Only the table of contents has been included in this version of the document given the large size of the MSDS catalog for the site

Nansen Site

MSDS Table Of Contents

29/Apr/16

Section	Product	Manufacturer	Issue or Revision Date, <i>underline/italics</i> indicates retrieved/printed date if no current (3yrs) issue available
A	ABS Cement	Schwartz	✓ 1/Jan/16
	Acetylene	Jacobs Industries	✓ 1/May/13
	Antifreeze/Coolant	Prestone	✓ 19/Sep/13
	ATF (Automatic Transmission Fluid)	Motomaster/Shell	✓ 18/Dec/14
B	Battery Lead Acid	Exide	✓ 11/Sep/13
	Bleach	The Clorox Company	✓ 19/Jul/13
	Brake Fluid Dot 3	Kleen-Flo	✓ 2/Jan/15
	Brakleen (Brake Parts Cleaner)	CRC	✓ 8/Jul/14
C	Counter Assault bear deterrent	Counter Assault	✓ <u>4/Mar/15</u>
	Copper 2 Green Preservative	Recochem Inc	✓ <u>24/Jun/15</u>
	Cyanamer P-70 Antiscalant	Cytec	✓ <u>4/Mar/15</u>
D	Descaler	Peacock	✓ 1/Apr/14
	Diesel Fuel	Petro Canada	✓ 28/Jun/13
	Diesel Fuel Conditioner 3 in 1	Motomaster/Shrader Canada	✓ 3/Mar/15
E	Engine Oil (15w-40) Shell Rotella	Shell/Sopus	✓ <u>4/Mar/15</u>
F	Fuel Injector Cleaner	Motomaster	✓ 27/Apr/15
	Fuel Stabilizer	Motomaster	✓ 12/Dec/13
G	Gasoline (Regular Unleaded)	Petro Canada	✓ 14/May/15
	Gas Line Antifreeze	Recochem Inc	✓ 9/Nov/15
	Grease - Unirex EP2	Mobil	✓ 1/Jan/14

Diesel fuel conditioner

Kleen Flo

Jan 2, 2015

Hazardous Materials Registry

Nansen Site

	Gojo Fast Towels	Gojo		2/Oct/15
H	Husqvarna 30 Wt. chain saw bar oil	Spectrum Lubricants Co.		4/Mar/15
	Hydraulic oil (10w)			13/Dec/15
K	Kleen-Start Starting Fluid (ether)	Kleen-Flo		2/Jan/15
O	Odorbane Urinal pucks	Dustbane		1/Jun/15
	Oxygen	Jacobs Industries		2/May/13
P	Paint Thinner	Recochem Inc		30/Apr/13
	Perma Treat PC-191	Ondeo Nalco Co.		4/Mar/15
	Polyurethane Foam Sealant TouchnSeal	Convience Products		4/Mar/15
	Propane	Superior Propane		1/Jan/14
	PVC Cement IPEX	Sluyter		14/May/14
R	RV Antifreeze	Recochem Inc		27/Jan/16
	Ridgid dark thread cutting oil	Ridgid		13/Jun/13
S	Shell Snowmobile Oil Advance	Shell Canada		9/Jan/15
	Spray Nine	ITW Permatex		25/Mar/14
T	Transmission Oil	Esso Imperial oil.		2/Mar/15
U	Used Oil	Safety Kleen		15/Sep/13
W	WD-40	WD-40 products		27/Mar/14
	Windex	SC Johnson		28/Aug/15

Appendix F – Contents of Spill Response Kit

Contents of Spill Response Kit

(Kept in Cooler at Security)

- Spill Response Report Form
- Clipboard
- 4 – Chain of Custody Form
- Pens and felt pens
- 6: Plastic 1L bottles – Inorganic water analysis / Dissolved Metals
- 6: Plastic 250 ml bottles – Total Metal water analysis
- 6: Vials of Nitric Acid
- 12: Amber glass 250 mL bottle + Sodium Bisulfate – Diesel fuel and oil type Hydrocarbon water sampling.
- 10: Clear glass vials 40 mL + Sodium Bisulfate – Gasoline Hydrocarbon water sampling. **No Headspace in vial after sample collection.**
- 10 – Clear glass vials 40 mL + Methanol – Gasoline Hydrocarbon soil sampling.
- 10 - TerraCore Sampler:– Used to collect soil for Gasoline Hydrocarbon soil sampling.
- 12 – 125 mL Glass Jars – Soil for Moisture and metal analysis.
- A 150 ml glass beaker for collecting sample for filling 40 ml glass vials as described above
- Contact information
- Gloves
- Sampling instructions

Note: Must record date, time and exact location of sample collection on the bottle and chain of custody.

If a spill has made contact with a creek, water samples need to be collected to assess level of contamination. Samples will be required to be collected over the period of remediation to ensure no adverse effect on the creek. A creek sediment sample may also be required at the discretion of the Project Manager and/or Site Manager.

A background sample will also be required to be collected, that is a sample above the influence of the spill.

Collected samples are to be kept cool and transported to the laboratory for analysis. The laboratory needs to be contacted as to what samples are on the way and that the required analysis is a RUSH – one day turnaround.

Appendix 2 – Sediment & Erosion Control Plan

Sediment and Erosion Control Plan Guidance Document Mount Nansen

April 20, 2017

**Government of Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines**

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1 Introduction

The objective of the Sediment and Erosion Control Plan (SECP) is to provide guidance on controlling run-off, minimizing erosion in exposed areas, and preventing inputs of sediment into water bodies at the Mount Nansen site. Erosion entails the movement and transport of sediment as result of water and wind forces. Sedimentation results from erosion and consists of the deposition of transported sediment. Erosion rates can be easily accelerated when surface material is disturbed through anthropogenic activities. Erosion control measures are designed to prevent exposed earthen material from being transported by water or wind. The purpose of this document is to guide the development of activity/site specific sediment and erosion control plans so that these can be customized to different project areas, activities, and risks.

An SECP ensures that potential impacts to surface water quality an aquatic habitats (i.e. including water chemistry and watercourse function) are appropriately mitigated. This SECP describes detailed measures (derived from Best Management Practices [BMPs]) to prevent, minimize and control erosion of exposed erodible materials and sediment mobilization. These measures are essential to minimize potential effects to the environment and ensure the stability of infrastructure. The SECP ensures compliance with relevant federal and territorial legislation (i.e. acts and regulations), permits and licences. Contractors will be required to develop plans in accordance with the SECP specific to the works/activities that they will be undertaking.

The following general tasks will be taken prior to any activities that may expose erodible materials:

- Assess the activity/site for its potential to cause the mobilization of sediments and erosion.
- Identify sediment and erosion control measures for the relevant activity/site.
- Maintain, inspect and monitor to ensure the implementation of mitigation measures and to verify that these are effective.
- Develop activity/site specific plans to address erosion and sedimentation concerns.

2 Activities Subject to the SECP

The SECP will apply to the following types of activities:

- Maintenance of diversions
- Soil/rock sampling
- Equipment installation including wells, thermistors, and flow measurement facilities
- Water treatment facility construction and maintenance
- Vegetation removal
- Snow clearing and stockpiling
- Site road and trail maintenance

3 Strategy

3.1 Assessment of Activity/site

The assessment of the activity/site for its potential to cause the mobilization of sediments and erosion includes:

- Consideration of the site characteristics and all works that are intended to be completed at the site so that potential water quality contaminants of concern generated by the activities/sites can be identified;
- Identifying work site areas that are more susceptible to erosion and sedimentation (e.g. silty soils, permafrost, steep and long slopes); and
- Identify stream and drainage control points, as well as areas where vegetation should remain for erosion prevention purposes.

3.2 Identification of Measures

The selection and implementation of sediment and erosion control measures will consider the following factors:

- The size of work site;
- The grade of the work site;
- The type of activity and resulting disturbance;
- The duration and intensity of the disturbance;
- The time-of-year of the work;
- Local climate characteristics;
- The activity/site's proximity to a water body; and
- The nature of the disturbed material (i.e. texture and percolation characteristics).

The activities mentioned in Section 2 will be managed through the erosion and sedimentation mitigation measures identified in Sections 3.2.1 and 3.2.2 below. The mitigation measures from these sections will be drawn from when developing activity/site specific plans (see Section 3.4).

3.2.1 General Erosion and Sedimentation Prevention Measures

The following measures are intended to reduce or prevent the effects of erosion and sedimentation:

- Minimize the non-essential areas of vegetation and soil disturbance (i.e. delineate area for clearing and grading using flagging tape);
- Minimize water flow quantity and velocity entering and flowing through work areas;
- Minimize the length of time that erodible materials are exposed (e.g. stage/sequence ground disturbance to minimize the area of exposed material at any given time);
- Minimize steepness and length of slopes of disturbed areas and stockpiled material;

- Minimize vehicle access routes and vehicle traffic in work areas;
- Avoid placing material stockpiles on slopes, near watercourses, and near drainage features;
- Avoid work during periods of high precipitation;
- Avoid work in sensitive areas during the time-of-year when erosion is more likely;
- Avoid areas that are susceptible to erosion (e.g. silty soils, permafrost, steep and long slopes);
- Avoid the disruption of vegetation buffers near sensitive areas (e.g. erosion prone areas, streams);
- Ensure the installation of erosion control measures before the commencement of works;
- Ensure that materials required for erosion control measures are available on-site;
- Ensure that the installation of stream stabilization and erosion protection measures avoid flow areas in stream; and
- Stabilize erodible materials as soon as practical through erosion and sedimentation control measures.

3.2.2 Erosion and Sedimentation Control Measures

The following methods and mechanisms are intended to control erosion and sedimentation at a work site:

- Install sediment barriers (e.g. straw bales, biofilter, brush barrier, pre-fabricated barrier) around disturbed area and stockpiled material to capture and retain sediment;
- Install rock, log or straw check dams where warranted to reduce the velocity of water flow (i.e. typically installed in a series), protecting the channel from erosion;
- Install geotextile sediment/silt fence to capture sediment in channels thereby protecting downslope areas and preventing further movement of sediments (i.e. sediment settles upstream of the fence);
- Install sediment/silt fences and/or berms around stockpiled material or disturbed areas;
- Install sediment traps and/or dewatering basins to pond sediment laden water in order to allow sediment to precipitate and clean water to either percolate or discharge through a passive overflow outlet;
- Install diversion ditches/berms to divert sediment laden water towards, sediment/silt fence, sediment traps and/or dewatering basins;
- Install interception ditches/berms to intercept and divert clean water away from disturbed areas (i.e. direct clean water to less sensitive areas);
- Install rolled erosion control products (i.e. sheets of permeable fibrous material) where warranted (i.e. directly adjacent to streams or on highly erodible/sloped disturbed areas);
- Stabilize disturbed areas with vegetation where practicable after initial disturbance;
- Apply a multi-barrier approach where warranted;
- Apply clean aggregate to trafficked area to stabilize and prevent further exposure of erodible material;

- Cover erodible material, where possible, with impermeable material (e.g. tarp); and
- Lightly roughen the surface on flat to moderately sloped disturbed areas to trap runoff and allow water to infiltrate.

3.3 Inspection, Monitoring, and Maintenance

Inspection and monitoring will be conducted to verify the implementation and effectiveness of mitigation measures and to ensure compliance with relevant legislation, permits, and licences. Maintenance will be conducted to ensure the continued function of erosion and sedimentation control measures.

3.3.1 Inspection

Inspection will be conducted by Site Operations personnel to ensure that activity/site specific sediment and erosion plans are adhered to, are effective (i.e. ensure that mitigation measures are appropriate/successful), and to verify if maintenance is required. The focus, extent and frequency of the inspections of erosion and sediment control measures will be relative to the activities, the measures being used, weather, and site conditions. Should it be identified that sediment and erosion control measures are not being implemented as planned or that maintenance is required (e.g. cleaning or replacement), corrective actions will be taken without delay. The activity/site specific plan will be revisited should it be identified that measures not adequately address Sedimentation and Erosion concerns, or should there be changes to the activity/site conditions. Any changes to the manner through which the work is conducted or to the mitigation measures employed will require prior approval from the site operator.

The frequency of inspections of erosion control measures should be based on risk and sensitivity of the area. At a minimum, inspections should occur at all control measures before and after all significant precipitation events to ensure they will remain effective or have functioned adequately during the event.

3.3.2 Monitoring

Erosion and sedimentation effects will be evaluated at individual sites by comparing the quality of potentially affected water at a particular site against background/reference water quality. Potentially affected water will be measured immediately downstream of the site (i.e. sampling location will be located at downstream limit of disturbance area). Background/reference water quality will be measured either at the site before work begins or at a location immediately upstream. Upstream and downstream sampling will take place at the same time. Sampling locations will be situated, to the extent possible, in locations where water is not influenced by other potential sources. The following parameters will be monitored: turbidity, total suspended solids, and pH. Should monitoring results indicate exceedence of site specific threshold, additional sediment and erosion control measures will be applied (i.e. adaptive management will be used to correct measures which are unsuccessful at addressing erosion and sedimentation concerns).

Water sampling locations and frequency will consider:

- The terms and conditions of permits, licenses, or other authorizations; and

- The environmental risk of the activity/site (i.e. the sensitivity of the area, the type of activity, the likelihood of an effect, and the potential consequence of the effect).

3.3.3 Maintenance

As a result of inspection and monitoring activities, maintenance may be required such as cleaning, repair, and replacement of erosion and sediment control measures. Maintenance may also occur on scheduled interval. More frequent or intensive maintenance may be required during periods of increased material handling activities or increased precipitation. Erosion and sedimentation mitigation measures will remain in place and will be maintained until all disturbed areas in the work area have stabilized; as approved by the Government of Yukon.

3.4 Activity/site Specific Plans

Activity/site specific plans will be developed to address erosion and sedimentation concerns prior to the implementation of the work. These plans shall include:

- A summary of the work and site, focusing on elements of erosional and sedimentation concern;
- A detailed description of the sediment and erosion control measures that will be employed including the location of control measures as well as the timing of installation, inspection and maintenance of these measures (i.e. the aforementioned measures will be reviewed and selected depending on their applicability); and
- A monitoring plan which includes a description of sampling methods, locations, frequency, and thresholds for taking further sediment and erosion control measures.

3.4.1 Reference Documents

The following documents will be used to assist in developing activity/site specific plans, as these documents contain further detail on the locations that specific measures should be applied to, the timing of their application, the materials required, as well as methods of installation.

- EDI Environmental Dynamics Inc. 2003. *Runoff, Erosion and Sediment Control Best Management Practices for Yukon Placer Mining Operations*. Retrieved from <http://emrlibrary.gov.yk.ca/Runoff,%20Erosion%20and%20Sediment%20Control.pdf>
- Yukon Government. 2011. *Best Management Practices for Works Affecting Water in Yukon*. Retrieved from http://www.env.gov.yk.ca/publications-maps/documents/bestpractes_water.pdf
- Government of Alberta. 2011. *Erosion and Sediment Control Manual*. Retrieved from <http://www.transportation.alberta.ca/Content/docType372/Production/ErosionControlManual.pdf>
- Ministry of Transportation Ontario. 2007. *Environmental Guide for Erosion and Sediment Control During Construction of Highway Projects*. Retrieved from [http://www.raqsbo.mto.gov.on.ca/techpubs/eps.nsf/8cec129ccb70929b852572950068f16b/7ff7c9fa7def430f852572b300578dec/\\$FILE/MTO%20Env%20Guide%20for%20ESC%20Final%20Feb%202007.pdf](http://www.raqsbo.mto.gov.on.ca/techpubs/eps.nsf/8cec129ccb70929b852572950068f16b/7ff7c9fa7def430f852572b300578dec/$FILE/MTO%20Env%20Guide%20for%20ESC%20Final%20Feb%202007.pdf)

Appendix 3 – Waste Management Plan

Waste Management Plan

Mount Nansen

April 20, 2017

Government of Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines

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Attachment A – Waste Management Permit

1 Introduction

The Waste Management Plan (WMP) outlines how waste materials generated at the Mount Nansen site are managed. The objective of the WMP is to ensure that waste is managed in a manner that protects human health and safety and the environment, and that complies with current permits (e.g. Commercial Dump Permit No. 81-052 [Attachment A]) as well as applicable territorial and federal legislation (e.g. Yukon Special Waste Regulations). A Spill Contingency Plan has been developed for the Site, for which the handling and storage procedures of solid and special waste are also subject to.

The management of waste at the Site is authorized by Commercial Dump Permit No: 81-052 and is managed in accordance with the terms therein. The permit is currently held by Denison Environmental Services (i.e. the current care and maintenance site operator) and is effective until December 31, 2021. The scope of authorization of the Commercial Dump Permit includes the following:

- Operation of a dump for the disposal of solid waste generated by the activities at the Site;
- Open burn solid waste in an amount greater than 5 kilograms per day; and
- Generation, storage, and transport of waste oil, waste batteries, and waste antifreeze.

All site operations personnel are provided with training for the handling, storage and disposal of waste materials. They are made familiar with the contents of this WMP as well as the terms and conditions of Commercial Dump Permit No. 81-052. A copy of the permit is available in the bunkhouse.

Site operations personnel will apply the following general practices to mitigate the effects of waste generation:

- Materials will be used efficiently in order to minimize waste generation;
- When possible, materials that are less harmful to the environment will be used;
- Waste materials will be separated as recyclable and non-recyclable; and
- Waste will be handled in such a way to avoid attracting wildlife.

2 Normal Waste

2.1 Domestic Waste

Domestic waste includes food waste and garbage associated with routine operations. The domestic type waste (i.e. putrescible) is stored on-site either inside the bunkhouse or in bear-proof waste bins outside.

2.2 Recyclables

Recyclable materials are sorted into recycle bins which are located in the bunkhouse.

Recyclable materials include, although is not limited to:

- Aluminum and tin cans;
- Plastic and glass beverage bottles; and
- Waxed cardboard beverage containers and tetra packs.

2.3 Disposal

Domestic waste is either burned on-site or are transported to, and disposed of in, the Carmacks landfill (i.e. approximately once every two weeks).

3 Special Waste

3.1 Handling

All special waste generated at the Site will be handled as follows:

- Special waste will not be mixed together in a container;
- Material Safety Data Sheets (MSDS) will be referred to for more information on the appropriate handling, transport and disposal of a special waste substance.
- All special waste is stored in containers that are of a material that will not react with the substances they are intended to contain;
- All containers and drums containing special wastes are appropriately marked and labeled;
- All containers and drums containing special wastes are appropriately closed/sealed at all times and stored temporarily above the ground;
- Special waste storage areas are regularly inspected to verify that containers and drums are not leaking;
- Special wastes are stored in such a manner that prevents contact between incompatible substances (i.e. that react with one another); and
- The residue at the bottom of special waste containers will be segregated and treated as a special waste.

Several empty hazardous material over-pack barrels are on-site for storage of any potentially hazardous materials found or created during routine site operations. When pails or drums or other hazardous materials are found or created on-site, they are placed in an over-pack barrel and moved to the hazardous material laydown area for future transport off site.

3.2 Waste Oil

Waste oil storage and transfer/disposal is carried out in accordance with the Waste Management Permit held by the site operator. Waste oil is stored in 20 litre pails inside a containment structure pending off-site disposal. A map indicating the waste oil storage location can be found in Appendix A. As waste oil quantities approach 200 litres, the waste oil is transported to Whitehorse for disposal at a permitted facility.

3.3 Transportation

Special waste that is transported offsite for disposal must be to an appropriate management facility that is permitted to receive and dispose of the special waste. If the facility is in the Yukon, both the facility and the carrier must be permitted in the Yukon (i.e. according to the *Transportation of Dangerous Goods Regulations* [SOR/2008-34]). A transportation manifest issued by the carrier and a disposal certificate issued by the disposal facility will be provide to site operations personnel.

4 Record Keeping

The site operations personnel will keep the following records:

- A current site plan identifying waste storage and handling areas;
- Inspection records including the name of the inspector, the date of the inspection, observations made, as well as any resulting actions taken and the date of each action;
- A record of the types of special wastes at the site, their estimated volumes, and their storage areas;
- Transportation manifests issued by the carrier and a disposal certificates issued by the disposal facility for special waste;
- Written authorization from the operator of any municipal or Yukon government solid waste disposal facility authorizing the transfer of waste to that facility, if any waste is to be transferred off-site;
- Spill reports (i.e. as per the Spill Contingency Plan);

Attachment A – Waste Management Permit



Permit No: 81-052

COMMERCIAL DUMP PERMIT

Issued Pursuant to
the *Environment Act*, the *Solid Waste Regulations*, the
Air Emissions Regulations, and the *Special Waste Regulations*

Permittee: Denison Environmental Services

Mailing Address: 4109 4th Avenue, Suite 207, Whitehorse, YT Y1A 1H6

Site Location: Mount Nansen Mine (60km west of Carmacks)
62°2'51.63" N, 137°8'48.85" W

Authorized Representative: Janet Lowe
Phone/Fax: (867) 393-4800 / (867) 393-4803
Email: jlowe@denisonenvironmental.com

Effective Date: Date of Director's Signature
Expiry Date: December 31, 2021

This permit replaces permit #81-052 issued on January 31st, 2014.

Scope of Authorization: In accordance with your application, **Denison Environmental Services**, represented by yourself, is authorized to:

- a. operate a dump for the disposal of solid waste generated by the commercial activities of the permittee; and
- b. open burn solid waste in an amount greater than 5 kilograms per day; and
- c. generate or store: **waste oil, waste batteries, and waste antifreeze**, at the above site location ("the site"); and
- d. transport: **waste oil, waste batteries, and waste antifreeze**, to and from the site,

as set out in the terms and conditions of this permit.

Dated this 9th day of January, 2017



Director, Environmental Programs Branch
Environment Yukon

DEPARTMENT OF ENVIRONMENT
ENVIRONMENTAL PROGRAMS
Whitehorse, Yukon
Certified true copy of original
Date: 9 Jan 17 Initials: JLM

1. DEFINITIONS

1. In this permit,

“Act” means the *Environment Act*, R.S.Y. 2002, c. 76;

“approved plan” means a plan that is submitted by the permittee and approved by an environmental protection analyst under this permit and includes any terms and conditions specified by the environmental protection analyst in the approval;

“associated personnel” means all employees, contractors and volunteers involved in the permitted activities;

“Branch” means the Environmental Programs Branch, Environment Yukon;

“cell” means a discrete area of the site into or onto which solid waste is deposited for permanent disposal and includes such areas that are no longer used for that purpose;

“combustible solid waste” means food waste, cardboard and other paper-based waste, and wooden construction and demolition waste, not including treated wood products (e.g., wood products treated with creosote, chromium copper arsenate, pentachlorophenol) and wood painted with lead- or PCB;

“contaminated material” means any soil, snow, sediment, or water that has one or more parameters in excess of applicable standards in the *Contaminated Sites Regulation*, O.I.C. 2002/171;

“dangerous wildlife” means wildlife so defined in the *Wildlife Act*, R.S.Y. 2002, c. 229;

“disposal areas” means the locations of the cell(s), and the open burning equipment or pit;

“dump” means the portion of the site used for the handling or disposal of solid waste, including the location(s) of any machinery, equipment, devices, tanks, buildings or other works used to handle or dispose of the solid waste;

“environmental protection analyst” means an employee of the Branch so designated by the Minister of Environment under the Act;

“environmental protection officer” means an employee of the Government of Yukon so designated by the Minister of Environment under the Act;

“open burning” means the combustion of material without control of the combustion air and without a stack or chimney to vent the emitted products of combustion to the atmosphere;

“putrescible waste” means food or plant-based waste which can decompose or rot;

“Regulations” means any or all of the *Air Emissions Regulations*, O.I.C. 1998/207, the *Solid Waste Regulations*, O.I.C. 2000/11, the *Contaminated Sites Regulation*, O.I.C. 2002/171, the *Designated Materials Regulation*, O.I.C. 2003/184, the *Storage Tank Regulations*, O.I.C. 1996/194, the *Spills Regulations*, O.I.C. 1996/193, and the *Special Waste Regulations*, O.I.C. 1995/047, as applicable;

“solid waste” includes waste which originates from residential, commercial, industrial or institutional sources, or from the demolition or construction of buildings or other

structures or which is specified in a solid waste management plan to be solid waste and for greater certainty includes litter, as defined in the *Act*, but does not include untreated brush or wood products that are not mixed with other materials;

“special waste management facility” means an operation which handles or disposes special wastes generated by other persons or operations, and includes without limitation a community collection system which is intended to collect or transport special waste to a special waste management facility in the Yukon;

“spill” means a release of a substance in excess of the amounts specified in Schedule A of the *Spills Regulations*, O.I.C. 1996/193, or that is abnormal in quantity or quality in light of all the circumstances of the release;

“storage tank” means a closed container with a capacity of more than 230 litres that is designed to be installed in a fixed location, and includes either an aboveground storage tank or an underground storage tank;

“substance” means a hazardous substance, pesticide, contaminant, or special waste.

“vehicle” has the same meaning as in the *Motor Vehicles Act*, R.S.Y. 2002, c. 153; and

“waste manifest” means the shipping document required to be completed by the permittee as set out in this permit in the form approved by an environmental protection officer.

2. Any term not defined in this permit that is defined in the Act or the Regulations has the same meaning as in the Act or the Regulations.

2. GENERAL

1. No condition of this permit limits the applicability of any other law or bylaw.
2. The permittee shall ensure that all activities authorized by this permit occur on property that the permittee has the right to enter upon and use for that purpose.
3. The permittee shall ensure that all associated personnel:
 - a) have access to a copy of this permit;
 - b) are knowledgeable of the terms and conditions of this permit; and
 - c) receive the appropriate training for the purposes of carrying out the requirements of this permit.
4. The permittee shall provide notice in writing to an environmental protection analyst prior to any significant change of circumstances at the site, including without limitation:
 - a) closure of the operation or site;
 - b) change of ownership of the site;
 - c) discontinuation of any regulated activity at the site;
 - d) generating, storing or transporting special wastes other than those authorized by this permit; or
 - e) change to the mailing address or phone number of the permittee.
5. The permittee shall obtain approval from an environmental protection analyst prior to:

- a) burning any type of waste that is not combustible waste as defined in this permit;
or
 - b) any change to existing incineration or open burning equipment, including the addition, removal or replacement of equipment.
6. Where conflicts exist between this permit, the permit application or elements of any plan pertaining to any activity regulated under the Act, this permit shall prevail.
7. If an inspection reveals that the site or equipment is in any way not in compliance with this permit or approved plans developed in accordance with this permit, the permittee shall repair the damage or take other actions as required to bring the site or equipment into compliance.
8. For clarity, all obligations of the permittee under this permit survive the expiry date.

3. PLANS AND REPORTS

1. When the permittee is required to submit a plan under this permit, the permittee shall:
- a) ensure the plan meets the requirements for that type of plan as established by the Branch in writing, where applicable;
 - b) submit the plan in writing to an environmental protection analyst; and
 - c) implement the plan as of the date it is submitted, unless otherwise provided for in this permit.
2. If the permittee wants to amend a submitted plan, the permittee shall submit the proposed amendment to an environmental protection analyst as if the amendment were a plan under section 3.1 of this permit.
3. If an environmental protection analyst directs in writing that a submitted plan be amended, the permittee must prepare the required amendment by the date specified and submit it as if it were a plan referred to in section 3.1 of this permit.

4. FENCING AND SECURITY

1. The permittee shall install and maintain, in accordance with the manufacturer's operating and maintenance instructions and recommendations, an electric exclusion fence(s) and gates that encompass all putrescible waste storage and disposal areas at the dump and any other areas of the site that become or may become an attractant to animals. The fence and gates shall be adequate to prevent dangerous wildlife from entering the encompassed areas of the site.
2. The fences and gates referenced in paragraph 4.1 above must be:
- a) activated continuously from May 1 to October 31 of each year;
 - b) activated between November 1 and April 30 of each year if there are tracks or other signs of dangerous wildlife attempting to access the dump; and
 - c) activated upon the written request of an environmental protection officer.

3. If the permittee wishes to deactivate the electric fence for any length of time during the period of operation referenced in paragraph 4.2 (other than for regular maintenance of the fence), the permittee shall obtain prior approval from an environmental protection officer.
4. The permittee shall conduct weekly inspections of all electric fences and shall maintain them as necessary during periods of activation as specified in paragraph 4.2 to ensure that:
 - a) the fence is sufficiently charged to deter wildlife; and
 - b) there is no vegetation or windblown litter or other items along the perimeter of the fence, or contacting the fence, that may act as a ground.
5. The permittee shall ensure that all gates are closed and secured every time personnel leave the area bounded by the electric fence.
6. The permittee shall install and maintain fencing or other comparable measures to prevent the release of solid waste from the dump.

5. STORAGE AND OFF-SITE TRANSFER OF SOLID WASTE

1. The permittee shall ensure that putrescible waste is stored in bear-proof containers and that it is not stored for a period of greater than seven days prior to being transferred offsite or disposed of in accordance with this permit.
2. The permittee shall ensure that all materials listed in the schedules of the *Designated Materials Regulation*, as updated from time to time, are not buried or burned and that they are taken periodically to a municipal or community dump or other depot for those materials.
3. The permittee shall ensure that they receive written authorization from the operator of any municipal or Yukon government solid waste disposal facility prior to transferring any waste to that facility.
4. The permittee shall report any incidents involving dangerous wildlife to the Government of Yukon, Conservation Officer Services Branch (867-390-2685) or the TIPP line (1-800-661-0525).

6. BURIAL OF SOLID WASTE

1. The permittee shall submit a letter of notification to an environmental protection analyst when:
 - a) a new cell is developed; or
 - b) a cell is closed,providing details of the cell construction or closure and written confirmation that the cell was properly constructed or closed in accordance with written guidelines developed by the Branch.

2. The permittee shall ensure that all cells are located and constructed in accordance with the "Requirements for Commercial Dumps" guidelines established by the Branch in writing, as amended from time to time.
3. The permittee shall ensure that all cells no longer used for the disposal of solid waste are closed in accordance with the "Requirements for Commercial Dumps" guidelines established by the Branch in writing, as amended from time to time.
4. The permittee shall cover any exposed solid waste in a cell with soil or other comparable material to a depth of 0.1 metres or any other depth that an environmental protection officer considers necessary to prevent windblown solid waste and attraction of birds after every 0.5 metres of solid waste is deposited.
5. The permittee shall dispose of ash from incinerating or open-burning solid waste by:
 - a) placing it in a cell on-site and immediately covering it with a layer of soil or other comparable material to a depth of 0.1 metres, or any other depth that an environmental protection officer considers necessary to prevent windblown ash or attraction of wildlife; or
 - b) placing it in a covered metal container suitable for transporting it to a permitted solid waste disposal facility.
6. Paragraphs 6.4 and 6.5(a) do not apply between November 15 and April 15 of each year if soil or other comparable cover material cannot be obtained at the site.
7. The permittee shall submit to an environmental protection analyst for approval copies of all laboratory analytical results of any contaminated material before accepting it at the dump for deposition into a cell, and shall not allow special wastes or materials containing contaminants in excess of the industrial land use standards in the *Contaminated Sites Regulation, O.I.C. 2002/171*, to be deposited into a cell.

7. OPEN BURNING OF SOLID WASTE

1. The permittee shall only open burn combustible solid waste.
2. The permittee shall:
 - a) ensure, to the extent practicable, that combustible solid waste to be open burned is dry and shall only burn wet combustible solid waste when to delay such burning may result in attraction of animals or creation of a fire hazard;
 - b) not allow combustible solid waste to smoulder (burn and smoke without flame) during an open burn;
 - c) separate combustible solid waste from any underlying grass or peat layer prior to ignition;
 - d) ensure that a natural or artificially-induced draft is present when combustible solid waste is to be burned; and
 - e) ensure that all combustible solid waste, when open burned, is reduced to ash to the extent possible (for clarity, metals are not expected to be reduced to ash).

3. The permittee shall divert surface water from flowing into the open burning area through the use of controls such as trenches, berms, and grading techniques.
4. The permittee may use waste petroleum products, excluding waste oil, as an accelerant for open burning solid waste in an amount not exceeding 500 millilitres of petroleum product per burn.
5. The maximum amount of solid waste that may be open burned under this permit without undertaking an environmental screening pursuant to the *Yukon Environmental and Socio-economic Assessment Act* is 50 kg/day.

8. STORAGE AND HANDLING OF SPECIAL WASTE

1. The permittee shall not handle special wastes other than those authorized by this permit.
2. The permittee shall not discard, destroy, treat, process, incinerate, or recycle special wastes unless specifically authorized by this permit, except for mixing or dilution authorized by an environmental protection officer as an acceptable treatment or disposal option for the special waste.
3. The permittee shall ensure that each container containing special waste is clearly labelled to indicate the type of special waste stored. The permittee shall not mix different types of special waste.
4. The permittee shall ensure that special wastes are stored and handled in such a manner as to prevent their release into the environment.
5. The permittee shall ensure that:
 - a. all drums and other portable containers containing special wastes are covered or stored out of inclement weather;
 - b. all drums and other portable containers containing special wastes are stored off the ground;
 - c. all containers used to store special waste are closed at all times during storage;
 - d. special wastes are stored in a manner that will prevent incompatible substances from reacting adversely with each other;
 - e. containers used for the storage of special waste are made of materials that will not adversely react with the special waste;
 - f. special wastes stored in leaking containers are immediately transferred to intact containers; and
 - g. all containers used for the storage of special waste are clearly marked to identify what special waste is stored in the container.
6. The permittee shall inspect special waste storage containers:
 - a) weekly in terms of visual inspections for leaks;
 - b) monthly in terms of the volume of special wastes stored on site;

- c) annually in terms of tank/container quality, piping, and auxiliary equipment; and
 - d) upon request from an environmental protection officer.
7. The permittee shall not allow any residue at the bottom of a container used for the storage of special waste to be released to the environment. Such residue shall be collected by the permittee and considered to be special waste until proven by testing to not be special waste.
 8. The permittee shall not store special wastes that are petroleum products in a storage tank with a capacity greater than 4000L unless specifically authorized by a permit issued pursuant to the *Storage Tank Regulations*, O.I.C. 1996/194.
 9. The permittee shall not store special wastes that are not petroleum products in a storage tank with a capacity of 2000L or greater unless specifically authorized by a permit issued pursuant to the *Storage Tank Regulations*, O.I.C. 1996/194.
 10. If an inspection reveals that the amount of special waste stored at the site may pose a risk to human health or the environment, the permittee shall develop and implement a final disposal plan for the special waste, as directed in writing by an environmental protection officer.

10. WASTE OIL

1. Waste oil in which one or more contaminants exceeds the standards specified in Table 1 below shall be considered contaminated waste oil.

TABLE 1: ACCEPTABLE ANALYSIS METHODS AND CONTAMINANT LEVELS IN WASTE OIL

Contaminant	Maximum Concentration (mg/kg)	Test Method
Arsenic	5.0	EPA 3050B/3051 & 7060
Cadmium	2.0	EPA 3050B/3052 & 7000/7131
Chromium	10	EPA 3050B/3051 & 7000/7191
Lead	50	EPA 3050B/3051 & 7000/7421
Total organic halogens	1000	EPA 9020B or EPA 9022
PCBs	2.0	EPA 3540C/3541 & 8082

2. Determination as to whether waste oil is contaminated shall be made in accordance with the "General Information on Waste Oil" guidelines established by the Branch, as amended from time to time.
3. Prior to blending contaminated waste oil with uncontaminated waste oil, the permittee shall obtain analytical results for both the contaminated and uncontaminated oil and blend the oil in accordance with the "General Information on Waste Oil" guidelines established by the Branch, as amended from time to time.
4. When submitting a sample of waste oil feedstock for laboratory analysis the permittee shall ensure that the laboratory uses the methods specified in Table 1, or equivalent, as

amended from time to time, for each listed substance. The permittee shall ensure that the detection limit of the method used is lower than the standards set forth in Table 1.

11. TRANSPORT AND TRANSFER OF SPECIAL WASTE

1. The permittee shall ensure that all special wastes are transported and transferred in such a manner as to prevent their release into the environment.
2. The permittee shall complete a waste manifest documenting each shipment of special wastes from the site. The permittee shall distribute copies of the waste manifest in the manner described thereon.
3. The permit number **YG81-052** shall be used as the Provincial Identification Number on waste manifests used for the transport of the listed special wastes.
4. The permittee shall ensure that all vehicles operated by the permittee and carrying any special wastes are secured to prevent access by unauthorized persons.
5. The permittee shall ensure that special wastes are transported to a special waste management facility in the Yukon or another jurisdiction that is permitted to receive those listed special wastes.
6. The permittee shall ensure that special wastes are transported by a carrier permitted in the Yukon to transport the listed special wastes.

12. SPILLS

1. The permittee shall contact either an environmental protection officer, or the 24-hour Yukon Spill Report Centre (**867-667-7244**) as soon as possible under the circumstances in the event of a release, spill, unauthorized emission, discharge, or escape of any substance listed in the *Spills Regulations*, O.I.C. 1996/193, or any special wastes.
2. The permittee shall ensure that clean-up equipment appropriate for the amount and type of special waste generated or stored on site (such as sorbent, shovel, broom, bucket, gloves, boots, etc.) is readily accessible at all locations where the special wastes are handled or stored.
3. The permittee shall ensure that spill procedures are developed, maintained, and posted at all locations where special wastes are handled or stored, and that all personnel (employees, contractors or volunteers) are familiar with those procedures. The spill procedures must meet the requirements for that type of plan as established by the Branch in writing.
4. The permittee shall ensure that contaminated material resulting from a release, spill, unauthorized emission, discharge, or escape or any special wastes is properly handled in accordance with the *Contaminated Sites Regulation*, O.I.C. 2002/171.

13. INSPECTIONS AND RECORD KEEPING

1. The permittee shall keep the following general records at the site:
 - a) a current site plan showing the location of the solid and special waste storage and handling locations, active and closed cells, and the open burn area;
 - b) a copy of each plan developed under this permit, and any amendments to and approvals of each plan;
 - c) inspections conducted by the permittee in accordance with this permit (including the name of the person conducting the inspection, the date of each inspection, any observations recorded during the inspection, actions taken as a result of those observations, and the date each action was taken); and
 - d) any and all deficiencies remedied in accordance with paragraph 2.7, and how and when they were remedied.

2. The permittee shall keep the following records at the site related to the disposal of solid waste:
 - a) an estimate, in kilograms or tonnes, of the amount of solid waste disposed of each month the site is in operation and on an annual basis (if solid waste is burned or incinerated, this must be an estimate of the mass of solid waste prior to burning or incineration);
 - b) before and after photographs and a detailed description of any activities undertaken to construct or close any cell; and
 - c) written authorization from the operator of any municipal or Yukon government solid waste disposal facility authorizing the transfer of waste to that facility, if any waste is to be transferred off-site.

3. The permittee shall keep the following records at the site related to operation of the open burning of solid waste:
 - a) the name of the person monitoring the open burn;
 - b) the date and time of the open burn; and
 - c) the types and approximate quantities of solid waste open burned.

4. The permittee shall keep the following records at the site related to the storage and handling of special waste:
 - a) the types of special wastes generated or stored at the site, their estimated volumes, and their storage location(s);
 - b) a copy of any waste manifests used to transport special wastes to or from the site; and
 - c) notes concerning any release, spill, unauthorized emission, discharge, or escape that occurred at the site, including the substance involved and estimated quantity, the date of observation, any spill reports made, and clean-up procedures implemented.

5. The permittee shall keep all records required under this permit in a format acceptable to an environmental protection officer for a minimum of three years and make them available for inspection by an environmental protection officer upon request.

Appendix 4 – Wildlife & Habitat Management Plan

Wildlife and Habitat Management Plan

Mount Nansen Site

March 12, 2018

Government of Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines

Table of Contents

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1 Introduction

The Wildlife and Habitat Management Plan (WHMP) describes the management approaches and best management practices (BMPs) that are used to prevent and/or minimize adverse effects on wildlife and wildlife habitat.

The objectives of this WHMP include the following:

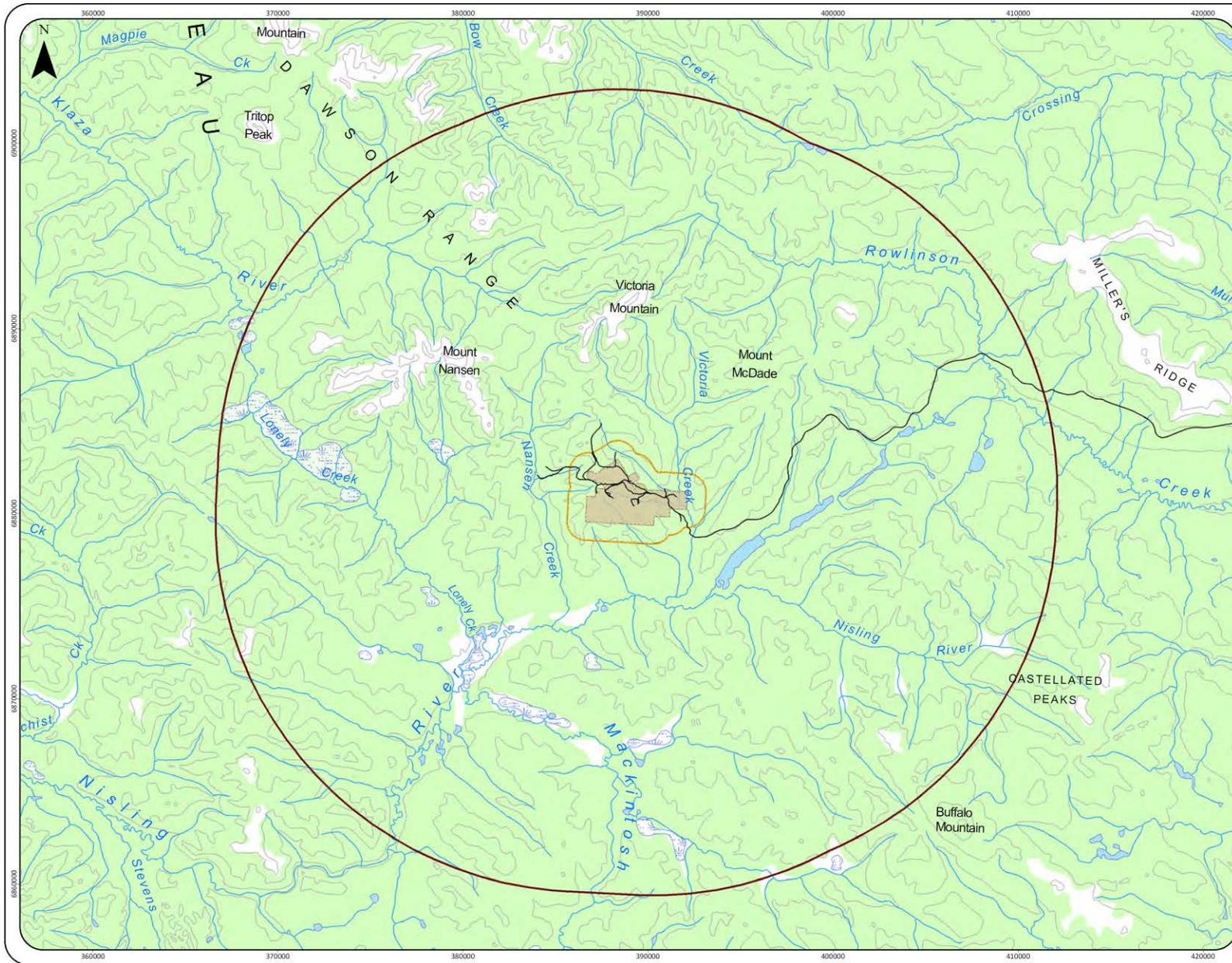
- Identify mitigation measures to avoid and/or minimize potential adverse effects;
- Ensure effects are monitored and management strategies are adapted so as to ensure that mitigation measures are applied and are efficient;
- Ensure that management of wildlife and wildlife habitat are in compliance with territorial and federal legislation.

2 Wildlife Present at the FMC

The wildlife Local Study Area (LSA) was defined using a 1-km buffer beyond the boundary of the Order-in-Council (OIC) area, creating a total area of 31 km² (see Figure 1). The LSA encompasses the Site footprint and is characterized by roads, mine infrastructure, engineered water bodies (e.g. tailings and seepage ponds, Brown-McDade pit) and areas of regenerating vegetation communities. The LSA also encompasses surrounding undisturbed areas that include the Dome, Pony, Back and Victoria creek valleys, upland spruce forests and low subalpine ridges that form the height of land above the Site.

The wildlife Regional Study Area (RSA) was defined as an area extending 20 km beyond the OIC area, resulting in a total area of 1,574 km² (see Figure 1). The RSA encompasses physiographic features that include the Nisling River valley in the south and in the north the Klaza River headwaters, Victoria Mountain, Mount Nansen and Mount McDade.

Woodland caribou and moose are commonly occurring ungulates in the LSA and RSA, while bison are rare visitors to the LSA and more commonly occurring in the southern RSA. Thinhorn sheep and mule deer have not been detected in the area. Bears (black and grizzly) occur in the RSA and LSA, as well as furbearers including Canada lynx, grey wolf, red fox, American marten and wolverine. Many species of birds occur in the LSA and RSA, including passerine, shorebird, raptor and waterfowl species. For further detail on wildlife and wildlife habitat in the vicinity of the Site, please refer to the environmental baseline section and appendices of the Care and Maintenance Project Proposal.



MOUNT NANSEN CARE AND MAINTENANCE

Figure 1

Wildlife Study Areas



Legend

Local Boundaries

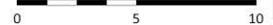
- Order in Council Area
- Wildlife Local Study Area
- Wildlife Regional Study Area
- Road
- Topographic Contour (150 m Interval)
- Watercourse
- Wetland
- Waterbody
- Vegetation

Data Source:

National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:250,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.

Datum: NAD 1983 CSRS UTM Zone 8N

Scale 1:200,000
Kilometers



March 16, 2017

2.1 Species at Risk

Several species of conservation concern occur or have the potential to occur in the LSA or RSA (Table 6.1.12 2). These species have been identified or protected under SARA (2002) or the Yukon Wildlife Act. (2002), or designated by either NatureServe Canada (2013), or by COSEWIC. SARA is a key federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. This act provides for the legal protection of wildlife species and the conservation of their biological diversity. The Yukon Wildlife Act regulates the hunting and trapping of wildlife in addition to protecting those listed in Schedule A (i.e. specially protected species). Some species and their populations may be considered as at-risk but are not currently afforded legal protection. Both NatureServe Canada and COSEWIC are committees that provide conservation ratings for species across Canada, recommending them for consideration under SARA or other regulations.

Four potentially occurring species within in the RSA are identified as Threatened, and 10 species are identified as Special Concern by COSEWIC or SARA. An additional 14 species are identified by NatureServe Canada as Vulnerable, one of which is specially protected under the Yukon Wildlife Act (Table 1).

Table 1: Species at Risk Confirmed or Potentially Occurring in the Local and Regional Study Areas

Common Name	Scientific Name	Confirmed or Potentially Occurring in LSA	Confirmed or Potentially Occurring in RSA	Conservation Status ^{A,B}	SARA Status ^C	COSEWIC Status ^D
Mammals						
Woodland caribou	<i>Rangifer tarandus caribou</i>	Confirmed	Confirmed		Special Concern	Special Concern
Wood bison	<i>Bison bison athabascaae</i>	Potential	Confirmed	Imperiled/ Vulnerable ^A	Threatened	Special Concern
Grizzly bear	<i>Ursus arctos horribilis</i>	Confirmed	Confirmed			Special Concern
Wolverine	<i>Gulo gulo</i>	Confirmed	Confirmed	Vulnerable ^A		Special Concern
Collared pika	<i>Ochotona collaris</i>	Potential	Potential	Vulnerable ^A		Special Concern
Birds						
Bank swallow	<i>Riparia riparia</i>	Potential	Potential			Threatened
Harlequin duck	<i>Histrionicus histrionicus</i>	Potential	Potential		Special Concern	Special Concern
Horned grebe	<i>Podiceps auritus</i>	Potential	Potential			Special Concern
Lesser scaup	<i>Aythya affinis</i>	Potential	Potential	Vulnerable ^A		
Osprey	<i>Pandion haliaetus</i>	Potential	Potential	Vulnerable ^A		
White-winged scoter	<i>Melanitta fusca</i>	Potential	Potential	Vulnerable ^A		
Surf scoter	<i>Melanitta perspicillata</i>	Potential	Potential	Vulnerable ^A		
Trumpeter swan	<i>Cygnus buccinator</i>	Potential	Potential	Vulnerable ^A / Apparently Secure. Specially Protected ^B		

Common Name	Scientific Name	Confirmed or Potentially Occurring in LSA	Confirmed or Potentially Occurring in RSA	Conservation Status ^{A,B}	SARA Status ^C	COSEWIC Status ^D
Olive-sided flycatcher	<i>Contopus cooperi</i>	Confirmed	Confirmed	Imperiled/ Vulnerable ^A	Threatened	Threatened
Canada warbler	<i>Wilsonia canadensis</i>	Potential	Potential		Threatened	Threatened
Common nighthawk	<i>Chordeiles minor</i>	Confirmed	Confirmed		Threatened	Threatened
Rusty blackbird	<i>Euphagus carolinus</i>	Potential	Potential		Threatened	Special Concern
Peregrine falcon	<i>Falco peregrinus</i>	Potential	Potential	Vulnerable ^A , Specially Protected ^B	Special Concern	Special Concern
Gyrfalcon	<i>Falco rusticolus</i>	Potential	Potential	Specially Protected ^B		
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	Potential	Potential	Vulnerable ^A		
American golden plover	<i>Pluvialis dominica</i>	Potential	Potential	Vulnerable ^A		
Lesser yellowlegs	<i>Tringa flavipes</i>	Potential	Potential	Vulnerable ^A		
Whimbrel	<i>Numenius phaeopus</i>	Potential	Potential	Vulnerable ^A		
Red-necked phalarope	<i>Phalaropus lobatus</i>	Potential	Potential	Vulnerable ^A		Special Concern
Short-eared owl	<i>Asio flammeus</i>	Potential	Potential	Vulnerable ^A	Special Concern	Special Concern
Northern shrike	<i>Lanius excubitor</i>	Potential	Potential	Vulnerable ^A		
Smith's longspur	<i>Calcarius pictus</i>	Potential	Potential	Vulnerable ^A		
Golden eagle	<i>Aquila chrysaetos</i>	Confirmed	Confirmed	Vulnerable ^A		

Notes:^A NatureServe Conservation Subnational Status Rating (NatureServe Canada, 2013)^B Specially Protected under Section 5 of the Yukon Wildlife Act (Environment Yukon, 2015)^C SARA Status (SARA, 2012)^D COSEWIC status (COSEWIC, 2014)

3 Mitigation and Monitoring Measures

3.1 General Mitigation Measures and BMPs

The following are some of the general mitigation measures and BMPs which will be applied at the Site:

- Immediate on-site communication of wildlife sightings to advise other personnel;
- Assess, delineate and avoid disturbance of habitats of ecological importance;
- Reduce footprint of works to the greatest extent possible (e.g. minimize vegetation clearing area);
- Wildlife will have the right-of-way (e.g. if wildlife encountered on road, the driver will stay as far back as possible and will wait for wildlife to cross road);
- Remediate all newly disturbed areas to the extent practicable (e.g. re-sloping and revegetation);
- Manage waste as per the Waste Management Plan (WMP) (e.g. use of bear proof containers);
- Educate on-site personnel and contractors about potential wildlife interactions and mitigation measures;
- Posting and enforcement of speed limits to minimize dust and noise, and reduce collisions;
- Implement construction activities outside of the migratory bird nesting window of May 1 to August 15, and pre-clear vegetation from planned construction areas during the non-nesting season.
- Prohibition against domestic pets;
- Prohibition against littering;
- Prohibition against approaching, feeding or otherwise harassing wildlife species; and
- Control of vegetation in the vicinity of tailings facility to discourage wildlife use and remove potential contaminants uptake pathways.

3.2 Monitoring Program

The Site has a Terrestrial Effects Monitoring Program and an Aquatic Effects Monitoring Program to monitor wildlife and potential effects, and includes thresholds that may trigger follow-up activities. For further detail, please refer to those programs (i.e. attached as Appendix 7E and Appendix 7C of the Mount Nansen Care and Maintenance Project Proposal)