Voyageur Exploration Ltd.

The Tharsis Rare Earth Element Project

2022 Land Use Permit Application

Waste Management Plan

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Introduction

This *Waste Management Plan* is effective from the date of issuance of the Land Use Permit currently being applied for by Voyageur Exploration Ltd. (Voyageur) on its Tharsis property located approximately 170 km northeast of Yellowknife, NWT, until the expiry of said permit. The Tharsis campsite is tentatively located at the following coordinates: 63° 54' 34.8" North and 113° 09' 19.7" West. The Waste Management Plan has been prepared for internal company use and distributed to the Wek'eezhii Land and Water Board for approval, as part of Voyageur's Land Use Permit application. Copies and updates of this Plan may be obtained by contacting:

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The purpose of Voyageur's Waste Management Plan is to outline procedures for reduction, recycling, storage, and disposal of waste materials at the Company's exploration camp in the Squalus Lake area of the Northwest Territories. This plan provides the protocol for storage and disposal of solid waste, sewage, and greywater that will minimize health and safety hazards, environmental damage, wildlife attractants, and reclamation costs.

Scope of Waste Management Plan

Voyageur's waste management plan is an integral part in upholding the company's environmental policy and goal to minimize health and safety hazards, environmental damage, wildlife attractants, and reclamation costs. Disposal of waste from the Tharsis camp will comply with all relevant acts, regulations and permit requirements and incorporate the principles of source reduction, reuse, and recycling. This plan will cover the waste management operations at the Tharsis camp for the period of the Land Use Permit for which Voyageur is currently applying.

Company Environmental Policy

Table 1 presents regulations that will be strictly enforced. The sensitivity of the northern environment and its importance to First Nations people in terms of livelihood and cultural significance are very important to the employees of Voyageur. It is paramount that we set and maintain high environmental standards. Our performance is monitored by government agencies, representatives of Aboriginal organizations, nearby communities, and by our peers.

Table 1 Environmental regulations.

Item	Description
1	No unnecessary destruction of vegetation.
2	No harassment or feeding of wildlife. All food and garbage will be stored in a manner that will not attract wildlife. Animals conditioned to obtaining food from humans can become dangerous and may have to be destroyed.
3	No pollution of the campsites or work area – all garbage from the field will be returned to camp daily for disposal in the appropriate manner. All campsites will be kept clean. Land use inspectors can inspect the campsite at any time. They have the power to suspend operations if standards are not met. Be cautious when transferring fuel from drums to fuel tanks to minimize fuel spillage. Any leaking drums or cylinders around the camp are to be reported immediately to the project manager or the camp manager. Drip trays and double-walled containment will be used wherever possible.
4	Be careful with fire – all fires (for the incineration of waste) will be extinguished completely. Various containers will be provided around camp for the disposal of cigarette butts.
5	Fishing licenses are required in most areas of Canada. Purchase one before you arrive in camp. Responsible fishing is encouraged – keep what you catch and eat what you catch. The local fish can be returned to the water if simple lures (e.g., flies, barbless) are used and minimal damage is done on catching.
6	No unauthorized firearms are allowed in a Voyageur camp. Hunting is not allowed by either personnel or contractors, while working out of the camp. It is not a part of the Voyageur activities, and most land use licenses do not permit it.

Project Description

Figure 1 presents the location of the Tharsis Property. During the operation of the exploration program, progressive restoration of field sample and drill sites will occur on an ongoing basis. Diamond-drilling may consist of up to 100 drill holes per year, with plans for the first year consisting of up to 4 drill holes. Small-diameter reverse-circulation (RC) drilling is proposed as an alternative to infill between diamond holes to reduce costs and use of water. While these lightweight rigs have many positive aspects to them, they provide minimal geological and geotechnical information and are best used in conjunction with diamond-drilling. Water for the drilling will be the nearest source (i.e., waterbody or watercourse) to the drill targets. Water sources that are within 1 km will be considered for pumping directly to the drill. The diamond-drilling is expected to use 35 m^3/day to 45 m^3/day per drill. The RC drilling will use virtually no water; however, 0.5 m^3/day is allocated for each drill hole.

The temporary tent camp is planned for a central location on the property as a base of operations for exploration activities. Capacity for the camp will be to a maximum of 30 people with the average being around 15 for the majority of the exploration program. A small sump is to be dug for wastewater and will be filled in upon completion of the program. The location of this sump will be at a minimum of 100 m from the highest water point of any local water sources to ensure no risk of contamination. Garbage will be sorted into combustible and non-combustible, and the non-combustible garbage and human waste will be flown to Yellowknife for proper disposal. A temporary landing strip to accommodate aircraft as large as an ATR 42-320 may be prepared on the lake-ice adjacent to the camp, to minimize frequency of flights required and reduce environmental impacts. There is potential ground-access to the property via Wekweètì or the Tibbit-Contwoyto Winter Road. If access to the property via either point becomes needed, Voyageur will conduct an Archaeological Impact Assessment to guide the routes of these access trails/roads. At the end of the program, if a renewal of the permit is not sought, all unnecessary equipment will be removed for handling elsewhere. Any potential spill sites will be inspected and cleaned up. All camp infrastructure (tents/shacks) will be completely removed and the land returned to a stable condition. All fuel storage sites and caches will be removed at the end of the project. Any contamination will be cleaned up as per the Spill Contingency Plan.

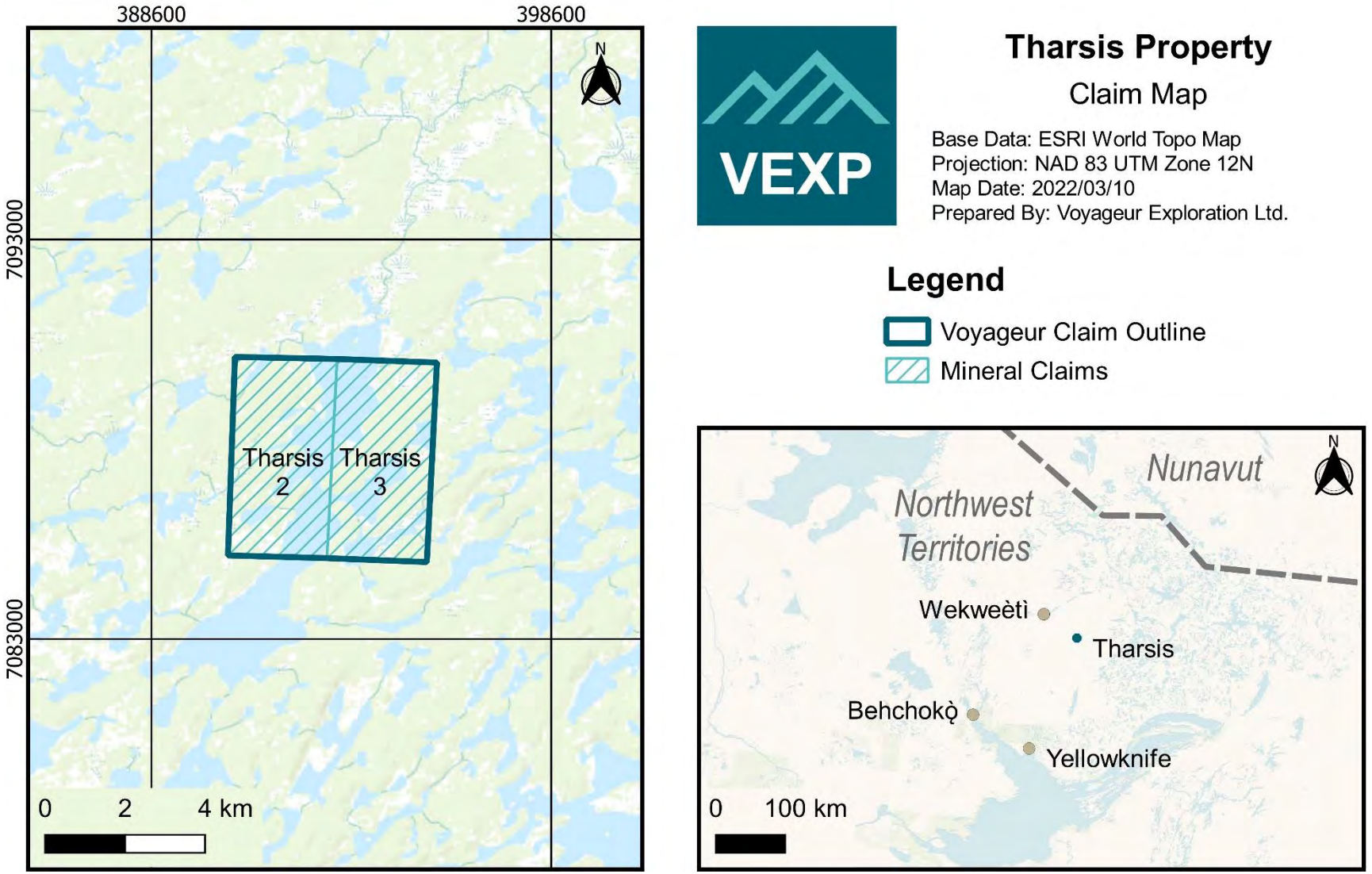

Figure 1 Location of the Tharsis Property.

Site Information

The Tharsis campsite is tentatively located at the following coordinates: 63° 54' 34.8" North and 113° 09' 19.7" West. Capacity for the camp will be to a maximum of 30 people with the average being around 15 for the majority of the exploration program. Table 2 presents a tentative list of structures to be erected at the campsite. Up to 30 bottles (100 lbs) of propane are to be stored in camp. At the fuel cache, up to 150 drums (205 L) of aviation fuel, diesel, and gasoline are to be stored. All fuel is to be stored within a secondary containment. The cache will be located a minimum of 100 m from the normal high-water mark, and in such a manner that no fuel can enter any such waterbody. Daily inspections of fuel will be conducted to ensure there are no leakage or spills. Spill kits will be provided at the camp and will be restocked after each use.

Table 2 Campsite structures.

Item, Purpose	Quantity	Dimensions (m)	Area (m^2)
Tent, Sleeper	3	4.3 x 4.8	20.6
Tent, Kitchen	1	4.3 x 9.8	42.1
Tent, Dry	1	4.3 x 12.2	52.5
Tent, Office	1	4.3 x 4.8	20.6
Tent, Core Logging	1	4.3 x 4.8	20.6
Tent, Washroom	1	4.3 x 4.8	20.6
Shack, Generators	1	2.4 x 2.4	5.8

The camp will be constructed on level, dry, durable ground. The ground is to be gravelly, which will allow surface water to drain, preventing erosion and destruction of any sensitive areas. No clearing of trees will be necessary during camp construction. The camp would be accessible year-round by float/ski-equipped aircraft, and transportation to and from the project area will be by boat or helicopter. All sumps and pits will be constructed in locations at least 100 m from the high-water mark of any waterbody, and fuel is to be stored at least 100 m from the high-water mark of any waterbody.

Waste Type Identification

All waste management practices will comply with legislation, regulations and conditions of the Land Use Permit and will incorporate the principles of source reduction, reuse, and recycling. Through source reduction, wherever possible, products and materials will be chosen to decrease or eliminate the amount of waste that will be generated by the company. All glass, metal, and plastic products that are suitable to be reused or recycled will be separated in camp for eventual backhaul to Yellowknife and appropriate disposal or recycling.

Hazardous or Potentially Waste

Table 3 presents a list of important hazardous waste telephone numbers. A small amount of hazardous or potentially hazardous waste may be produced in the form of ash from the incinerator, batteries (AA, AAA, 9 volt), light-bulbs, paint, used oil or spill clean-up materials. These used materials will be sorted and stored in a well-marked, sealable metal container or containers until such time as they are backhauled to Yellowknife for recycling or disposal in an approved facility. Voyageur will register with the Government of NWT, Department of Environment as a Hazardous Waste Generator, and all carriers and receivers of these materials will be informed of their need to register. All carriers will have proper documentation in the form of a waste manifest. Please see the attached Fuel Spill Contingency Plan and Appendix I for further details.

Table 3 Important hazardous waste telephone numbers.

Contact	Number
24 Hour Spill Report Line	(867) 920-8130
Voyageur Representative	(306) 531-6022 or (306) 536-3599
WLWB – Ryan Fequet	(867) 765-4589
GNWT – Clint Ambrose	(867) 767-9188 or (867) 446-0769

Non-Hazardous Waste

Figure 2 presents the solid waste management stream (INAC Northern Land Use Guidelines 2011). It shows the separation of waste that is to take place in camp to expedite the process of incinerating combustible waste or recycling/disposal of non-combustible waste once these materials have been backhauled to Yellowknife.

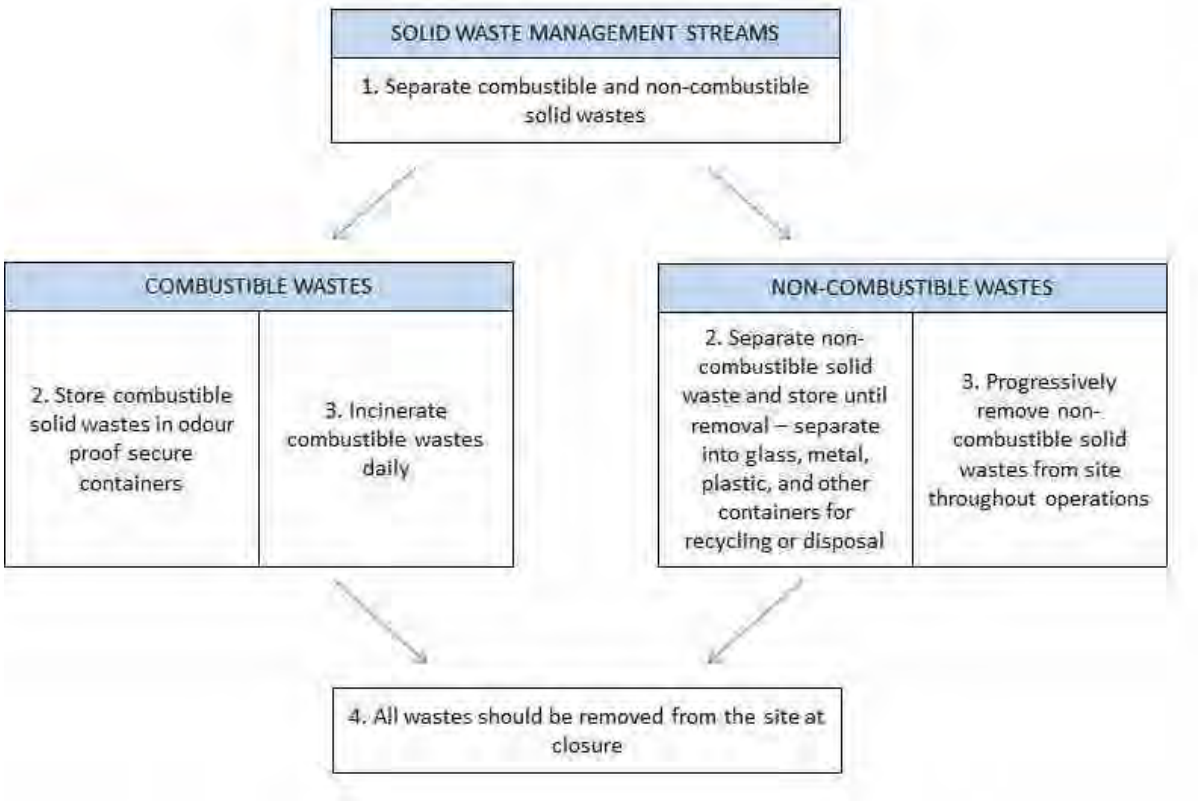

Figure 2 Solid waste management streams (INAC Northern Land Use Guidelines 2011).

Separate, sealed animal-proof containers for combustible waste (paper, cardboard, untreated wood, food scraps – if using incinerator), non-combustible recyclables (glass, metal, plastics), non-combustible non-recyclables (food scraps – if using burn barrel, rubber, treated wood) and hazardous waste (batteries, paint, used oil, light bulbs) will be provided at camp and clearly labeled. Combustible materials will be incinerated daily, and non-combustible recyclables will be thoroughly cleaned to avoid attracting wildlife before being placed in animal-proof metal containers. Putrescible waste will be properly packaged by double-bagging in industrial-grade garbage bags to prevent leakage and odor. All animal proof containers will be regularly cleaned to prevent odor and attracting wildlife. All

waste will be stored in an enclosed structure until being transported to Yellowknife for appropriate disposal. All non-combustible solid waste that has been collected will be backhauled to Yellowknife and disposed of or recycled at an approved facility. As removal of waste will be on-going throughout the field season, only a minimal amount of waste will be stored at camp. At the end of each field season, all remaining waste will be removed and the sump/pit will be filled in with soil/gravel.

Mineral Waste

This initial program will involve approximately 2,300 m drilled from 2 setups, with two holes drilled from each setup, to a maximum depth of 800 m. The use of two drill rigs is currently envisioned. Core diameter will be either NQ or NQ3. All collar locations may be on land or ice. As per normal diamond-drill operation, a temporary pump-shack will be set up beside the nearest water source (lake or river); a maximum of 35 m^3 to 45 m^3 will be used per shift (totaling maximum 70 m^3 to 90 m^3 per 24-h period for two rigs). Water will be recycled, and drill-cuttings collected in either a tank or a natural depression upon completion of drilling. Casing, which would be sealed and pulled, or may be left in some or all of the holes and cut at ground surface. The drill-core will also remain on-site (at the camp location) and be stored in an organized fashion on sturdy racks.

Brush and Tress

Drill pads are anticipated to be placed near shorelines or on ice; however, some brush and trees may need to be cut down to make room for drill pads further away from the lake in the future. In this event, vegetation will be cut and pushed aside to make room for the drill. After the drilling is completed, the vegetation will be pushed back and laid flat.

Waste Type Management

Table 4 presents the types and quantities of waste. For each of the following waste types, the source of generation, estimated volume and treatment or disposal method of waste which may be produced during the life of the Land Use Permit is covered.

Table 4 Types and quantities of waste.

Waste Type	Characteristics	Potential Environmental Effects	Estimated Volume	Treatment and Disposal Methods
Solid Waste (Combustible)	Paper, cardboard, untreated wood, food scraps (if using incinerator).	Potential for litter.	Minimal with a crew on avg. of 15 people. Estimated waste of less than 1 kg/person/day.	Incinerated in modified burn barrel or double chambered incinerator daily, ash to be collected and stored in sealed container and disposed of at approved facility in Yellowknife.
Solid Waste (Non-Combustible)	Food Scraps (if using burn barrel), Plastic, metal, glass, treated wood, rubber.	Improper cleaning and storage can attract wildlife, potential for litter.	Minimal with a crew of 15 people. Estimated waste of less than 1 kg/person/day.	Collected and stored in sealed containers, then transported to Yellowknife and recycled or disposed of at approved facility.
Hazardous Waste	Ash, paint, used oil, batteries, light bulbs.	Potential for contamination of ground or water, litter.	Minimal, < 0.01 m^3/day.	Collected and stored in sealed containers, then transported to Yellowknife and recycled or disposed of at approved facility.
Sewage	Human waste.	Potential for water contamination.	Estimated < 0.1 m^3/day.	Pactos expected to be used but may use pit privies which would be built > 100m from high-water mark, treated with bacterial reducing agent or lime. Pit to be filled and covered with > 30cm of soil at end of project.
Grey water	Domestic waste water (kitchen, shower).	Improper drainage can cause erosion and damage to sensitive areas. Food particles can attract wildlife.	Maximum 1 m^3 day.	Gravity-fed disposal to a natural depression or constructed sump > 100 m from the high-water mark. Food particles to be removed or filter used. Sump to be backfilled at end of each field season.
Construction Materials	Scrap metal, wood.	Potential for litter.	Minimal, expected to be removed and reused by contractor.	Transported to Yellowknife and recycled or disposed of at approved facility.

Waste Management Infrastructure

Infrastructure required at camp for the management of waste includes an incinerator, greywater sump, and sealable containers with labels. Combustible, non-hazardous waste will be incinerated daily in a modified burn-barrel or double chambered incinerator. The burn-barrel or incinerator will be located downwind from the camp and placed on gravelly or rocky ground with no vegetation or combustible material in the vicinity. The burning process will be attended at all times. If using a burn-barrel, food waste will be securely stored until removal for offsite disposal at a licensed facility. Ash from the incinerator will be collected and barreled and backhauled to Yellowknife for appropriate disposal. Prior to burning, combustible waste will be stored in a sealable container to avoid attracting wildlife.

Figure 3 shows the proper construction of a greywater sump (INAC Northern Land Use Guidelines 2011). Greywater from kitchen waste water and showers will be discharged into a sump constructed at least 100m from any high-water mark, which will allow for slow infiltration of water into the soil. The sump will be inspected daily to remove any food particles and will be treated with lime or crystal lye to prevent being an attractant to wildlife. Once the sump is full or camp operations cease, the sump will be back-filled.

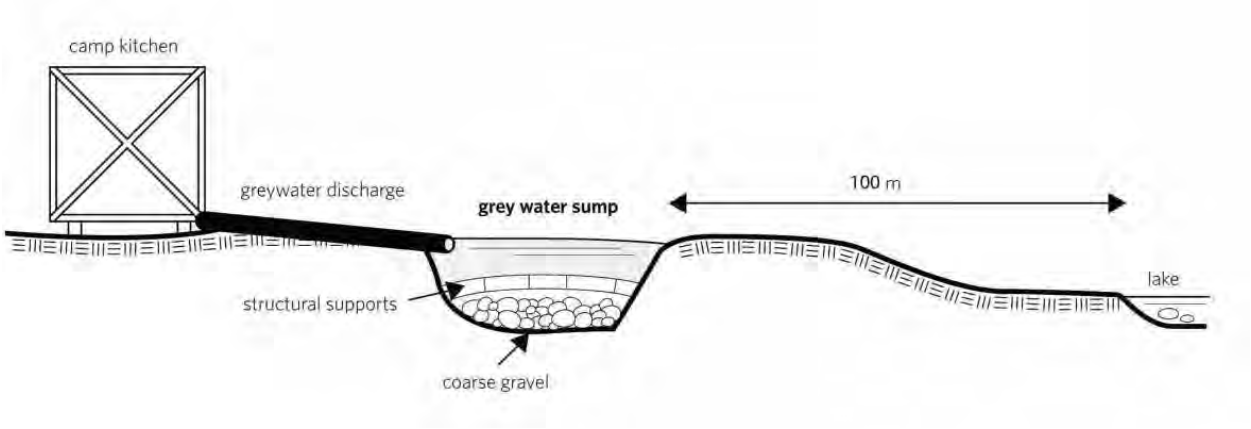

Figure 3 Solid waste management streams (INAC Northern Land Use Guidelines 2011).

All non-combustible waste will be divided at camp into metal, plastic, glass, food waste and hazardous waste containers. Putrescible waste will be properly packaged by double-bagging in industrial grade garbage bags to prevent leakage and odor and bags will be stored in a sealable container until backhauled. Containers will be stored in an enclosed structure before removal to Yellowknife.

Appendix I – Environmental Guideline for the General Management of Hazardous Waste in the NWT

Guideline for the General Management of Hazardous Waste in the NWT

February 1998

Guideline for the General Management of Hazardous Waste in the NWT

1 Introduction

Waste is produced in the normal course of operation of any industrial, commercial or institutional operation. Because of their chemical, physical or biological properties, some wastes are more dangerous than others. These are known as a hazardous waste and require special handling and disposal to prevent impact on human health and the environment.

This guideline has been developed by the Environmental Protection Service of the Department of Resources, Wildlife and Economic Development. Its intent is to:

- provide information for the proper management of hazardous waste in the Northwest Territories,
- increase awareness of hazardous waste in the Northwest Territories, and
- establish a "cradle to grave" monitoring system for hazardous waste from generation to final disposal.

Section 2.2 of the *Environmental Protection Act* (EPA) gives the Minister of Resources, Wildlife and Economic Development of the Government of the Northwest Territories (GNWT) the authority to develop, coordinate and administer guidelines. This guideline complements existing acts and regulations concerning hazardous waste which should be consulted for interpretation and application. Section 2.5 of the guideline provides additional information on regulatory roles and responsibilities.

This guideline is for the general management of hazardous waste and should be read in conjunction with applicable specific hazardous waste guidelines. Contact the Environmental Protection Service for a listing of these guidelines.

1.1 Definitions

Carrier	Any person engaged in the transport of hazardous waste whether or not for hire or reward.
Commercial	Actions undertaken for hire or reward.
Commissioner's Land	Lands in the Northwest Territories that have been transferred by Order-in-Council to the Government of the Northwest Territories. This includes highways, block land transfers and most lands within municipalities.
Consignor	A person who offers a consignment of hazardous waste for transport.
Contaminant	Any noise, heat, vibration or substance and includes such other substances as the Minister may prescribe that, where discharged into the environment, (a) endangers the health, safety or welfare of persons,

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

Environmental Protection Act

Dangerous goods — Any product, substance or organism included by its nature or by the *Transportation of Dangerous Goods Regulations* (TDGR) in any of the classes listed in the schedule provided in the *Transportation of Dangerous Goods Act* (TDGA).

Transportation of Dangerous Goods Act (Canada)

Empty container — A container that has been emptied, to the greatest extent possible, using regular handling procedures, but it's contents shall not exceed 1% of the container's original capacity or 2 litres, whichever is less. This does not include containers which previously contained mercury or class 2.3, 5.1, or 6.1 materials of TDGR.

Generator — The owner or person in charge, management or control of a hazardous waste at the time it is generated or a facility that generates hazardous waste.

Hazardous waste — A contaminant which is a dangerous good that is no longer used for its original purpose and is intended for recycling, treatment, disposal or storage.

A hazardous waste does not include a contaminant that is:
(a) household in origin;
(b) included in class 1, Explosives or class 7, Radioactive materials of TDGR;
(c) exempted as a small quantity;
(d) an empty container; or
(e) intended for disposal in a sewage system or by landfilling that meet the applicable standards set out in schedules I, III or IV of the Guideline for Industrial Waste Discharges in the NWT.

Hazardous waste management facility — A facility which is used for the collection, storage, treatment, recycling or disposal of hazardous waste.

Incompatible waste — Hazardous wastes which, when in contact with one another or other substances under normal conditions of storage or transportation, could react to produce heat, gas, fire, explosion, corrosive substances or toxic substances.

Landfilling — The deposit of waste, on land, as described in the GNWT Department of Municipal and Community Affairs' document Guidelines for the Planning, Design, Operation & Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories.

Long term storage — The storage of hazardous waste for a period of 180 days or more but does not include materials in transit.

Manage To handle, transport, store, recycle, treat, destroy or dispose of hazardous waste.

Receiver A person to whom a quantity of hazardous waste is being or intended to be transported. Also referred to as a consignee.

Sewage system A system for the collection, transmission, treatment or disposal of any liquid waste containing animal, vegetable, mineral, human or chemical matter in solution or in suspension.

Small quantity Hazardous waste that is generated in an amount that is less than 5 kilograms per month if a solid or 5 litres per month if a liquid; and where the total quantity accumulated at any one time does not exceed 5 kilograms or 5 litres. This does not apply to wastes that are mercury or in classes 2.3, 5.1 or 6.1 of TDGR. These wastes must be generated in an amount less than 1 kilogram per month if a solid or 1 litre per month if a liquid; and where the total quantity accumulated at any one time does not exceed 1 kilogram or 1 litre.

Transport authority The regulations controlling the management of hazardous waste under that mode of transport. These include:

Road and rail - *Transportation of Dangerous Goods Act* (TDGA) *and Regulations* (TDGR).

Air - *International Civil Aviation Organization Technical Instructions* (ICAO).

Marine - *International Maritime Dangerous Goods Code* (IMDG).

TDGA/TDGR The *Transportation of Dangerous Goods Act and Regulations* (Canada).

Treatment or Treat The handling or processing of a hazardous waste in such a manner as to change the physical, chemical or biological character or composition of the hazardous waste in order to eliminate or reduce:
(a) one or more environmental hazard of the waste; and/or
(b) the volume.

2 Roles and Responsibilities

2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the natural environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. By practise EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the *Environmental Protection Act* (EPA) and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

EPS monitors the movement of hazardous waste from the generator to final disposal through use of a tracking document called a waste manifest. A waste manifest form must accompany all hazardous waste in transit regardless of the means of transport. In order to complete the manifesting requirements, all parties (the generator, carrier, receiver) must be registered by EPS and the registration number entered in the appropriate location on the waste manifest form. Registration numbers and waste manifest forms are available from EPS.

Under the EPA, the *Spill Contingency Planning and Reporting Regulations* set the standards for reporting spills of contaminants and preparing spill contingency plans.

2.2 Generators of Hazardous Waste

The responsibility for proper waste management rests with the generator and should be considered part of the cost of doing business.

The generator is ultimately responsible for ensuring hazardous waste will be properly managed from the time it is generated to final disposal. Waste must be properly stored, transported, treated and disposed. Contractors can manage waste on behalf of the generator however, the generator is responsible for ensuring, in advance, that the waste management method is acceptable.

In general, the generator is responsible for the following:

- Classifying, labelling and storing the hazardous waste properly.
- If waste is to be transported off site the generator should:
- register as a generator of hazardous waste;
- ensure a waste manifest is properly completed and accompanies the shipment; and
- ensure the waste is transported by a registered hazardous waste carrier to a registered receiver.
- Registering their hazardous waste management facility, if required.
- Ensuring the proper disposal of hazardous waste by an acceptable method.

- Ensuring workers are trained in the management of hazardous waste including emergency response in the event of a discharge.
- Complying with all other regulatory requirements for hazardous waste management including transportation, occupational health and public health.

2.3 Carriers of Hazardous Waste

Carriers must be registered with EPS prior to transporting hazardous waste. Hazardous waste must be transported in accordance with the appropriate transport authority: *Transportation of Dangerous Goods Regulations* (TDGR); *International Civil Aviation Organization* (ICAO) or *International Maritime Dangerous Goods Code* (IMDG). TDGR requires that drivers be trained in the aspects of transporting dangerous goods related to their assigned duties.

2.4 Receivers of Hazardous Waste

Receivers (consignees) of hazardous waste in the NWT must be registered with EPS as a receiver. The operator of a hazardous waste management facility in the NWT may be required to register the facility with EPS. Section 3.4 provides information on registering a hazardous waste management facility.

2.5 Other Regulatory Agencies

The following agencies are involved in activities relevant to hazardous waste management in the NWT:

The Motor Carrier Services of the GNWT Department of Transportation is responsible for administering the *Transportation of Dangerous Goods Act and Regulations* (NWT). The Department is also responsible for driver, vehicle and load safety under additional transport legislation.

Under the NWT *Safety Act*, *Occupational Health and Safety Regulations* address the safety of workers and the work place. The Act states that the employer shall maintain their establishment and take all reasonable precautions to ensure the safety and health of every person in the establishment. The Regulations also prescribe standards for protective clothing and equipment to be used by workers. *Work Site Hazardous Materials Information System Regulations* (WHMIS) were adopted to ensure employee training and safe storage and handling of controlled products at the employer's work site. Consultation with a Safety Officer from the Prevention Services Division of the Workers Compensation Board is the responsibility of every waste generator or employer.

The Office of the Fire Marshal has authority over the storage of flammable, combustible and hazardous materials under the National Fire Code. Consult with the GNWT Department of Municipal and Community Affairs` regional Fire Marshal or your community Fire Chief.

Waste management activities may affect public health. Environmental Health Officers of the regional Public Health Boards should be consulted regarding requirements under the *Public Health Act*.

The GNWT Department of Municipal and Community Affairs (MACA) administers Commissioner's Lands. MACA's responsibility includes the granting of leases, licences and land use permits on these lands and is also involved in the planning, funding, operation and maintenance of municipal infrastructure such as landfills and sewage treatment systems.

Indian and Northern Affairs Canada is responsible for hazardous waste management on federal lands through the *Territorial Lands Act* and *Northwest Territories Waters Act*.

Environment Canada is responsible for the management of hazardous waste from federal facilities and lands under the *Canadian Environmental Protection Act* (CEPA). CEPA regulates the release to the environment and storage of polychlorinated biphenyls (PCBs) under the *Chlorobiphenyls Regulations* and *Storage of PCB Material Regulations*. Because they regulate these areas, sections 3.2, 3.3, 3.4 and 4.4 of this guideline do not apply to PCBs. International shipments of waste dangerous goods are monitored under the *Export and Import of Hazardous Waste Regulations*.

The National Energy Board regulates frontier exploration, drilling, production and inter-jurisdictional transmission in the oil and gas industry. The management of land based drill sumps is in conjunction with the appropriate land regulator.

Natural Resources Canada has the authority to administer explosives under the *Explosive Act*. Atomic Energy Control Ltd. (AECL) administers the handling and disposal of radioactive materials in Canada. The Atomic Energy Control Board (AECB) licenses institutions and companies to possess and use radioactive materials.

Under land claim agreements, renewable resource management institutions have been given broad authority for land use planning, impact assessment, and administration of land and water activities in settlement areas outside municipal boundaries. Through the setting of terms and conditions in licensing and permitting procedures, such institutions will have authority over waste disposal.

Figure 1 provides a flow chart to assist in determining the primary regulatory contact for hazardous waste management. Contact the Environmental Protection Service if assistance is required.

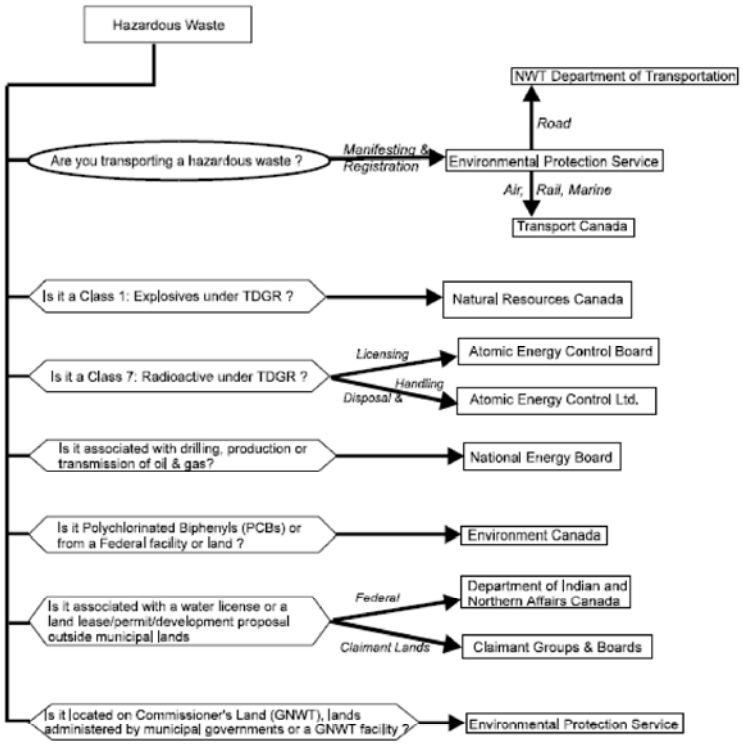

Figure 1: Primary Regulatory Contact for Hazardous Waste Management

3 Storage and Management of Hazardous Waste

3.1 General

The definition of hazardous waste in this guideline incorporates the term "dangerous goods" which is defined in the Transportation *of Dangerous Goods Act* (Canada). The Transportation of Dangerous Goods Regulations (TDGR) has a system for classifying dangerous goods. Because the term "dangerous goods" is used in the definition of hazardous waste, the classification system used in TDGR can be applied to hazardous waste. Appendix A indicates the 9 chemical classes used.

Hazardous waste must not be mixed or diluted with any substance or divided into smaller quantities to avoid meeting the definition of a hazardous waste.

Figure 2 is a flow chart illustrating the decision process for managing a hazardous waste under this guideline.

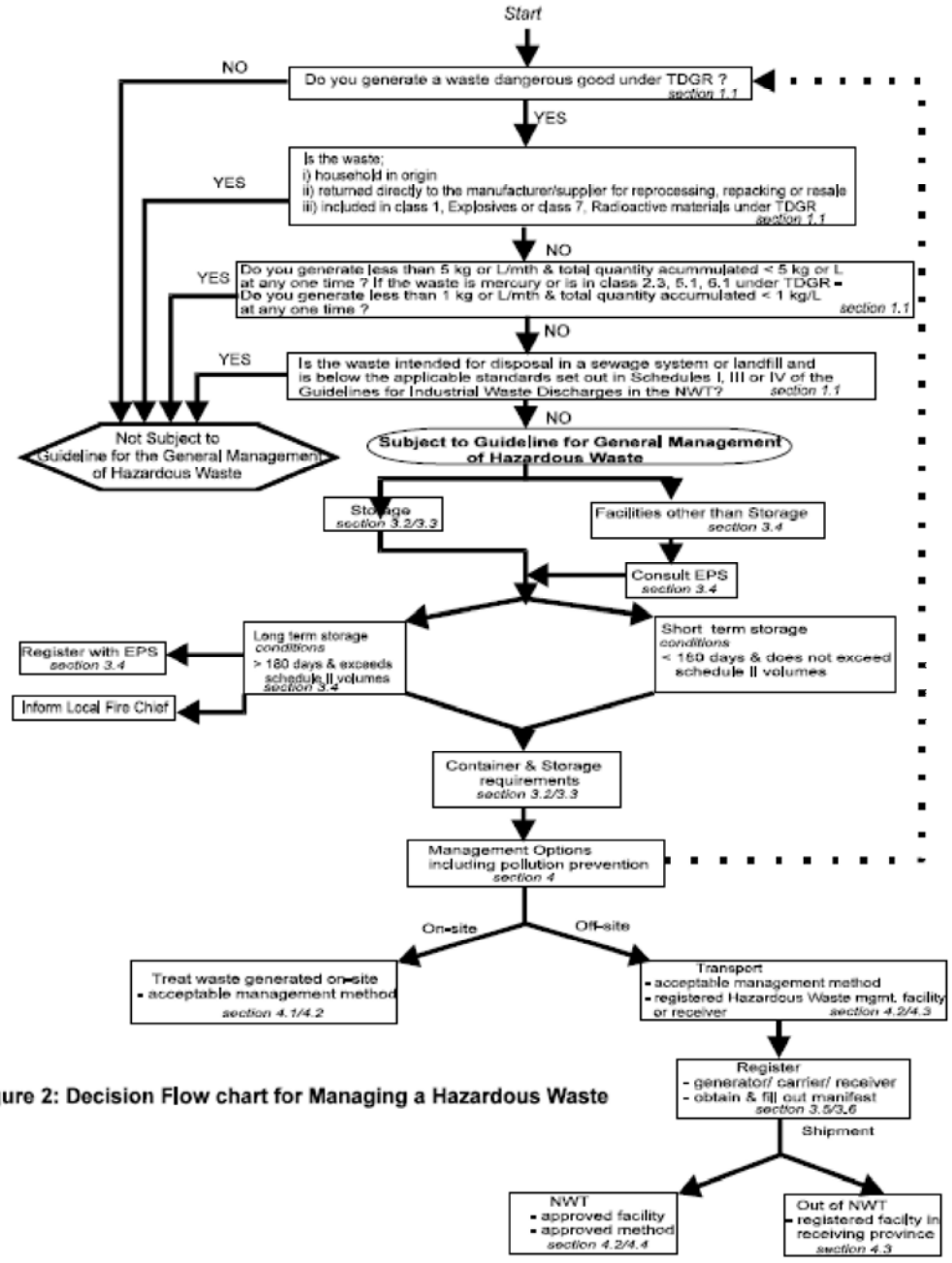

Figure 2: Decision Flow chart for Managing a Hazardous Waste

3.2 General Requirements for Storage Containers

Hazardous waste should be stored in containers according to the following:

- In the original containers, where possible, or in containers manufactured for the purpose of storing hazardous waste. The containers must be sound, sealable and not damaged or leaking. The Transport Authority regulates container specifications.
- Clearly labelled according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant Transport Authority, if transport is planned.
- Bulked into 16 gauge or equivalent metal or plastic 205 litre drums, as appropriate.
- The containers should be sealed or closed at all times, unless in use.

3.3 General Requirements for Storage Facilities

The storage of hazardous waste is not an acceptable long term waste management solution.

Hazardous waste must be stored in a safe and secure manner. In general, hazardous waste should be stored according to the following:

- Drainage into and from the site is controlled to prevent spills or leaks from leaving the site and to prevent run off from entering the site.
- Incompatible wastes are segregated by chemical compatibility to ensure safety of the public, workers and facility.
- In a secure area with controlled access. Only persons authorized to enter and trained in waste handling procedures should have access to the storage site.
- Regular inspections are performed and recorded. Containers are placed so that each container can be inspected for signs of leaks or deterioration. Leaking or deteriorated containers should be removed and their contents transferred to a sound container.
- Maintain a record of the type and amount of waste in storage.
- Storage sites have emergency response equipment appropriate for the hazardous waste stored on site.
- Where the site is to be used for long term storage and the amount of waste in storage exceeds the quantity requirements set out in Schedule I, the site should be registered in accordance with Section 3.4 of this guideline.
- Storage sites are expected to meet all local bylaw and zoning requirements. It is recommended that the local Fire Chief be advised of the storage facility and its content for emergency planning and response purposes.

3.4 Registering a Hazardous Waste Management Facility

Hazardous waste management facilities may require registration with the Environmental Protection Service.

<u>Storage Facility:</u>

A storage facility can be a building, locker, compound or area used to store hazardous waste. A storage facility should be registered with EPS if:

- The facility is used or is intended for the storage of hazardous waste for a period of 180 days or more, and
- quantities to be stored exceed the quantities set out in Schedule I for individual waste classes or if the aggregate quantity for all classes of waste stored exceed 5000 Kg/L.

When registering a storage facility the following information should be provided:

- Company name, address, phone number and contact person, including position.
- Location and description of the facility.
- Expected types, quantities and method of storage of the hazardous waste.
- Approvals required to operate and occupy the land for that purpose.

This information should also be provided to the local Fire Chief for emergency planning and response purposes.

Management Facility other than Storage:

Hazardous waste management facilities, other than a storage facility, which manage hazardous waste for commercial purposes require registration with EPS prior to operation. These include facilities which treat, reprocess, consolidate, destroy or recycle hazardous waste. When registering a facility the following information should be provided:

- Company name, address, phone number and contact person, including position.
- Location and description of the facility.
- A description of the waste management activities to be conducted.
- Expected types, quantities and method of storage of the hazardous waste.
- Approvals required to operate and occupy the land for that purpose.

The information requirements for an environmental review of a hazardous waste management facility may be found in the Environmental Information Guide For Industrial Projects on Commissioners Lands. The Guide provides the information requirements for relevant GNWT agencies to review the environmental impacts of a project. A proponent should review the Guide and contact EPS before making a submission.

3.5 Registering Hazardous Waste Generators, Carriers and Receivers

If hazardous waste is to be transported off site, the generator, carrier and receiver must be registered with EPS. Once registered, an identification number will be assigned which is required to complete the waste manifest under TDGR. A carrier or receiver may either be registered in the NWT or in the province or territory in which the company is based.

The following information should be provided when applying for a registration number:

Generator:

- Company name, address, phone number and contact person, including position.
- Location and description of the activity taking place which results in the generation of the hazardous waste.
- Expected type, quantity and method of storage of hazardous waste.

Carrier:

- Company name, address, phone number and contact person, including position.
- Proof of transport liability insurance.
- Operating authority for transport in the NWT.
- Confirmation that the company meets the training requirements of the transport authority.

Receiver:

- Company name, address, phone number and contact person, including position.
- Location and description of the management facilities and activities for hazardous waste.
- Expected type, quantity and method of storage of hazardous waste.

3.6 Waste Manifest Requirements

The *Transportation of Dangerous Good Regulations* require that a completed hazardous waste manifest form accompany shipments of hazardous waste. Manifests are available from EPS.

The completed manifest form provides:

- Detailed information on the types and amounts of hazardous waste shipped;
- A record of the firms or individuals involved in the shipment; and
- Information on the storage, treatment or disposal of the waste and confirmation that they reached their intended final destination.

The Generator (Consignor), Carrier and Receiver (Consignee) must each complete their portion of the manifest. The information provided on the manifest as well as other TDGR requirements (ie: labelling and placarding) are also intended to assist first responders (police, ambulance, fire fighters) with hazard information should a transportation accident occur.

Waste manifest completion instructions are provided on the reverse side of each manifest. Further assistance in completing a waste manifest may be obtained by referring to the User`s Guide for the Hazardous Waste Manifest produced by Environment Canada or by contacting the Motor Carrier Services of the GNWT Department of Transportation.

4 Waste Management

Waste management is intended to reduce or eliminate the effects of waste on the environment, to provide for public and worker safety and to maximize the efficient use of resources. Once hazardous waste has been created the proper treatment and disposal can be expensive. While it is the responsibility of the waste generator to pay for all disposal costs, various waste management options are available to reduce the cost and volume of waste requiring treatment.

A more effective and proactive management practise is to eliminate or reduce the generation of the waste. This is referred to as pollution prevention.

> **Minimizing or avoiding the creation of pollutants and waste can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**
>
> **Canadian Council of Ministers of the Environment**

4.1 Pollution Prevention

Pollution prevention methods are designed to eliminate the creation of waste. Whereas pollution control options treat waste after it has been created, pollution prevention measures avoid the creation of waste.

Waste generators in the NWT can reduce costs and prevent pollution by implementing reduction, reuse and recycling programs through changes in operational procedures, maintenance practices and raw material usage. An overall waste management plan should incorporate these ideas.

1. Reduce

   The aim of reduction is to eliminate the production of a hazardous waste by using raw materials more efficiently. Methods of reduction include substitution or reduction of a raw material, production redesign, process changes, and improved maintenance activities. Methods which are technically and economically practical in any given situation should be used to reduce or eliminate waste streams.

2. Reuse and Recycle

   Reusing or recycling hazardous waste in operating processes within the generating facility is another means of pollution prevention. Alternatively other users may be found to reuse the material that would otherwise require treatment or disposal. The Department of Resources, Wildlife and Economic Development encourages the reuse and recycling of hazardous waste in the following ways:

   (a) Waste exchanges and associations offer some opportunity for the reuse or recycle of waste. Waste exchanges put potential users of waste materials in contact with waste generators. Appendix B lists a number of waste material exchanges and management associations.

(b) Recycle programs are in place for some hazardous wastes such as waste oil, waste fuels and solvents. For information on recycling programs, contact the waste management associations in Appendix B or EPS.

4.2 Treatment or Disposal

It is not acceptable for hazardous waste to be abandoned, poured down sewers, dumped on land or discarded at a landfill.

Treating hazardous waste to reduce or eliminate their hazard is the final option after implementing appropriate pollution prevention options. It is the responsibility of the generator to treat or dispose of their hazardous waste properly. Although a discussion of treatment and disposal methods is beyond the scope of this guideline, the following are general points for consideration:

- The generator is required to determine and follow the proper management method for their waste. Sources of assistance include:
  - the manufacturers Material Safety Data Sheet (MSDS) provided with the raw materials.
  - the manufacturer.
  - complying with this guideline and other relevant legislation.
  - waste management consultants and associations.

- **Open burning of hazardous waste is not acceptable.**

- Treated hazardous waste may be directed for landfilling or to a municipal sewage system providing that the standards outlined in the Guideline for Industrial Waste Discharges in the NWT are met. The municipal authority and the facility's water licence should also be consulted.

- Different types of hazardous wastes should not be mixed together in the same container. It is important to control the quality of any waste to ensure it can be recycled or disposed of properly. Contaminating wastes with other wastes may prevent reuse/recycling options and increase disposal costs.

- Hazardous waste containers must be properly managed. Containers should be emptied, to the greatest extent possible, using regular handling procedures, or by triple rinsing with an appropriate cleaning agent. They should be rendered unusable by puncturing or crushing prior to disposal. This is especially of concern for containers which could eventually be used for water or food storage. Rinsings must be managed according to their waste characteristics.

4.3 Disposal Outside of the Northwest Territories

Hazardous waste can be sent to a hazardous waste management facility outside of the NWT if the receiving facility is registered in the receiving province or territory and is approved to manage that waste.

Environment Canada monitors international shipments through the *Export and Import of Hazardous Waste Regulations* (EIHW) of CEPA. The International Basel Convention on the

Control of Transboundary Movements of Hazardous Waste and their Disposal controls the shipment of hazardous waste across international borders. Contact Environment Canada when considering international shipments.

A list of Canadian waste management facilities is available by contacting the associations representing the waste industries. These associations are listed in Appendix B.

4.4 Alternative Management Methods

EPS will give consideration to proposals for alternate management methods that provide an equivalent level of environmental protection to those identified in this guideline.

5 Conclusion

This guideline presents a brief introduction into the management of hazardous waste. It is intended as a source of basic information about the issues involved in the management of hazardous waste. It does not replace the existing legislation which is referenced in the guideline. Please contact the appropriate agency before proceeding. For more information contact:

1. Environmental Protection Service
   Department of Resources, Wildlife and Economic Development
   600, 5102-50 Avenue
   Yellowknife, NT, X1A 3S8
   Phone: (867) 873-7654 Fax: (867) 873-022

2. Motor Vehicles
   Department of Transportation
   South Slave Region
   76 Capital Drive, Suite 201
   Hay River, NT, X0E 1G2
   Phone: (867) 874-500 Fax: (867) 874-608

3. Workers' Compensation Board
   Box 888
   Yellowknife, NT, X1A 2R3
   Phone: (867) 920 Fax: (867) 873-4596
   Toll Free: 1-800-661-0792 Fax: 1-866-277-3677

4. Office of the Fire Marshal
   Department of Municipal and Community Affairs
   600, 5201-5 th Avenue
   Yellowknife, NT, X1A 2S9
   Phone: (867) 873-7469 Fax: (867) 873-026

5. Lands Administration
   Department of Municipal and Community Affairs
   500, 5201-5 th Avenue
   Yellowknife, NT, X1A 3S9
   Phone: (867) 920- Fax: (867) 873-060

6. Population Health
   Department of Health and Social Services
   Box 132
   Yellowknife, NT, X1A 2L9
   Phone: (867) 920-8877 Fax: (867) 873-0122

7. Indigenous and Northern Affairs
   Canada Environment and
   Conservation
   Box 150
   Yellowknife, NT, X1A 2R3
   Phone: (867) 669-2589 Fax: (867) 669-2716

8. Environmental Protection Branch
Environment Canada
301, 5204 – 5 th Ave.
Yellowknife, NT, X1A 1E2
Phone: (867) 669-4700 Fax: (867) 873-8185

9. Environment Branch
National Energy Board
444 Seventh Ave. S.W.
Calgary, AB, T2P 0X8
Phone: (403) 299-3676 Fax: (4

10. Explosives Division, Western Region
Natural Resources Canada
Unit 244, 755 Lake Bonavista Dr. S.E.
Calgary, AB, T2P 0N3
Phone: (403) 292-4766 Fax: (403) 292-4689

11. Western Regional Office
Canadian Nuclear Safety Commission
850, 220 - 4th Avenue SE
Calgary, AB, T2G 4X3
Phone: (403) 292- Fax: (403) 292-6985
Nuclear Emergency (24 Hour) (613) 995-0479

Schedule I: Registration Volumes

Minimum quantity of hazardous waste[1] necessary for registration as a Hazardous Waste Storage Facility.

Waste Classification TDG		Quantity[2] (Kg or L)
1	Explosives	50[3]
2.1	Compressed Gas (flammable)	500[4]
2.2	Compressed Gas (non-corrosive, non-flammable non-toxic)	5000[4]
2.3	Compressed Gas (toxic)	200[4]
2.4	Compressed Gas (corrosive)	500[4]
3.1	Flammable Liquids (flash-point < -1 °C)	1000
3.2	Flammable Liquids (flash-point > -18°C < 23°C)	2000
3.3	Flammable Liquids (flash-point > 23°C < 61°C)	4000
4.1	Flammable Solids	5000
4.2	Spontaneously Combustible Solids	1000
4.3	Solids which React Violently with Water	500
5.1	Oxidizing Substances	1000
5.2	Organic Peroxides	50
6.1	Poisonous Substances	1000
6.2	Infectious Substances	500[4]
7	Radioactive	any amount[3]
8	Corrosive Substances	1000
9.1	Miscellaneous	1000
9.2	Environmentally Hazardous	50[5]
9.3	Dangerous Waste	5000
	Total Aggregate Quantity of Hazardous Waste	5000

[1] This applies to hazardous waste and not dangerous goods.
[2] Quantity refers to liquids when the amount is expressed in litres (L) and solids when expressed in kilograms (Kg).
[3] Controlled under the authority of the Federal *Explosives Act* or *Atomic Energy Control Act*.
[4] Total liquid volume capacity of the container.
[5] PCB storage is regulated by Environment Canada under the *Canadian Environmental Protection Act*.

6 Bibliography

Government of Alberta, Alberta Environmental Protection - Alberta User Guide for Waste Managers, Edmonton, (1995).

Government of Northwest Territories, Department of Renewable Resources - Guideline for Industrial Waste Discharge, Yellowknife, (1995).

Government of Northwest Territories, Department of Renewable Resources - Environmental Information Guide For Industrial Projects, Yellowknife, (1995).

Heinke, G. and Wong, J., Guidelines for the Planning, Design, Operation & Maintenance of Solid Waste Modified Landfill Sites in the NWT, Volume 1 & 2. Department of Municipal and Community Affairs, Yellowknife, (1990).

NWT Water Board, Northwest Territories Waters Act, Canadian Gazette Part II, Vol.127, No.13, (1993).

Appendix A: angerous Goods Classifications

Class 1: Explosives[1]

Class 2: Compressed Gases

Division 2.1: Flammable Gases
Division 2.2: Non-Flammable Gases
Division 2.3: Poison Gases
Division 2.4: Corrosive Gases

Class 3: Flammable Liquids

Division 3.1: Flash Point < -18°C
Division 3.2: Flash Point > -18°C and < 23°C
Division 3.3: Flash Point > 23°C and < 61°C

Class 4: Flammable Solids, Substances Liable To Spontaneous Combustion, Dangerous When Wet

Division 4.1: Flammable Solids
Division 4.2: Spontaneously Combustible
Division 4.3: Dangerous When Wet

Class 5: Oxidizers, Organic Peroxides

Division 5.1: Oxidizers
Division 5.2: Organic Peroxides

Class 6: Poisonous, Infectious Substances

Division 6.1: Poisonous
Division 6.2: Infectious Substances

Class 7: Radioactive Materials[1]

Class 8: Corrosives

Class 9: Miscellaneous Dangerous Goods

Division 9. Miscellaneous Dangerous Goods
Division 9.2: Hazardous to the Environment
Division 9.3: Dangerous Wastes

1 - Class 1 and 7 are regulated under federal legislation and not subject to this guideline.

Appendix B: Waste Exchanges and Associations

Exchanges

Alberta Waste Materials Exchange	(780) 450-8996
British Columbia Waste Exchange	(604) 683-6009
Canadian Ortech Environmental Inc.	1-877-774-65
Canadian Chemical Exchange	(800) 561-65 (450) 229-5344 Fax
Ontario Waste Materials Exchange	(416) 778-419
Quebec Waste Materials Exchange	1-800-668-6686 (514) 762-9012
Saskatchewan Waste Materials Exchange	(306) 787-9

Associations

Assn. Québecoise des Techniques de L'eau	(514) 340-
Canadian Chemical Producers Association - Chemical Referral Centre	1-800-267-6
Canadian Water & Wastewater Association	(613) 747-0524
Environmental Services Association of Alberta	1-800-661-9278 (403) 439-6363
Northwest Territories Water and Waste Association	(867) 873-4
Ontario Waste Management Association	(905) 791-9
Water Environment Association of Ontario	(416) 410-6933
Western Canada Water & Wastewater Association	1-877-283-20

CITY OF YELLOWKNIFE

April 13, 2022

Letter of Waste Acceptance

Acceptance of Mixed Solid Waste Disposal from Voyageur Exploration Ltd. – The Tharsis Rare Earth Element Project

This letter is to attest that the City of Yellowknife's Solid Waste Facility has agreed to accept mixed solid waste from Voyageur Exploration Ltd – The Tharsis Rare Earth Element Project. The project will start on June 21- July 31, 2022 and an estimate waste average of 100kg per week. This waste will be subject to the Commercial Waste from Outside of City Limits tipping fee as outlined in the Fees and Charges By-Law 4436 (i.e. For 2022, the Commercial Waste from Outside of City Limits tipping fee is $172.50 per tonne).

The City reserves the right to refuse waste from the project in question, at is sole discretion, at any time.

This agreement is valid until September 1, 2022.

Please feel free to contact the Solid Waste Facility if you have any further questions or concerns.

Sincerely,

Chris Vaughn
Manager, Sustainability and Solid Waste
Public Works and Engineering
City of Yellowknife
CV/cv

DM: 687714

VEXP - Land Use Permit Application -