Waste Management Plan

Summary of Changes

a) A description of the management and treatment methods for Drilling Waste, including the practices in different seasons (Section 4.4);
b) A description of all chemicals and additives that may be used in the drilling program (Section 2);
c) A description of the locations of Drilling Waste Sumps, relative to water features, and the rationale for their respective locations (Section 4.4);
d) Updated distance to high water mark of any waterbody when depositing Drilling Waste from 30 to 100 m (Section 4.4);
e) The description of the closed systems, and how the Drilling Waste are captured and transported to sumps (Section 4.4);
f) Updated frequency of removing hazardous waste on site (Section 4.1);
g) Updated description of the containers of chemical storage to prevent wildlife access (Section 4.1);
h) Description of the management of drill cuttings (Section 4.4); and
i) Updated Table 3 to reflect revised list of waste disposal sites.

Contents

1 Summary

This management plan has been prepared as a condition of the land use permitting and water licensing processes for a confirmation drilling program in the Pine Point District. This plan identifies the different: ways in which waste minimization activities will be used, types of waste that might be produced as part of the permitted activities, and methods of waste handling and disposal.

2 Introduction

Pine Point Mining Limited (PPML) will be conducting confirmation drilling in the Pine Point District (Figure 1). Confirmation of resources and mineral potential is critical to enhance the viability of the project economics. PPML's policy is to comply with all existing laws and regulations to help ensure protection of the environment. In accordance with the Mackenzie Valley Resource Management Act and subject to regulations, terms and conditions, a 5-year Land Use Permit (LUP) MV2017C0024 was granted by the Mackenzie Valley Land and Water Board (MVLWB) on July 20, 2017 for certain exploration activities in the Pine Point District with an expiry date of July 19, 2021. The activities associated with that Permit and its associated Plans are independent of this Plan. This Waste Management Plan will become effective upon issuance of a new Land Use Permit and Water License for the Confirmation Drilling Program.

All confirmation drilling will be carried out by contactors. PPML activities associated with the drill program will include supervision of the program and recovery and analysis of the drill core. All contractors will be required by contract to comply with this Waste Management Plan and with the conditions spelled out in the Land Use Permit and Water License.

Waste management activities typically undertaken in PPML's drilling programs (ordered most to least preferred) include:

Source reduction	Elimination or decreases of the volume/mass of waste generated by using alternative methods or processes
Reuse	Use of a product more than once for the same use or different purpose, either on site or off site
Recycle/Recovery	Process by which materials otherwise destined for treatment or disposal are collected, processed, and/or remanufactured into the same or different products either onsite or offsite
Treatment	A method which reduces the volume, mass and/or toxicity prior to disposal. Common methods of treatment are thermal, physical, chemical, and biological processes
Release to the Environment	As a last resort, waste disposal may be required when it is not technically or economically feasible to apply preceding waste management activities. Disposal is commonly associated with the final storage location for waste at approved disposal facilities.

Source: MVLWB 2011

This Waste Management Plan identifies the types of waste generated by confirmation drilling and describes how each will be managed – including the infrastructure required.

The use of chemicals and drill additives is required to complete the process in drilling programs. A list of quantities associated with chemicals and additives anticipated for this program are included in Table 1.

Table 1. Chemicals that may be used in the project.

List of Drill Additives		
Brand Name	Generic Use	Quantity
AMC Betta Gel (Bentonite Clay)	Bentonite	5 - 50lb bags/day/drill
BARAD-399 (Bentonite Clay)		
Di_Corp_Bentonite – Extra High Yield Bentonite		
Talik Time Tablets (bentonite clay)		
Portland Cement-LaFarge	Cement	4 - 50 lb bags/day/drill
AMC CR650 (Polymer ground stabilizer)	Polymer Stabilizer	1 - 20L pail/day/drill
AMC K-Ion (Ground stabilizer)		
AMC Poly-Plug (Polymer ground stabilizer)		
AMC PureVis (Polymer ground stabilizer)		
DD 2000 (polymer ground stabilization)		
DD 955 (Polyethylene glycol)		
Extreme Kwik-Seal (Natural and Polymer Fibers)		
Quik-Trol Gold (Polymer ground stabilizer)		
Sand Drill (Polymer ground stabilizer)		
AMC 133-X DEC (Mineral Oil)	Rod Lubricant	1 - 5L tube/day/drill
AMC linseed Soap		
AMC Rod Grease Xtra Tacky MAR 2016		
Big Bear Rod Grease		
810 BLACK WIDOW ROD GREASE		
ES Thread Compound (vegetable oil lubricant)		
Extreme TORQ-EEZ (Canola Oil Derivative)		
LINDSEED SOAP		
Torqueless (vegetable oil lubricant)		
SODA ASH F.G.	Stabilizer	Less than 1 - 20L pail/day/drill

3 Identification of Waste Types

In confirmation drilling activities, the likely sources of waste materials are associated with the dozers, drills and camp. The types of waste expected to be generated through PPML's confirmation drilling activities are listed in Table 2. PPML does not expect that the project will generate other types of waste.

Table 2. Waste Types Potentially Generated at Pine Point Drilling Sites

Waste	Quantity per Month 2018	Max Quantity 2018 -2020	Transport from Site
Hazardous or Potentially Hazardous			
Contaminated Soils	<150 kg	3,000 kg	Sealed 5 gallon buckets or impermeable mega bags or equivalent secure containers transported to contractors' permitted site as produced
Hydrocarbon contaminated matting, rags, empty oil	<400kg	400kg per month	Stored in sealed impermeable 12 yard dumpster on site prior to transport. Transported as needed

containers and non-liquid waste			to permitted contractor site in Hay River
Used oil, fuels, lubricants, solvents, other liquids	<700 L	800 L per month	Transported as produced to permitted contractor site in Hay River in sealed containers
Non-Mineral			
Domestic Refuse (including food waste, paper, cardboard, and plastics)	Two 30 yard metal dumpsters equivalent to one garbage truck	Two 30 yard metal dumpsters equivalent to one garbage truck	Disposed of daily in animal proof metal dumpster, transported Hay River as needed (one per week)
Scrap Metal	<1 kg per day	<5 kg per day	Removed to recycle as produced
Tires	Max of 1	Max of 1	Taken to disposal as accumulated
Sewage	45 gallons per PortaPotty (up to 9 potties)	900 gallons/month	Accumulated and disposed as referenced in Section 4.3
Mineral			
Drill cuttings	<25,000 kg	maximum of 1,000 kg per day	Handled daily as referred to in Section 4.4

4 Management of Each Waste Type

PPML prefers to work with contractors that have experience in the NWT. PPML will require its contractors to comply with permit conditions and follow its management plans. Furthermore, PPML understands that the inspectors have a helpful role in ensuring that all contractors adhere to the permit; PPML will cooperate with the Inspectors. The following procedures apply waste management measures to reduce wildlife attractants, reclamation costs and health hazards. Some of the best practices for managing waste are outlined below.

4.1 Management of Hazardous or Potentially Hazardous Waste

Hazardous waste material generated from these drilling operations will be temporarily stored at an Inspector-approved, secure location. In addition, the contractor will implement the following procedures:

a) Store hazardous materials in clearly marked containers with lids (i.e., Drums). Other chemicals used at the site (e.g. bags of cement, bentonite, etc.) will be stored in sealed packaging.
b) Remove hazard materials from the site daily to secure storage container and as needed to an approved facility for receiving hazardous waste (i.e., Hay River).
c) Complete an appropriate waste manifest form for transporting hazardous waste and submit this to the PPML project manager who will, in turn, relay the information to the ENR Hazardous Waste Specialist.

To minimize the risk of chronic and accidental spills and their impacts to the environment with respect to the transportation, storage, use and disposal of petroleum products and hazardous substances, fuel storage areas at the drill pads will be lined with an impervious liner as a preventative measure against potential future soil and groundwater contamination from fuel spills. Additional measures that must be observed related to the safe handling and transfer of fuel are identified in the permit and water license.

Further discussion of safe fuel handling procedures and spill mitigation measures are identified in the Spill Contingency Plan.

4.2 Management of Solid Waste

Solid waste will be transported off-site for disposal. The Town of Hay River has stated that the Town landfill will accept solid waste from this project at its landfill. The contractor will implement the following procedures for management of solid waste:

a) Store non-combustible solid waste in secure containers.
b) Progressively remove solid wastes from the site and dispose at an approved facility for receiving solid waste (i.e., Hay River); use empty trucks to back-haul solid waste.
c) At closure, remove all wastes from the site and dispose at a designated waste facility.

4.3 Management of Liquid Waste

Portable Toilets will be available, in good condition, at each drill pad. These will be emptied as needed, but at least once per month. Sewage removed from the portable toilets will be disposed of at an approved facility for receiving and treating sewage waste. The Town of Hay River has stated that the Town will accept liquid waste from this project at its lagoon (see Attachment A). The portable toilets will be sited at least 30 metres from any waterbody unless otherwise instructed by an Inspector.

4.4 Management of Drill Cuttings

While the core drilling process is designed to minimize waste products that are associated with recovery of drill core, a small fraction of the rock drilled through will be washed to the surface as “cuttings”. Cuttings will be deposited and buried in a shallow excavation or natural depression located more than 100 metres from the ordinary high-water mark of any water feature or other areas deemed suitable by the Land Inspector. Shallow excavations may be established at drill sites to meet the needs for cuttings disposal. These will be established with the full knowledge and approval of the Inspector. PPML will work with the Inspectors to identify appropriate sites for safe disposal of drill cuttings.

Sump locations will be selected because they: fall within PPMLs leases and claims, are in close proximity to the area of most interest as confirmation drilling targets, and are located on previously disturbed ground with easy access. The Inspector will approve these locations prior to their use for cuttings disposal. These locations are not close to natural water features. Three cuttings disposal areas will be created in suitable previously disturbed ground (Figure 2). These will be used when there are no suitable natural depressions or shallow excavations close to the drill pads that could be used. PPML will receive approval from the Inspector for cuttings disposal locations before drilling commences at each pad. The more centralized disposal areas are likely to be used more often in the winter months when snow cover makes it difficult to identify suitable alternatives closer to drill sites.

In winter when drilling in wet ares, cuttings will be captured and stored in secure containers and subsequently moved to a cutting disposal site for burial. Care will be taken to ensure that cuttings disposal pits are appropriately sized, that all cuttings are fully buried, and that the site is appropriately restored.

In the summer season, drill cuttings will be placed in a sump and allowed to dry in the sump. Once the moisture has evaporated from the cuttings the cuttings will be buried and the sump reclaimed.

During freshet, the depressions where cuttings will be placed and buried will be appropriately sized to handle the solids and liquids, including meltwater. Operations during the freshet will be shut down to avoid the potential for creating ruts on the ground, therefore no cuttings will be deposited into the sumps during freshet.

PPML's contractors will use systems and methods that contain the cuttings for this project. The systems will collect the cuttings at the drill hole collar by using a metal containment collar or an associated small depression at the drill collar. All returned material will be pumped into a decant tank at the drill or pumped directly into a shallow excavation or a natural depression to be buried when dry. The decanted water can be recycled back to the drill for reuse. The decant system will allow collection of cuttings to be transported to a central disposal area if there are no suitable sites near the drill pad.

There will not be any mine tailings in the drilling program. Therefore, tailings containment is of no concern to this project. The drilling program will not generate mine waste rock. Therefore, mine waste rock management is of no concern to this project.

5 Infrastructure Required for Waste Management

The following infrastructure is required to manage waste generated from this program:

1. Pump Truck - Truck with an appropriately sized tank for transporting and disposing of liquid waste temporarily stored in the holding tanks.
2. Excavated Pit – Area where cuttings can be stored during winter months and buried when weather permits.
3. Drill Cuttings/Muds Tanks – Used for temporary storage of cuttings/mud prior to burial.
4. Waste Disposal Facilities - registered and approved facilities that will receive waste materials generated through these operations (see Table 3).
5.

Table 3. Approved Waste Receiving Facilities

Waste Type	Facility, Waste Generator Number and Location
Solid Waste	Town of Hay River, Hay River, NT
Liquid (sewage) waste	Town of Hay River, Hay River, NT
Hydrocarbon-contaminated soil	Town of Hay River (NTR023), Hay River, NT
	KBL Environmental Ltd. (NTR134), Yellowknife, NT
Used oil and waste fuel (Burners)	Bassett Petroleum (NTR100) Hay River Disposals (Hay River)
	Carter Industries (NTR107), 652395 Alberta Ltd. (L&P Disposals), High Level, AB
All other hazardous waste types including contaminated water	KBL Environmental Ltd. (NTR123), Yellowknife, NT

Note: The most current list is available from: NWT: Hazardous Waste Specialist, Environment Division, GNWY
Alberta: http://esrd.alberta.ca/waste/hazardous-waste-management/hazardous-waste-approvals.aspx
BC: http://www.hazwastebc.com/

6 Monitoring and Evaluation

PPML staff will oversee contractors' operations and will work with them to make sure they are following this plan. The GNWT inspector has a key role in evaluating and monitoring the drill program and ensuring that waste is being handled and disposed of safely and properly. PPML project management will maintain open lines of communication with the Inspector.

7 Contingencies

PPML will work with the Inspector to address any non-compliance issues that may arise with the drilling contractors. Should unforeseen circumstances or natural events arise, PPML and its contractors will: #1 attempt to find a solution that falls within the allowable activities clearly defined in the permit; #2 contact the Inspector to seek advice on an appropriate response; and #3 seek a permit modification (last resort).

8 Acronyms and Definitions

AANDC	Aboriginal Affairs and Northern Development Canada
ENR	Environment and Natural Resources (GNWT)
GNWT	Government of the Northwest Territories
LUP	Land Use Permit
NA	Not Anticipated

9 References

Government of the Northwest Territories. Environment and Natural Resources. 2003. Used Oil and Waste Fuel Management Regulations - Plain Language Guide. 13p: http://www.enr.gov.nt.ca/sites/default/files/guidelines

Government of the Northwest Territories. 1998. Guideline for the General Management of Hazardous Waste in the NWT. 23p: http://www.enr.gov.nt.ca/sites/default/files/guidelines

Mackenzie Valley Land and Water Board. 2011. Guidelines for Developing a Waste Management Plan. 24p: http://mvlwb.com/sites/default/files/documents/MVLWB-Guidelines-for-Developing-a-Waste-Management-Plan-Mar-31_11-JCWG.pdf

Mackenzie Valley Land and Water Board. 2011. Water and Effluent Quality Management Policy. 20p. A: http://mvlwb.com/sites/default/files/documents/MVLWB-Water-and-Effluent-Quality-Management-Policy-Mar-31_11-JCWG.pdf

Figure 1. Project Area.

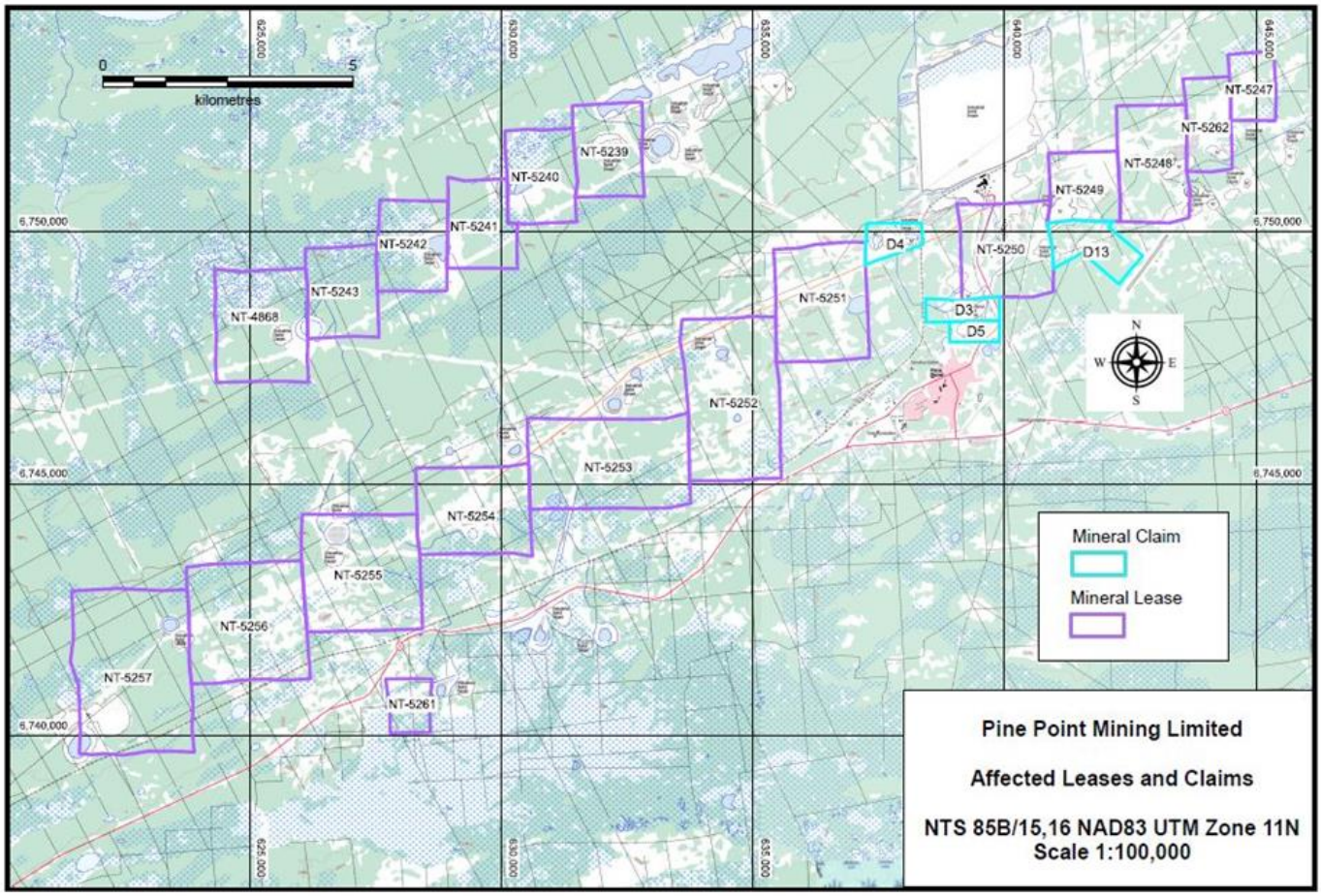
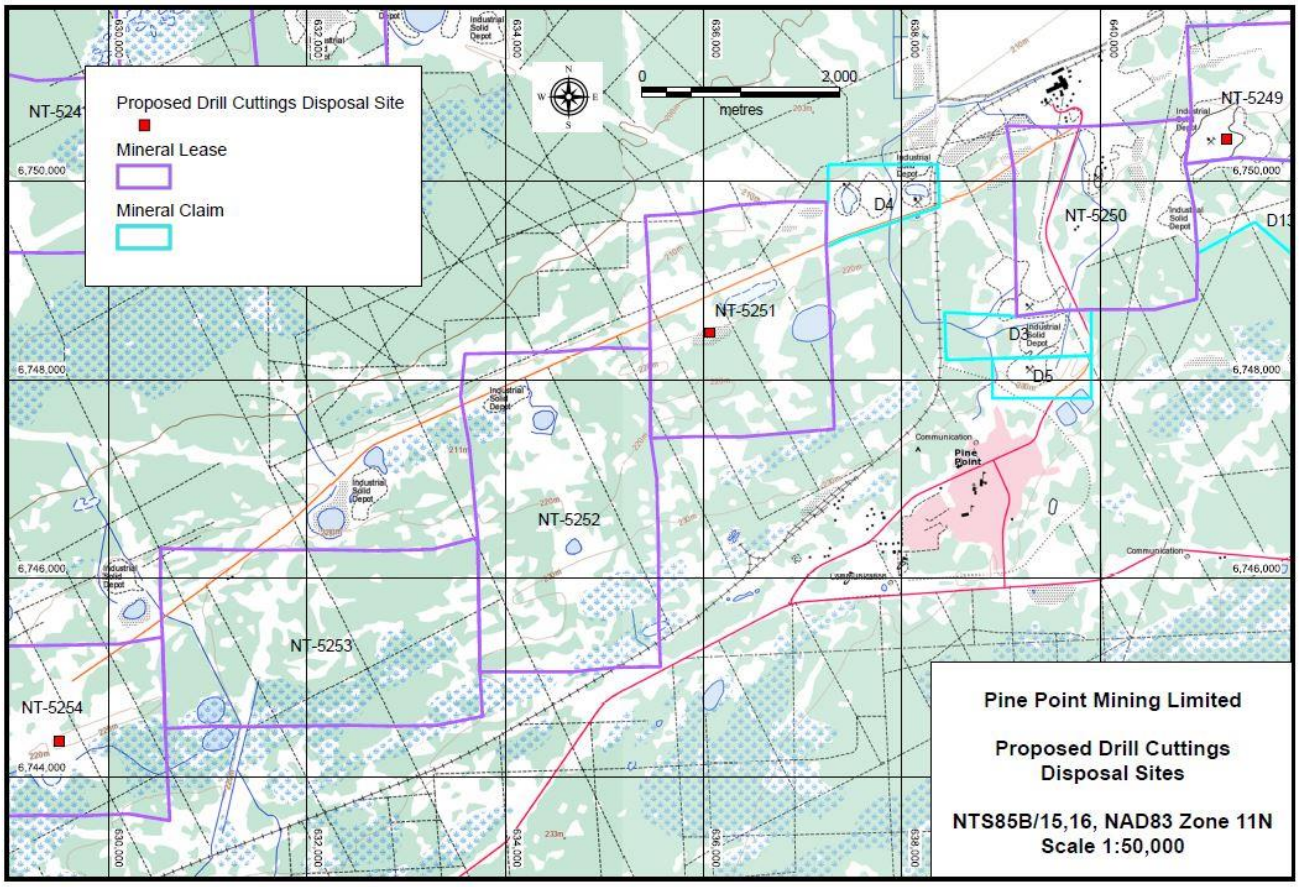


Figure 2. Proposed Drill Cuttings Disposal Locations



Attachment A.

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February 15th, 2018

This letter will confirm that Pine Point Mining Limited can deposit wastes in the Hay River landfill and lagoon arising from its drilling operations. The waste products generated throughout the program are anticipated to be in small volumes.

Please contact me if you have any questions regarding this letter of confirmation.

Sincerely,

Judy Goucher
SAO

cc. Tim Smith, Pine Point Mining Limited