Item	Requirement	Review Comment Reference	Proponent Response and Reference			
1	ADKFN comment ID-1: ADKFN expressed concerns about the amount of hazardous wastes moving through its territory and requested that the WMP be updated to include estimates of the total volumes of waste that will be produced and disposed of. The Board requires that Paramount update the WMP to include estimates of the total	December 29, 2020, Board Directives	See updated Version Introduction			
2	Volumes of waste that will be managed GNWT comment ID-1-4 and 6-8: GNWT noted several editorial requirements needed to update the WMP. The Board requires that Paramount ensure all editorial issues identified by the GNWT be addressed in the final revision	December 29, 2020, Board Directives	See updated Version			
3	GNWT comment ID-5: GNWT requested additional detail on the waste management facilities proposed to be used for final disposal. The Board requires Paramount to provide more detail on the final disposal locations for all waste types.	December 29, 2020, Board Directives	Section 5 and Table 4. It is important to note the facility is outside of the NWT, all remaining waste will go to this facility			
4	Comment on notion that ADKFN should be directly compensated for a 'rent' for hosting the waste in perpetuity in our territory, and that ADKFN should also receive the proceeds of any salvage of materials that will not be landfilled.	ADKFN - 2	Paramount Resources Ltd. will continue to engage with ADKFN as per the project engagement plan.			
5	Provide a plan detailing how landfill site(s) will be reclaimed following capping to ensure that there are no impacts associated with the site once Paramount is gone. Post-landfill reclamation plans also require follow up monitoring. Paramount's plan should include a detailed monitoring program that ensures the site is consistent with pre-disturbance conditions.	ADKFN -3	As previously stated in prior reviews, Liard South does not and has never had land fills.			
6	Include in the Waste Management Plan an updated table listing all planned abandonments and provide an updated estimation for total waste volume, and the anticipated increase in traffic volumes as a result	ADKFN - 4	e planned abandonments have been completed. Details are in Section 1			
7	Provide details on the routes and total number of trucks that are expected to use these routes to transport waste.	ADKFN - 5	Appendix 1 shows project access within the jurisdiction of the MVLWB.			
8	Given that both hazardous and non-hazardous waste will be transported through Acho Dene Koe First Nation's traditional territory, a spill could have a significant impact on ADKFM's inherent and Treaty rights. To mitigate this risk, Paramount should provide in the Movement Documents for each waste shipment a detailed route of transport, and a list of measures/tools on hand to manage a spill in the event of a vehicle collision, turnover or other accident	ADKFN - 6	An example of the Movement document is in Section 4. Spill equipment and scenarios are covered by the project Spill Contigency Plan.			
9	The Waste Management Plan should demonstrate that the bioremediation methods proposed in Table 2 of the plan have been proven to work in Northern climates. In particular, the plan should provide examples of successful implementation in a Northern climate for the following methods: Bio-cell, Bio-pile, and Biodegradation Facility.	ECCC - 2	Remediation techiques and outcomes are discussed in the project Closure and Reclamation Plan.			
10	The tollowing are provided regarding the Waste Management Plan: • Label and manage household hazardous waste materials as such, including in Table 3 of the plan; • Identify potential disposal/management facilities for the hazardous waste materials listed in Table 3; and • Provide secondary containment for hazardous waste materials, including during storage and transport.	ECCC - 3	Household wastes will no longer be present in the project area as camp services are no longer required. Disposal facility is identified in Section 5 and Table 4. Soil is the only potential hazardous waste to be transported during winter months			
11 12	Provide details regarding the on-going surveillance and environmental monitoring mentioned in Section 1 (Introduction) of the plan. Clarify if campsite incinerators will be: (1) selected, operated, and maintained according to guidance outlined in the ECCC Technical Document for Batch Waste Incineration; and (2) tested to verify that Canada-wide Standards for divoxie/furgas and mentury are met	ECCC - 4 ECCC - 5	See Introduction and project Closure and Reclamation Plan Camp(s) will no longer be used in the project area. Incineration is no longer be considered as a waste management. References have been removed from the olan			
13	Provide specific treatment option for each waste type potentially generated by the project as each option would likely require a different implementation and management strategy, which the WMPs should accordingly address in detail.	MVLWB - 1	See updated Waste Management Table (Table 5) potential waste streams have been significantly reduced.			
14	Provide written confirmation from all waste management facilities that have indicated their willingness to accept waste generated by the project	MVLWB - 2	Link for facility in Section 5			
15	As "Turnkey Management Approaches are likely to differ for many of the waste streams generated by the project, it is recommended that Paramount elaborate on the specific "Turnkey Management Approach" that would be used for each waste stream associated with the project	MVLWB - 3	See Section 5			
16	Update Appendix 4 of the Plan to include the names of Personnel listed as "TBD" given the current stage of the noniect	MVLWB - 4	Appendix 3 has been updated. Site supervisor will be provided prior to site activities			
17	Update the "Introduction" section to clarify which of the wells will be abandoned by the Project.	MVLWB - 5	See updated Introduction			
18	Please indicate how each directive has been addressed by the updated plan. Provide rationale for any directive that has not been addressed.	MVLWB - 6	See above			
19	Additional Changes	PRL October 2022	As mentioned above and in the document, remaining abandonments at Liard South have been completed and substantial closure work was undertaken in the winter of 2021-2022. As a result, a number of activities that create waste streams will not be undertaken going forward. This has not lead to a change in the structure of the Plan, however content specific to camp services and abandonment have been removed. The biggest change has been the removal of a numer of items from Table 5, some definitions and removal off two appendives.			

Waste Management Plan Fort Liard South Northwest Territories October 2022 Version 3



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# Glossary

Dangerous Goods	Any product, substance or organism included by its nature or by the <i>Transportation of Dangerous Goods Regulations</i> (TDGR) in any of the classes listed in the schedule provided in the <i>Transportation of Dangerous Goods Act</i> (TDGA) [Transportation of Dangerous Goods Act (Canada)]					
	Class 1: Explosives, including explosives within the meaning of the <i>Explosives Act</i> (Canada).					
	Class 2: Gases; compressed, deeply refrigerated, liquefied or dissolved under pressure.					
	Class 3: Flammable and combustible liquids.					
	Class 4: Flammable solids; substances liable to spontaneous combustion and substances that on contact with water emit flammable gases.					
	Class 5: Oxidizing substances; organic peroxides.					
	Class 6: Poisonous (toxic) and infectious substances.					
	Class 7: Radioactive materials and prescribed substances within the meaning of the <i>Atomic Energy Control Act</i> (Canada).					
	Class 8: Corrosives.					
	Class 9: Miscellaneous products, substances or organisms that are considered by the Lieutenant Governor in Council to be dangerous to life, health, property or the environment when transported and are prescribed to be included in this class.					
Hazardous Waste	A contaminant which is a dangerous good that is no longer used for its original purpose and is intended for storage, recycling, treatment or disposal. Materials that do not meet the criteria in schedules I, III or IV, or the standards for dioxins and furans, of the Guideline for Industrial Waste Discharges in the NWT.					
	<ul> <li>A hazardous waste does not include a contaminant that is:</li> <li>(a) household in origin,</li> <li>(b) included in class 1, Explosives or class 7, Radioactive materials of TDGR,</li> <li>(c) exempted as a small quantity,</li> <li>(d) an empty container, or</li> <li>(e) intended for disposal in a sewage system or by land filling that meet the applicable standards set out in schedules I, III or IV of the Guideline for Industrial Waste Discharges in the NWT.</li> </ul>					
Household Hazardous Waste	Common everyday products that people use in and around their homes including paint, paint thinner, herbicides, and pesticides that, due to their chemical nature, can be hazardous if not properly disposed.					

Non- hazardous Waste	Wastes that do not fall into the "Hazardous Waste" category.
Run off	In this document, excessive rain or snowmelt can produce overland flow to retention ponds.
Testing Required	Occasionally, laboratory analysis may be required to fully characterize and classify a waste product.

## 1. Introduction

Paramount Resources Ltd. (Paramount) is the operator of the Liard South Project, which encompasses winter access roads; well sites, decommissioned pipeline, camp and decking sites; and various borrow pits, sumps and other clearings. Three wells (F-36, O-35 and N-01) were tied-in to the pipeline system, the main stem of which runs 26km from well site F-36 to a compressor station in British Columbia (Maxhamish d-36-I) and is known as the Shiha Pipeline (see Appendix A for Fort Liard South As-built June 2017 map). This trans-border pipeline is operated by Shiha Energy Transmission Ltd., a partnership between the Acho Dene Koe Band and Paramount.

Poor economic conditions (*i.e.* low gas production rates and market value) prompted Paramount to suspend production late in 2007 and then to formally deactivate the project in April 2008 (according to National Energy Board (NEB) miscellaneous order MO-09-2008, which allows the deactivation of the pipeline until such time as the NEB approves its abandonment). In the 2016-2017 Paramount abandoned and decommissioned numerous sites. In the winter of 2022 Paramount abandoned the last well at I-02 and completed the cut and cap of F-36. The only remaining abandonment or decommissioning activities is the removal of the riser at F-36. Significant reclamation work was also undertaken in the winter of 2022 leaving limited remaining activities at the project area. All activities contemplated will continue to be on crown land.

Remaining activities will include monitoring, revegetation and additional reclamation activities as required, details are available in the project Closure and Reclamation Plan. Waste generation, salvage opportunities and movement are expected to be limited. Projected waste generation for the remaining life of the project is 2 to 20 trucks worth, depending on final reclamation at I-02. At a minimum 2 truckloads will be needed to remove the riser at F-36.

## 2. Environmental Overview

#### 2.1 Terrain, Soil and Permafrost

The Project areas occur within the Liard Plains MB Ecoregion; immediately to the south and east lies the Liard Upland MB Ecoregion and, further to the west, the Central Mackenzie Plain Boreal Northern Cordilleran (Ecosystem Classification Group 2007). In the Project areas local terrain, soils and vegetation are directly representative of the Liard Plains MB Ecoregion, and to varying degrees the adjacent Liard Upland. In general, the Liard Plain MB Ecoregion exhibits one of the warmest climatic conditions in the NT. Productive deciduous, mixed-wood and conifer forests occur on the broad low-lying alluvial terraces of the Liard River (Ecosystem Classification Group 2007). Meander scrolls have developed on the Liard River floodplain, indicating an environment of active deposition and change. East of the Liard River plain are the gently undulating lacustrine deposits and lacustrine veneers of the Trout Uplands.

Soils of the Liard Plain, mainly poorly drained Regosols, are relatively young, due to ongoing deposition by the Liard River. Gleysols and Luvisols occur with lacustrine and till materials, while Organic soils occur under wetlands (Ecosystem Classification Group 2007). Permafrost is uncommon and is defined as being discontinuous sporadic.

Terrain, soils and permafrost in the Project areas have experienced relatively low levels of impacts prior to clearing and development undertaken for previously approved Project components; these include well leases, pipeline right-of-ways, access roads, sumps, camps and other facilities. Typical sources of potential impacts included contamination resulting from spills and/or poorly managed waste; altered, local terrain features (surface topography, site elevation, drainage patterns) resulting from soil movement; soil erosion resulting from the removal of vegetative ground cover; and disruption of permafrost resulting in slumping and erosion.

#### 2.2 Vegetation

Vegetation characteristic of the Liard Plain MB Ecoregion reflects the relatively warm climate and moist, rich site conditions (Ecosystem Classification Group 2007). Willow shrublands occur on recently flooded areas along the Liard River. Drier upland sites on alluvial terraces contain mixed deciduous and mixed wood forest of trembling aspen, balsam poplar and white spruce. Forest understories are often lush, and include species such as low-bush cranberry, prickly rose, red osier dogwood, dwarf red raspberry, meadow-horsetail and other herbs. On low-lying areas, rich willow-sedge fens occur.

#### 2.3 Water and Aquatic Species

In the Liard Plain Ecoregion, water covers approximately 5% of the total land base, with the Liard River being the dominant aquatic feature (Ecosystem Classification Group 2007). Numerous ponds, channel marshes, and fens occur along the Liard River plain. The Muskeg River and Rabbit Creek, along with numerous other small permanent and intermittent streams, drain into the Liard Plain MB Ecoregion from the adjacent Liard Upland and Trout Upland ecoregions. Small shallow lakes occur in undulating areas, mainly in the south half of the Ecoregion.

Both ground and surface water have the potential to be impacted through changes in water quality and water volumes. Primary sources of impacts may include spills and/or releases, soil erosion, and water withdrawal from specified lake sources. Water withdrawals, and the effects and management of withdrawals, will continue to be addressed and managed as part of the new Type-B Water Licenses. To mitigate the ongoing risk of impacts from erosion, spills, and releases, Paramount will continue to employ specific industry best management practices and applicable mitigation measures along with the associated Project Spill Contingency Plan.

#### 2.4 Wildlife

Wildlife species that occur in the region encompassing the Project area are those adapted generally and/or more specifically with the topography, hydrologic systems and vegetation communities occurring in the Liard Plain and Liard Upland ecoregions. Characteristic mammal species include moose, black bear, beaver, fox, wolf, lynx, marten, mink, snowshoe hare, wolverine, weasel and red squirrel. To a lesser degree species such as woodland caribou occur throughout the region. Common bird species include bald eagles, hawks, falcons, chickadees, northern shrike, redpolls, ravens, Canada jays, woodpeckers, sandhill

cranes, grouse and owls. Common fish species include northern pike, grayling, walleye, burbot, suckers, whitefish, and a number of species of forage fish (i.e. minnows).

Overall, wildlife species' habitats and populations have been exposed to relatively low levels of impacts from approved developments that comprise the existing Projects. Sources of impacts have included the clearing and construction for well leases, the battery site, access roads, sumps, camps and other facilities.

## 3. Regulatory Framework

Managing oil and gas wastes in the NWT is challenging, due in part to the complex regulatory regime. Minimal waste facilities add to the complexity: if waste must be moved outside of the NWT for disposal, the regulatory regime becomes even more complex (see CAPP, 2009). In the past for the Liard South project area Paramount received oil and gas approvals from the National Energy Board (NEB). Since devolution and the creation of the Oil and Gas Regulator for Oil and Gas Operations ("OROGO") in the NWT, Paramount receives oil and gas approvals from OROGO. Paramount still holds an NEB approval related to the Shiha Pipeline. The Mackenzie Valley Land and Water Board (MVLWB) regulates the use of land and water and the deposit of waste through the issuance of Land Use Permits (LUPs) and Water Licences (WLs).

#### 3.1 Assessment Processes

The Liard South project area has been the subject of an Environmental Assessment processes and preliminary screening prior to licencing and permitting of activity. In 1998 an Environmental Impact Assessment (EIA) focusing on two exploratory wells (F-36 and I-03); using existing cut lines for access and locating work camps/staging area was conducted. Also, in 1998 an Environmental Impact Assessment (EIA) focusing on four exploratory wells (A-01, K-46, C-02 and P-57); it included winter access roads, all on existing cut lines; siting four temporary work camps and using borrow pits. In 1999 an Environmental Impact Assessment (EIA) focusing on ten exploratory wells (O-35, G-35, E-37, M-25, I-46, G-47, I-23, L-24, C-58, C-02 and I-02); the barge landing, nine camp sites; 34.6km access plus 3.3km winter road; a water well; surface water withdrawal and borrow pits. A Heritage Resources Impact Assessment was conducted by Paramount for Fort Liard Drilling Project and NWT Portion of the Shiha Pipeline Project NWT Archaeologist's Permit 99-890 in 2000. It is important to note that several of the components that were assessed were never permitted, licenced or built.

#### 3.2 Regulatory Approvals

Table 1 below lists Paramount's current LUPs and WLs for the Liard South Project Area. Given the current state of the projects (built and in some instances decommissioned and/or suspended) the scope of the LUPs and WLs are very limited. Activities contemplated include maintenance, access, suspensions and abandonments, reclamation and remediation. It is important to note that OROGO is the regulator for the down-hole activities of suspension and abandonment: however, surface use, waste disposal and water use for these activities is within the jurisdiction of the MVLWB.

#### Table 1: Current LUPs and WLs

Liard South	Registry Link			
MV2021A0006	https://mvlwb.com/registry/MV2021A0006			
MV2021L1-0006	https://mvlwb.com/registry/MV2021L1-0006			

### 4. Waste Management Strategy

Poor waste management practices can result in direct or indirect adverse environmental effects and can pose health and safety risks to employees and members of the general public. Furthermore, poor waste management practices can ultimately result in substantial financial and legal liabilities. To prevent poor waste management practices and minimize potential adverse effects to environment, health and safety, Paramount Resources Ltd. (Paramount) has developed this Waste Management Plan (WMP), which falls under Paramount's Health, Safety and Environment Policy (Appendix 2).

The basis of Paramount's waste management system is the waste management hierarchy (Figure 1). The overriding principle of the waste management hierarchy is the reduction, if not the elimination, of both the volume and toxicity of waste. In the waste management hierarchy, disposal is the least preferred waste management option. Disposal also involves the greatest potential liability.

Project personnel and contractors are expected to adhere to the Waste Management Plan along with Permit and Licence conditions related to waste management and disposal. Paramount further reduces operational risk by using a management framework called the Paramount Operational Excellence Management System (POEMS). Issues of non-compliance discovered by Paramount or by regulators will be addressed quickly and appropriately. Paramount onsite field supervisors and HSE advisor are responsible to ensure compliance by contractors. Paramount onsite field supervisors and HSE advisor report to the appropriate office staff (identified in Appendix 4).

#### 4.1 Waste Minimization

Waste minimization includes source reduction (reducing the amount and/or toxicity of waste generated). In some cases, reduction at the source will not yet be technically possible or economically feasible. Therefore, opportunities for reuse (reusing materials without changing the physical properties), recycling (reusing materials by changing the physical properties) and recovery (extracting a useful component) will be investigated for all wastes that are unavoidably generated.

The concept of waste minimization is a cornerstone to the Environmental Protection Plan: waste that is not generated need not be managed. Waste that is generated but is of the lowest possible volume and/or toxicity, can be managed most cost-effectively. Potential benefits to a waste minimization program are:

- increased revenue;
- reduced costs of operating, materials, waste management and disposal,
- energy, and facility cleanup;
- improved operating efficiency;
- reduced regulatory compliance concerns;

- reduced potential for both civil and criminal liability; and
- enhanced public perception of the company and the industry as a whole.



**Figure 1**: The waste management hierarchy presents options to minimize the amounts and hazard of waste.

#### 4.2 Waste Treatment and Disposal

Waste treatment is any method, technique, or process that changes the physical, chemical, or biological character of a waste. Treatment renders the waste less hazardous and, therefore, recyclable or safer to transport, store, and dispose of. Treatment should be investigated for any waste that is unavoidably

generated and that cannot be reused, recycled or recovered. Waste disposal generally is the discharge, deposition, injection, dumping or placing of any waste into or on land, water or air. Table 2 describes various waste treatment and disposal options. Waste removed from the project area will be sent to an approved facility in British Columbia(near Fort Nelson) located at A-77-G/94-J-10, approval numbers PR 16078, PS 15866 and PE 17942.

#### 4.3 Waste Characterization and Classification

Waste characterization is the assessment of the physical, chemical and toxicological characteristics (e.g., properties) of the waste. Refer to and Directive 58: Oilfield Waste Management Requirements for the Upstream Petroleum Industry (AER, 1996); Waste Profile Sheets (CAPP, 2006) and Oilfield Waste Management in the Northwest Territories (CAPP, 2009) to assist with the characterization of common waste. Once a waste has been characterized, it can be classified into one of two classes: hazardous waste and non-hazardous waste (Figure 2).

Given that the project areas are in states of reclamation or abandonment waste generation is limited. Waste will be created during further short-term activities such as suspension, abandonment and reclamation. The majority of wastes created will be from reclamation. Waste could be stored for a short amount of time at F-36 and I-02, then transported to an approved facility outside of the Northwest Territories.

Option	Class <sup>1</sup>	Description <sup>1</sup>
<b>Bioremediation</b> – is the breakdown of oilfield wastes to carbon dioxide and water using natural biological	Bio-cell*	Bio-cells are constructed to optimize the air exchange for aerobic degradation and provide a method of controlling the moisture and nutrient requirements of the microorganisms. Bio-cells can be constructed as sub- grade containment areas in the earth's surface or pre- constructed containment devices. Option for contaminated soil
Additional details are included in Closure and Reclamation	Bio-pile*	Bio-piles operate on the same principles as bio-cells, but they are constructed above grade on the earth's surface. Option for contaminated soil
Plan, subject to Plan approval by the MVLWB.	Land Farming*	Land farming is process of mixing contaminated soil or subsoil with topsoil to augment the degradation process.
	Mulching*	Mulchers use a powerful rotating head to grind trees to "mulch". Option for re-established vegetation on previously cleared and permitted areas

#### Table 2: Treatment / Disposal Options for the Fort Liard Project.

Option	Class <sup>1</sup>	Description <sup>1</sup>
	Biodegradation Facility	A type of oilfield waste management facility where oilfield wastes are biologically degraded in a contained and controlled environment, whether it is in an impermeable cell structure (biocell) or piled on an impermeable liner (biopile). Option for contaminated soil

• \* Potential local waste treatment / disposal option.





*Figure 3*: Segregation diagram for generated waste (see table 2 for details).



Container Labe	1	Container Type	Details
General & Industrial Non-	Various	Wildlife proof waste Receptacle	General & Industrial Non-hazardous Waste
hazardous Waste	Untreated Wood	Temporary stockpiles	Excess slash, construction material, etc.
	Beverage Containers	Wildlife proof waste Receptacles	General Recyclables
General Recyclables	Various	Wildlife proof waste Receptacles	Household hazardous waste [aerosol paint/sprays; acetone; air fresheners (aerosol); ammonia; all- purpose cleaners; antifreeze; barbeque starters; batteries (household and vehicle); brake fluid and lining; butane refills; degreasers; car waxes/polishes; disinfectants; furniture polish/wax; gasoline; drain cleaners; insecticides; kerosene; lacquers; nail polish and remover; oven cleaners; paint thinners; photographic chemicals; paint and varnish; rust remover; turpentine; smoke detectors; spa and pool chemicals; waxes; wood preservatives/finishes]; cell phones; electronics; ink cartridges; milk jugs and cartons and tires
Industrial Hazardous Waste		Oilfield waste bin	Industrial Hazardous Waste
	Plastic	Oilfield waste bin	Industrial Recyclables
Industrial	Scrap Metal	Oilfield waste bin	
Recyclables	Used Oil	Oilfield Waste Bin;	
	Used Oil Filters	Oilfield Waste Bin	

Table 3: Waste Segregation Details

#### 4.4 Waste Storage

Because of local treatment/disposal and access limitations, waste may need to be stored for short periods while awaiting transport to appropriate and approved facilities. Wastes could be stored at any location in the project areas where activities are taking place. Paramount will identify where waste will be stored in a given activity season to Inspectors and the MVLWB as part of the commencement of the land- use operation notification. Waste should be removed from project locations and areas as soon as practical and in the same season as activities when feasible. Therefore, storage areas and containers become important considerations. General principles for the storage of non-hazardous waste are listed below.

- 1. The regular collection, grading and sorting of waste contribute to good housekeeping practices.
- 2. Placing scrap containers near where the waste is produced encourages orderly waste disposal and makes collection easier. The location of the stockpiles should not interfere with work but they should still be readily available when required.
- 3. All waste receptacles should be clearly labeled and in good condition, not leaking and protected from the weather.
- 4. Inspect waste receptacles weekly and note any deterioration or corrosion in an inspection log. Clean-up any messes immediately.

General principles for the storage of hazardous waste are listed below [from the *Guideline for Hazardous Waste Management* (GNWT, 2017)].

- 1. Drainage into and from a waste storage site should be controlled to prevent spills or leaks from leaving the site and to prevent run off from entering the site.
- 2. Access to a waste storage site should be controlled. Only persons authorized to enter and trained in waste handling procedures should have access to the waste storage site.
- 3. Waste storage sites should have emergency response equipment appropriate for the waste stored on site. Furthermore, hazardous waste 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.
- 4. Where long term storage of hazardous waste is required, quantity requirements (see Schedule I *Guideline for the General Management of Hazardous Waste in the NWT*) should be recognized. If quantity requirements are exceeded, the hazardous waste storage site should be registered in accordance with Section 3.4 of *Guideline for the General Management of Hazardous Waste in the NWT*.
- 5. Be sure that waste storage containers are compatible with chemical waste. Use containers that are made of or lined with materials which will not react with, and are otherwise compatible with, the waste to be stored. The original containers should be used, where possible.
- 6. Be sure that waste storage containers are sound, sealable and not damaged or leaking. Regular inspections for signs of leaks or deterioration should be performed and recorded.
- 7. Any container used to store hazardous waste must be labeled according to the requirements of the *Work Site Hazardous Materials Information System* (WHMIS) of the Safety Act (2006) or the relevant Transport Authority, if transport is planned.

- 8. Waste containers must be closed at all times, except when being filled. Do not leave funnels in the containers.
- 9. Maintain a record of the type and amount of waste in storage.

Waste will be temporary stored at locations where it is generated, this includes I-02 and F-36 identified on the Project Maps found in Appendix A. Waste will be removed in the same season during and at the conclusion of operations.

#### 4.5 Determining Destinations for Waste

Since local treatment and disposal options are limited, distance and shipping become the key considerations when determining the best waste management options. Table 4 lists waste management facilities currently closest to the Fort Liard, NWT Project area that may be used by Paramount.

#### 4.6 Waste Transporting and Tracking

#### 4.6.1 Waste Contractors

Transportation means will be carefully selected and checked with respect to health, safety and environment (HSE) requirements. Transporters of waste will be provided with instructions on how to handle emergency situations. When using waste contractors, the following details will be verified.

• Contracts with waste contractors contain appropriate provisions regarding HSE.

• Equipment provided for the storage and transport of wastes, such as waste bins or containers and trucks, are in good working order prior to being accepted by Paramount.

• Waste materials transferred to contractors are packaged and labeled appropriately.

• Shipping documentation is completed in accordance with approved procedures and rests with Paramount at the end of the project.

• Waste consignments reach the specified final disposal site and are disposed of at an approved facility.

• Transportation costs and tipping fees are a major component of the waste management program and require close monitoring and control.

#### 4.6.2 Trucking

At its most efficient, trucking occurs on a "back haul" when goods have been transported to Fort Liard. The ideal situation is to take advantage of the back haul. Therefore, anyone responsible for arranging the transport of goods to Fort Liard will be responsible for arranging a back-haul load. The Operations Manager (see Appendix 4 for contact information) can be consulted for assistance in identifying back haul loads.

#### 4.6.3 Tracking Hazardous and Non-Hazardous Waste

Paramount's hazardous waste generator registration number is NTG 000104. The Federal Transportation of Dangerous Goods Act and Regulations (TDG) identify requirements for the transportation of dangerous goods. According to these regulations, Paramount is responsible for the safe handling and transport of all hazardous material. It is Paramount's responsibility to ensure that anyone involved in the handling,

offering for transport or transporting dangerous goods must be trained and certified or working under the direct supervision of a trained and certified individual.

#### MOVEMENT DOCUMENTS

When completed, project produced Movement Documents provide:

- detailed information on the types and amounts of wastes being shipped;
- a record of various firms or individuals involved in the shipment; and
- information on the treatment storage, and/or disposal of wastes when they reach their final destination.

A Movement Document must be used for all shipment of hazardous wastes as defined in the province or territory of destination or origin and Interprovincial Movement of Hazardous Waste Regulations. Paramount will utilize Movement Documents for non-hazardous wastes as well.

Movement Document completion instructions are provided in Figure 4 and Table 4 as well as on the reverse side of each Movement Document. Further assistance in completing a Moving Document may be obtained by referring to the DRAFT - Instructions for Completing Each Item on the Movement Document (Environment Canada, 2017) or by contacting the Motor Carrier Services of the GNWT Department of Transportation.

#### MOVEMENT DOCUMENT DISTRIBUTION

All Movement Documents must be tracked through their cycle by the waste generator. Movement Documents must be kept on file for a minimum period of two (2) years.

• Consignor (i.e., Paramount) forwards copy 1 (white) to the appropriate territorial authority and retains copy 2 (green).

- The carrier takes copies 3, 4, 5 and 6 with the shipment to give to consignee/receiver (i.e., facility).
- The consignee completes part C and forwards copy 3 (yellow) to the appropriate authority.

• The consignee gives copy 4 (pink) to the carrier, retains copy 5 (blue) and forwards copy 6 (brown) to the consignor. The consignor forwards a photocopy of copy 6 (or faxes copy 6) to Paramount's Environmental Specialist, HSE Department (see Appendix 5 for contact information). Once the HSE Department receives a photocopy of copy 6, information is entered and stored in a database for Paramount's use.

## 5. Waste Specific Management Options

Management options for wastes generated by the oil and gas sector in the Northwest Territories are very limited because of little to no waste infrastructure. Therefore, waste generated by the Fort Liard Project is primarily treated or disposed off-site at <u>Secure Fort Nelson British Columbia</u>. Turnkey solutions for minor waste include associated with closure include providing proper storage containers, mobilizing and demobilizing storage items and sending waste to the identified receiver,

Figure 4 Movement Document Completion Instructions

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BOX #	Box label	Instructions for Box Entries						
1	Generator & Registration No.	Paramount Resources Ltd.Suite 2800 421 7th AvenueSWCalgary, AB T2P 4K9Telephone No.:403.290.3600						
2	Intended Receiver	Secure Northern Rockies See Link in Section 5.						
3 4 5 6	Provincial Code Shipping Name Class UN No. Packing Risk	- - See Table 5						
8	Group Quantity Shipped and Units	Enter the quantity of waste being shipped in metric units. Indicate the used as with either kilograms (kg) or litres (L). If the exact amount of use not known enter "ext" pefers the number for an estimated amount						
		Enter the number of individua head "No."	I packages used to ship waste in the column					
			Code	Container				
			01	Drum				
		Fatan the sector for the two	02	Tank				
9	Packaging	of packaging used in the	03	Bulk (e.g., Vac Truck, End Dump, etc.)				
		beaded "Codes"	04	Carton				
		headed codes .	05	Bag				
			06	Roll off or lugger				
			07	Other (e.g., pail, palette, etc.)				
10	Physical state	Enter the physical state of the waste as solid (s), liquid (l) or gas (g).						

#### Table 4: Movement Document Completion Instructions

#### Table 5 Paramount Resources Ltd. NWT Abandonment Waste Stream and Waste Management Plan.

Because of the small volume of various wastes which may be generated during this activity, a combination waste bin will be provided, and a specialized waste management contractor will handle disposal of the contents at the end of the project

Waste	Storage	NWT Classification	BC Classification	AB Classification	AER Code	Shipping Name	Class	UN #	Packing Group	Disposal
Aerosol Cans	Waste Bin-HAZ	HAZ	HAZ	DOW	WSTCGS	AEROSOLS, flammable	2.1	UN1950	-	Turnkey management of HAZ waste provided by contractor
Batteries (Dry Cell)	General Recyclable – Various [see	Non-HAZ	Non-HAZ	Non-DOW	BATT	-	-	-	-	Turnkey management of non- HAZ waste provided by contractor
Batteries (Dry Cell)	Guideline for the Management of Waste Batteries (GNWT, 1998) for recommendation]	HAZ	HAZ	DOW	BATT	Batteries, dry, containing potassium hydroxide solid, electric storage	8	UN3028	Ш	Turnkey management of non-HAZ waste provided by contractor
Chemicals (inorganic)	Original Containers	HAZ	HAZ	DOW	INOCHM	Dependent or (cons	n specific v sult TDG R	vaste characi egulations)	teristics	Contact Chemical Waste Exchange
Construction and Demolition Material (uncontaminated)	Stockpile	Non-HAZ	Non-HAZ	Non-DOW	CONMAT	-	-	-	-	Turnkey management of non- HAZ waste provided by contractor
Contaminated Debrisand Soil (Chemical/Solvent/Oil/ Produced Water)	Contact Paramount Environmental Dept				SOILCH SOILCO SOILPW	Dependent or (cons	n specific v sult TDG R	vaste charact egulations)	teristics	Contact Paramount Environmental Dept for approved landfill location
Filters – Lube Oil	Waste Bin-HAZ	HAZ (depending on flash point and BTEX content)	HAZ (depending on flash point and BTEX content)	DOW (depending on flash point and BTEX content)	FILLUB	Environmentally Hazardous Substance, Solid N.O.S. (lead)	9	UN3077	Ш	Turnkey management of HAZ waste provided by contractor
Grease Cartridges (Completely Empty)	Waste Bin- non HAZ	Non-HAZ	Non-HAZ	Non-DOW	EMTCON	-	-	-	-	Turnkey management of non- HAZ waste provided by contractor
Hydraulic and Transmission Oil	Waste Bin- non HAZ				HYDOIL	-	-	-	-	Turnkey management of non- HAZ waste provided by contractor
Incinerator (kitchen waste)	General & Industrial non- HAZ Waste	Non-HAZ	Non-HAZ	Non-DOW	INCASH	-	-	-	-	Turnkey management of non- HAZ waste (ash) provided by contractor
Lubricating Oil (Hydrocarbon and Synthetic)	Above ground disposal tanks; L&P Disposal Receptacles	Non-HAZ (unless containing heavy metals such as Vanadium or Lead	Non-HAZ (unless containing heavy metals such as Vanadium or Lead	Non-HAZ (unless containing heavy metals such as Vanadium or Lead	LUBOIL	-	-	-	-	Turnkey management of HAZ waste provided by contractor
Metal (Scrap) (uncontaminated)	Industrial Recyclable – Scrap Metal	Non-HAZ	Non-HAZ	Non-DOW	SMETAL	-	-	-	-	Recycle location - TBD

DOW: Dangerous Oilfield Waste HAZ:

Packing Group: A group in which dangerous goods are included based on the inherent danger of the dangerous goods.

Hazardous

Packing Group I indicates great danger

indicates medium danger

Packing Group II Packing Group III indicates minor danger

## 6. References

Canadian Association of Petroleum Producers (CAPP). 2006. Waste Profile Sheets. Prepared by Wotherspoon Environmental Inc., Calgary, AB. 59pp.

Canadian Association of Petroleum Producers (CAPP). 2009. Oil and Natural Gas Waste Management – Northwest Territories. Prepared by Priddis Environmental Solutions Ltd., Calgary, AB.

Energy Resources Conservation Board (AER). September 2007. Draft Directive 50: Drilling Waste Management. Calgary, AB.

Energy Resources Conservation Board (AER). 1996. Directive 50: Drilling Waste Management. Calgary, AB.

Energy Resources Conservation Board (AER). 1996. Directive 58: Oilfield Waste Management Requirements for the Upstream Petroleum Industry. Calgary, AB. 138pp+ apps.

Environment Canada. 2017. Movement documents for hazardous waste or recyclables. Available online at: <u>https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/permit-hazardous-wastes-recyclables/fact-sheets-international-movement/movement-documents.html</u>

Government of the Northwest Territories. 1998. Guideline for the Management of Waste Batteries. Available online at: <u>https://www.enr.gov.nt.ca/sites/enr/files/guidelines/batteryguideline.pdf</u>

Government of the Northwest Territories. 2017. Guideline for Hazardous Waste Management. <u>https://www.enr.gov.nt.ca/sites/enr/files/resources/128-hazardous waste-interactive web 0.pdf</u>

Appendix 1: Project Maps and Surveys









# FORT LIARD SOUTH

As-Built October 2022 60°20', 123°30" to 60°10", 123°00' **NORTHWEST TERRITORIES** 

	Legend	
Leases	Gathering System	Transportation
Abandoned	Built	—— Highway
Built	Not Used	Old Paramount Ice Road
Built - Tied-in	Not Built	Road
Foreign	Foreign	Trail
Reclaimed	Access Roads	Cut Line
Suspended	Access Built	Boundaries
Facilities	—— Access Foreign	SDL Lands
Camp - Built	Road	Provinical Boundaries
///// Camp - Foreign	Built	Contours
Battery - Built	E Foreign	Hydrography
Sump - Built	≍ Bridge	S Waterbody
Borrow Pit - Built	🖾 Gas Plant / Compressor	Watercourse
Decking Site - Built	Cabins	

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Appendix 2: Paramount HSE Policy



#### Health, Safety and Environment Policy

Paramount Resources Ltd ("Paramount") is committed to a culture where prevention of incidents that may cause harm to people, property loss or an adverse impact on the environment is of the highest importance.

We believe that promoting operational discipline and consistency as detailed in the Paramount Operational Excellence Management System (**POEMS**) is of critical importance in fulfilling our commitments in the areas of health, safety and environmental protection. Our commitments include:

**Worker Health and Safety:** We will endeavor to ensure that all work performed for Paramount is done so in a safe manner by competent workers using appropriate equipment It is a requirement that work should only proceed once hazards have been identified and appropriate controls put in place to prevent/minimize any potential incidents or loss.

All employees and contractors conducting work for Paramount have the right to stop or refuse work that they consider to be unsafe or environmentally irresponsible without fear of repercussion.

**Environmental Protection:** We are committed to achieving a high standard of environmental stewardship. We ensure that environmental protection is an integral component of our decision making by identifying the potential environmental impacts associated with our activities and taking prudent actions to prevent/minimize these impacts and reduce our environmental footprint.

**Regulatory Compliance:** We are committed to complying with all applicable Federal and Provincial laws and regulations and recognized industry standards and practices. Individuals who violate applicable laws and regulations will be held responsible for their actions.

**Continuous Improvement:** Incidents and potential incidents are reported and analyzed to determine causes and identify corrective actions and shared learnings in order to reduce the risk of recurrence. We review the adequacy and effectiveness of all our policies, processes, programs and procedures on a regular basis to ensure they remain appropriate and up to date.

Paramount believes that its interests and those of its stakeholders, including the communities in which we operate, are best served by diligently applying the principles, practices and procedures set out in POEMS in all of our operations, and we will take steps to ensure that everyone working for Paramount supports and conducts themselves in accordance with this management system.

**//J.H.T. Riddell** President and Chief Executive Officer

# Appendix 3: Paramount Contact Information

Title	Name	Contact
Construction Supervisor	Boyd Stewart	Telephone: 587-315-7218
		Email: boyd.stewart@paramountres.com
Director, Asset Management	John Hawkins	Telephone: 403-817-5074
		Email: john.hawkins@paramountres.com
Environmental Coordinator	lan Keir	Telephone: 403-817-5077
		Email: ian.keir@paramountres.com
Manager, Drilling and	Tim Wood	Telephone: 403-290-2919
Completions		Email: tim.wood@paramountres.com
<b>Regulatory and Community</b>	Terence Hughes	Telephone: 403-206-3859
Affairs Advisor		Email: terence.hughes@paramountres.com
Onsite Supervisor	TBD	Telephone:
		Email: