Volume 2 -Waste Management Plan Framework



Waste Management Plan Framework for the Pine Point Project



Purpose

This framework document is provided in support of the Mackenzie Valley Environmental Impact Review Board Environmental Assessment Initiation Package for the Pine Point Project (the Project). The intent of this document is to describe how this environmental management plan relates to the Project, what information will be provided as the Project develops and to list applicable guidelines and standards. It was developed with the available Project information. This document is not intended for approval but is provided for review purposes and will be refined as the regulatory process proceeds.

Version History

Pine Point Mining Limited is responsible for the distribution, maintenance, and updating of this document. Changes that do not affect the intent of the document will be made as required (e.g., phone numbers, names of individuals). The table below indicates the version of this document, and a summary of revisions made.

Revision #	Section(s) Revised	Description of Revision	Issue Date
0	-	Framework version for MVEIRB EA Initiation Package	15 December 2020

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Abbreviations

Abbreviation	Definition	
Cominco	Cominco Ltd.	
GNWT-ENR	Government of the Northwest Territories, Environment and Natural Resources	
MVLWB	Mackenzie Valley Land and Water Board	
NWT	Northwest Territories	
Osisko Metals	Osisko Metals Incorporated	
PPML	Pine Point Mining Limited	
Project	Pine Point Project	
TDG	Transportation of Dangerous Goods	

Units of Measure

Unit of Measure	Definition
%	percent
km	kilometre
L	litre



1 Introduction

1.1 Background

Pine Point Mining Limited (PPML) is the sole proponent of the Pine Point Project (Project) and is a 100% owned subsidiary of Osisko Metals Incorporated (Osisko Metals). Pine Point is a brownfield site and the location of the historical Pine Point Mine managed by Cominco Ltd. (Cominco), which was operated between 1964 and 1988. In February 2018, Osisko Metals acquired PPML and became owner of the Project. PPML is proposing to re-open the Pine Point Mine site to mine mineralized material and produce concentrates of zinc and lead for shipment to independent smelters worldwide

1.2 Purpose

The Waste Management Plan Framework is a requirement of the Environmental Assessment (EA) Initiation Package (MVEIRB 2018). It is intended to provide a preliminary outline of approaches to managing Project waste. The Waste Management Plan Framework is meant to provide a basis for PPML to engage with regulatory agencies and Indigenous communities and elicit feedback on planned waste management activities and facilities for the Project. A final Waste Management Plan will be submitted to the Mackenzie Valley Land and Water Board for approval following the EA, and will incorporate feedback obtained through the EA.

The goals of this Waste Management Plan Framework are to:

- Identify waste streams and areas for waste reduction or reuse.
- Comply with all regulations, whether federal, territorial, or local.
- Reduce the environmental impact of operations.
- Minimize impacts on land use by other groups.
- Protect aesthetics in the camp area.
- Identify, label, store and transport all hazardous waste and dispose of at appropriate licensed disposal facilities.
- Meet PPML Environmental Policy commitments.

PPML will comply with applicable territorial and federal legislation. The relevant major acts, regulations and guidelines include:

Territorial

- Environmental Protection Act
- Used Oil and Waste Fuel Management Regulations
- Transportation of Dangerous Goods Act
- Waste Reduction and Recovery Act
- Waters Act and Regulations
- Guidelines for Developing a Waste Management Plan (MVLWB 2011)



- Guidelines for Ambient Air Quality Standards in the Northwest Territories (GNWT-ENR 2014)
- Guideline for the Design, Operation, Monitoring, Maintenance and Closure of Petroleum Hydrocarbon-Contaminated Soil Treatment Facilities in the Northwest Territories (LWBMV 2020)
- Guideline for Hazardous Waste Management (GNWT-ENR 2017)
- Guideline for the Management of Waste Batteries (GNWT-ENR 1998a)
- Guideline for the Management of Waste Antifreeze (GNWT-ENR 1998b)
- Guideline for the Management of Waste Solvents (GNWT-ENR 1998c)
- Guideline for the Management of Waste Paint (GNWT-ENR 1998d)

Federal

- Transportation of Dangerous Goods Act
- Canadian Environmental Protection Act
- Mackenzie Valley Resource Management Act

This Waste Management Plan framework has been developed to support the EA Initiation Package to be submitted to the Mackenzie Valley Environmental Impact Review Board. An updated Waste Management Plan for the Project will be developed during the permitting phase of the Project, or earlier if required, once additional Project details are available, and will incorporate relevant feedback and commitments made by PPML during the environmental assessment review process.

1.3 Project Contact

Primary Pine Point Mining Limited Contact	Andrew Williams	
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1.4 Roles and Responsibilities

The Environmental Manager will be ultimately responsible for the success of this plan and approves all relevant policies and documents, auditing, action planning and the verification process. The Environmental Manager is responsible for the implementation of this plan including overall management of the plan, internal reporting, compliance, and adaptive management.



Other relevant personnel will be responsible for the effectiveness of this Plan by completing required training and supporting the implementation of and compliance to this Plan, as appropriate to their roles, as set out by this Plan.

1.5 Project Details

The Project is located in the South Slave Mining District, south of Great Slave Lake in the Northwest Territories (NWT), approximately 175 km directly south of Yellowknife, 75 km east of Hay River, and 53 km southwest of Fort Resolution (Figure 1). It is located on a brownfield site resulting from Cominco's historical mining and milling operations and includes the historical town of Pine Point and associated working accommodations. The closest major transportation hubs are Yellowknife and Hay River. Access to the Project is presently via all-weather Highways 5 and 6.

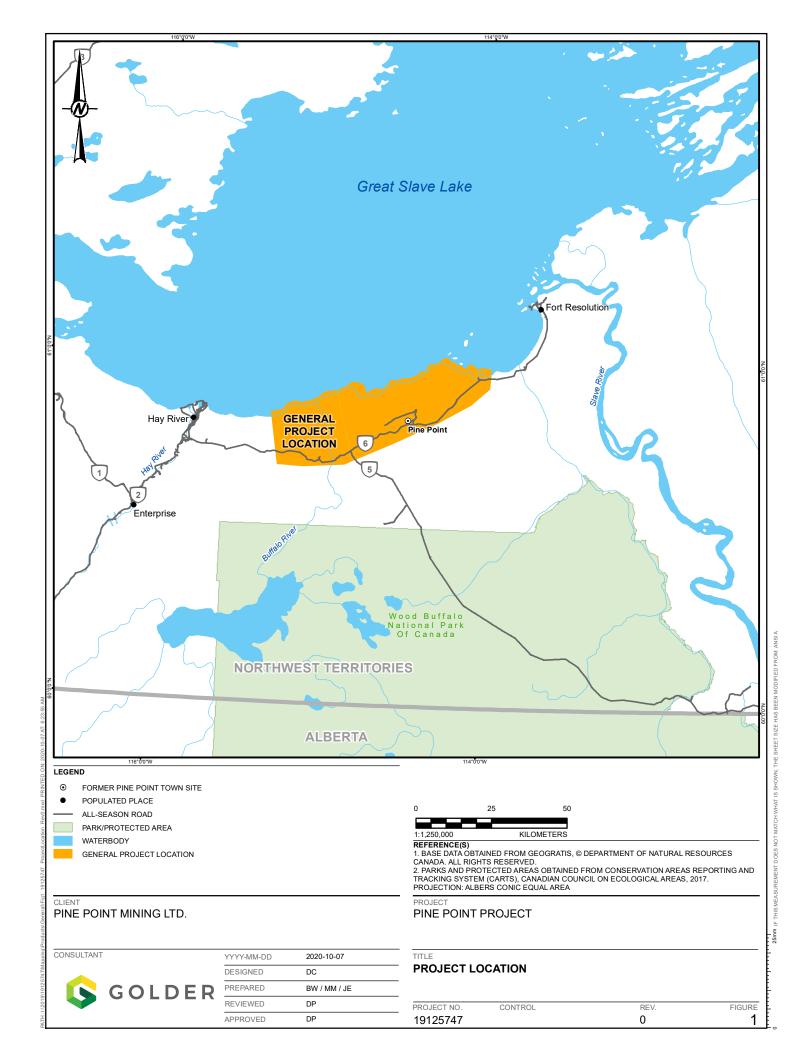
The Project will consist of open pit and underground mining for zinc and lead, construction and operation of up to three pre-concentration plants, construction and operation of a processing mill (or "concentrator"), storage and management of processed mineralized materials and waste materials, water management, construction and operation of ancillary support facilities including a camp for workers, and the shipping of zinc and lead concentrates to global markets. Further details are provided in the Project Description (Volume 1).

Maps indicating the Project footprint, infrastructure, storage locations of each hazardous material, probable spill locations and direction of flow on land and in water, catchment basins, locations of all response equipment, topography, approved disposal sites, and any other important on- or off-site features will be included in subsequent versions of the Waste Management Plan when these details have been finalized.

2 Waste Stream Hierarchy

A waste management hierarchy is useful in identifying what waste management strategies are more desirable. The methods and definitions are based on the *Guidelines for Developing a Waste Management Plan* (MVLWB 2011). In order of preference (from the most preferable to the least), the options to be considered for each type of waste or potential waste generated by the Project are:

- **Source Reduction** Elimination or decrease of the volume, mass, and toxicity of waste generated.
- Reuse Reuse of a product more than once for the same or different purpose, either on or
 off site.
- Recycle/Recovery Materials otherwise destined for disposal are collected, processed, and remanufactured whether on or off site. For this Project, recyclables (e.g., beverage containers, tin cans, plastics, and glass) will be collected and handed into an appropriate recycling facility.
- Treatment Method to reduce the volume, mass, and/or toxicity prior to disposal.
- Release to the Receiving Environment Least desirable option, often involving landfilling or other storage and containment options.





3 Definitions

Under the authority of the *Environmental Protection Act*, the Government of the Northwest Territories, Environment and Natural Resources (GNWT-ENR) has produced a series of Environmental Guidelines for the management of specific hazardous wastes commonly produced by NWT industries. The Environmental Guidelines for the management of waste solvents, hydrocarbons, batteries, antifreeze, asbestos, paint, and ozone depleting substances have been referred to during the preparation of this plan.

The *Guideline for Hazardous Waste Management* (GNWT-ENR 2017) in the NWT provides definitions of terms used in the *Environmental Protection Act* and Environmental Guidelines and describes the principles of acceptable waste management practice. The following definitions are particularly important to this document.

Hazardous Waste: A contaminant which is no longer used for its original purpose and is intended for recycling, treatment, disposal, or storage and is:

- a dangerous good according to the *Transportation of Dangerous Goods Regulations* (TDG Regulations)
- leachable waste
- hazardous to the aquatic environment
- waste containing dioxins and furans
- contaminated soil/snow/water from a contaminated site
- drilling waste
- listed waste
- any other waste deemed hazardous

Hazardous waste does not include a material that is:

- authorized for on-site disposal by the applicable regulator for the specific activity in which the hazardous waste was generated
- household hazardous waste being transported to a municipal collection depot
- included in Class 1, Explosives or Class 7, radioactive materials of TDG Regulations
- exempted as a small quantity
- an empty container
- goods that are defective, surplus, or otherwise not usable for their intended purpose and that are in the process of being returned directly to a manufacturer or supplier



Empty Container: A container from which all:

- Hazardous waste has been emptied, to the greatest extent possible, using regular handling procedures. Its contents shall not exceed 0.1 percent (%) of the container's original capacity or 0.2 litres (L), whichever is less. This does not include toxic gas in Class 2.3 of the TDG Regulations or containers which previously came in direct contact with:
 - Substances in Class 6.1 Packing Group I materials of the TDG Regulations.
 - Severely toxic contaminants.
- Flammable vapours have been reduced to less than twenty percent (20%) of the lower explosive limit for the material by purging, venting, or by the introduction of an inert material.

Small Quantity: Hazardous waste that is generated in any month is not greater than the amount in column II of Schedule V corresponding to the type of hazardous waste, or the aggregate quantity accumulated at any one time is not greater than the amount in column II of Schedule V (GNWT-ENR 2017) corresponding to the type of hazardous waste.

Schedule V: Small Quantity Threshold for Types of Hazardous Waste

Column I: Hazardous Waste Types	Column II: Amount	
1. All hazardous waste unless otherwise specified	5 Kg or L	
2. Dangerous Goods Class 6.1 (Packing Group 1)	1 kg or L	
3. Waste batteries	50 kg	
4. Contaminated snow/water	20 kg or L	
5. Contaminated Soil	500 kg	
6. Waste Glycol	20 L	
7. Incinerator ash	20 Kg	
8. Waste paint	20 kg or L	
9. Used Oil	20 L	
10. Leachable waste containing severely Toxic Contaminants	1 kg or L	
11. Severely Toxic Contaminants in pure form	n/a hazardous waste in any quantity	

4 Identification of Waste Types

Waste stream management involves the appropriate identification, segregation, and handling of different waste streams. The types of waste that may be generated during the Project can be categorized as:

- non-hazardous, non-mineral wastes
- recyclable and reusable material
- non-hazardous, combustible waste
- non-hazardous, non-combustible waste



- hazardous waste
- wastewater

A summary of the types of waste is provided below. As additional Project details become available, subsequent versions of the Waste Management Plan will include additional details regarding the types of wastes that will be generated by the Project and primary disposal methods.

4.1 Non-Hazardous, Non-Mineral Wastes

Non-hazardous, non-mineral wastes generated during construction will primarily include domestic wastes, vegetation from clearing operations, bulky metals (vehicles, equipment), and rubber products (tires). Disposal method to be included.

4.2 Recyclable and Reusable Material

All material appropriate for recycling (i.e., beverage containers, tin cans, plastics, and glass) will be identified, segregated, bagged, and shipped to an appropriate recycling facility.

Some select items can be sent back to the manufacturer for recycling or reuse. Large, reusable containers such as drums and metal parts from heavy equipment that can be sent back to the supplier for reconditioning and reuse.

4.3 Non-Hazardous, Combustible Waste

Clean wood waste, which is not painted and is not pressure treated can be incinerated on site. In addition to clean wood waste, food waste, paper and cardboard can also be incinerated. Should incineration of waste occur, the make and model of the incinerator and the standard operating procedure including training requirements and record keeping will be appended to this plan. Any ash generated from incineration of waste will be sampled and tested for leachable metals as well as dioxins and furans to confirm the absence of contaminants prior to disposal in solid waste facilities in the NWT.

4.4 Non-Hazardous, Non-combustible Waste

Food waste, combustible attractants and clean wood waste and cardboard will likely be incinerated on-site. Waste material which cannot be incinerated or recycled / reused will be identified, segregated, packaged and may be shipped off site for disposal or, if inert, can be placed in the landfill on site.

4.5 Hazardous Waste

The mining operation will use various hazardous materials including diesel, gasoline, lubricating and waste oil, antifreeze/glycol and propane, as required for heavy equipment operation, heating, back-up power generation, and small vehicles. All chemicals and fuels will be brought to site by trucks and will be stored in a secured area with adequate secondary containment. The Spill Contingency Plan will document mitigation to reduce the likelihood of spills and document spill response measures. Hazardous waste will be stored on-site in a secure area and removed by a suitably licenced hazardous waste handler for proper disposal at a licenced facility.

The GNWT-ENR defines hazardous waste in Schedule V of the *Guideline for Hazardous Waste Management* (GNWT-ENR 2017). This includes, among others, waste batteries, waste paint, waste glycol, incinerator ash, and used oil above certain quantities.

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Based on the GNWT-ENR (2017) guidelines, on-site materials which are considered hazardous waste are:

- diesel and gasoline
- waste paint and solvents
- · antifreeze, glycol, and propane
- lubricating and waste oil

These materials will be stored and transported in accordance with the above-mentioned guidelines and standard practice.

4.6 Waste Water

Sewage from the office, camp, and other potential locations will be sent to a treatment facility. Treated domestic effluent will be discharged to the septic field or may be discharged to a waterbody if it meets effluent criteria. This will be further described in an updated version of the plan during the permitting phase of the Project, or earlier if required, once additional Project details are available.

5 Waste Management Facilities

Various wastes will be generated during the construction and operation of the Project. It is essential that these wastes are handled, stored, and managed in a safe and environmentally responsible manner. Waste management facilities will be constructed to meet guidelines. Some wastes may also be transported off-site to municipal or third-party waste management facilities. A summary of the primary waste management facilities is provided below.

5.1 Waste Transfer Storage Area

The waste transfer storage area will be established near the process plant/accommodation complex for the handling and temporary storage of wastes and recyclables. Non-food waste products that are not incinerated or placed in the landfill immediately will be collected, sorted, and placed in designated areas within the storage area. The waste transfer storage area will include a lined and enclosed pad for the collection and subsequent return of hazardous waste to suppliers or to a hazardous waste disposal facility. It will be fenced to prevent wildlife from entering and human access will be controlled.

5.2 Landfill

The active landfill will be located within a combination of completed open pits, small areas of the mine rock piles, tailings disposal areas, or overburden stockpiles. Some landfill material may be shipped off site to a licensed facility when required. The landfill will receive inert bulk waste that cannot be recycled or re-used such as conveyor belts, tires, chute liners, and building debris. Incinerator ash from the combustion of kitchen and office waste will go to the landfill.

Landfill waste will be buried to minimize exposure to wind and care will be taken to prevent the presence of wastes that could attract wildlife. The landfill in the mine rock piles will represent a single landfill in operation at any given time, which will be covered and buried as mine rock piles or overburden piles are completed. As the landfill area(s) would be in the waste rock storage facilities or overburden piles, any potential runoff and seepage from the landfill area will be contained within the Project site.



5.3 Landfarm

A landfarm for the bioremediation of hydrocarbon contaminated solids from spills may be constructed, following the applicable guidelines (LWBMV 2020). This dyke bounded cell would be located adjacent to the fuel storage area and would consist of an arctic geo-membrane liner placed under fill material. Hydrocarbon-contaminated soils would be placed in the landfarm and spread during summer months. Any soil that has subsequently reached acceptable levels of hydrocarbon degradation would be removed and reused or transferred to the landfill.

Arctic conditions may impede the remediation of contaminated soil through natural microbiological processes. If remediation of hydrocarbon-contaminated soils in the landfarm proves to be ineffective and no other remediation system has proved effective in northern climates, the contaminated soils will be collected and shipped to suitable licensed disposal facilities.

5.4 Incinerators

Two dual-chamber, diesel-fired incinerators will be provided for the incineration of combustible waste, including kitchen waste. The incinerators can also be used to burn waste oil. Incinerator ash will be collected in sealed, wildlife-resistant containers, and transported to the landfill.

Each modular unit will be pre-assembled and will be housed in a pre-engineered module accessible from the accommodation complex or the waste management transfer storage area. The facility will be capable of meeting the demand of the construction workforce housed in the construction camp. The transport of waste to nearby landfill sites for disposal is also an option if required. Currently, removal of some combustible wastes to an off-site facility is also being considered to limit the amount of waste incinerated at the Project.

5.5 Domestic Sewage Treatment System

A sewage treatment system to handle a peak load of up to 500 people will be provided as part of initial construction. Treated domestic effluent will be discharged to the septic field, other treatment system or discharged to the aquatic environment if it meets effluent criteria. If may also be shipped off-site if required. Sewage sludge will be dewatered and incinerated on-site or transported to a licensed facility.

5.6 Monitoring, Inspections, Maintenance, and Reporting

An inspection program will be required for all waste storage areas at the Project to identify any non-compliances and to confirm any applied Best Management Practices are working as intended. Inspections must verify that:

- Secondary containment is in place and adequate (i.e., no debris / water build-up present limiting containment).
- Waste containers are labelled as to their contents and date.
- Waste storage areas housekeeping is adequate.
- Waste is not stockpiled and is being regularly transported off site for disposal.
- There are no signs of leaks or spills.
- There is no evidence of wildlife being attracted to waste storage areas.
- Landfill site is monitored and inspected.

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Inspections will be documented, and records retained. Where non-conformances are noted during inspection, corrective action must be taken, and a record of completion retained.

6 Training

PPML will be responsible for providing training to all employees and contractors. A training session on the Waste Management Plan will be held for all employees and contractors involved in environmental monitoring. The training session will review the Plan and include information on:

- · individuals' roles and responsibilities
- identification of the various types of waste
- instructions on how waste streams are separated and managed

TDG Regulation training will be provided to any employees responsible for the coordination of hazardous waste (i.e., dangerous goods) shipments off-site. Only TDG trained employees will prepare, review, and sign waste manifests, in accordance with regulatory requirements.



7 References

Acts and Regulations Cited

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Appendix A Project Maps

To be provided in final Waste Management Plan.



Appendix B: Schematic of Temporary Waste Storage at Camp Location

To be provided in final Waste Management Plan.



Appendix C: Additional Information

To be provided in final Waste Management Plan.

- 1) Waste management log form
- 2) Sewage management system (manufacturer, operating procedure, draft log)
- 3) Additional waste management facility approvals and/or hazardous waste operators