



REPORT

Waste Management Plan

Tuktoyaktuk Base Remediation, Inuvialuit Settlement Region, Northwest Territories

Submitted to:

Inuvialuit Land Administration

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Table of Contents

1.0	INTRODUCTION	1
1.1	Site Location and History	1
1.2	Site Description	1
2.0	PROJECT SUMMARY	1
2.1	Contaminated Soil Excavations	2
2.2	North and South Landfills	2
2.3	Draining and Reclamation of Former Sewage Lagoon	2
2.4	North and South Docks	3
2.5	Concrete Pads	3
3.0	WASTE MANAGEMENT PLANNING AND PROPONENTS' PRINCIPLES	3
4.0	WASTE TYPES	4
4.1	Waste Definitions	4
4.1.1	Hazardous Waste	4
4.1.2	Hazardous Chemicals	4
4.1.3	Dangerous Goods	4
4.1.4	Regulated Wastes	4
4.2	Waste Classification and Characterization	4
4.2.1	Ignitability	5
4.2.2	Corrosives	5
4.2.3	Reactivity	5
4.2.4	Toxicity	5
5.0	PREVIOUSLY DOCUMENTED HISTORIC WASTE ON SITE	5
5.1	North and South Landfills and Former Sewage Lagoon	6
5.2	Buildings and Surface Structures	6
5.3	Demolition Debris	6
5.4	Contaminated Soils	6

5.5	Hazardous Materials	6
5.6	North and South Docks	7
5.7	Barrels	7
5.8	Non-Hazardous Waste	7
6.0	OTHER ANTICIPATED WASTES	8
7.0	WASTE TREATMENT METHODS	8
7.1	Physical Methods	8
7.2	Hydrocarbon Contaminated Soil Treatment Cells.....	8
7.3	Incineration of Non-Hazardous, Combustible Camp Waste	8
8.0	WASTE HANDLING.....	9
8.1	Hazardous Industrial and Domestic Waste.....	9
8.1.1	Shipping Procedure for Off-Site Disposal of Hazardous Waste	9
8.2	Non-Hazardous Commercial and Domestic Waste	9
8.3	Grey Water and Sewage Waste.....	9
8.4	Recyclables	10
8.5	Off-site Disposal of Soils	10
9.0	SUMMARY OF WASTE QUANTITIES, STORAGE AND DISPOSAL.....	10
10.0	REFERENCES	12

TABLE [in text]

Table A: Anticipated Waste Streams During the Project.....	10
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FIGURES [after text]

Figure 1	Site Location
Figure 2	Site Plan

APPENDICES

APPENDIX A

Incinerator Specifications

APPENDIX B

Soil Treatment Engineering Designs

APPENDIX C

Proposed Engineered Soil Staging Area Locations

APPENDIX D

Landfill Acceptance Letter

1.0 INTRODUCTION

WSP Canada Inc. (WSP) was contracted by Imperial Oil Resources Limited (Imperial) to develop a Waste Management Plan (WMP) for the former Tuktoyaktuk Exploration Logistics Base Camp (Tuk Base or the Site) located approximately 1.5 kilometres (km) southeast of the Hamlet of Tuktoyaktuk, Northwest Territories (NWT) (Figure 1).

The purpose of the WMP is to describe the proper treatment and disposal of several types of waste generated during the remediation of Tuk Base (the Project). This WMP characterizes the waste present on site and the most effective way to dispose of the remaining waste. The majority of the Site infrastructure was demolished and removed from the Site (Advisian 2018). The remaining areas of focus are the historic landfills, surface waste, concrete pads, Former Sewage Lagoon, South Dock and the original operational areas.

The WMP will be effective upon its approval and will be implemented during the Project. Paper copies of this plan will be available at the Site (through the Site Supervisor) and will be posted at several accessible locations. All personnel will have access to paper and digital copies of the WMP.

1.1 Site Location and History

The Site is at 69°25'35"N latitude and 132°57'20"W longitude on the Beaufort Sea coast approximately 1.5 km southeast of Tuktoyaktuk, NWT (Figures 1 and 2). The Site is on a lease ILA85TJ079) held by Imperial from the Inuvialuit Land Administration (ILA). Tuk Base began operations in 1970 and operated as a staging and storage area for oil and gas exploration in the Arctic. In 1980, decommissioning of the Site began. Between 2001 and 2013 almost all major infrastructure on site was decommissioned and removed (Advisian 2019). As of 2018, the only notable features remaining on site include two historic landfills, a sewage lagoon, north and south docks and concrete pads.

1.2 Site Description

The Site covers a land area of approximately 54 hectares and generally comprises the former Tuk Base on the Upper Terrace, transitioning down to a Lower Terrace (created by infilling the low-lying natural topography with dredged ocean sediments) and the surrounding natural tundra shown on Figure 2.

The Site is bordered by tundra to the north and south, with the Mayogiak Inlet and Tuktoyaktuk Harbour bordering the Site to the east and west, respectively. The former Northern Transportation Company Limited tank farm/lease is located to the north of the Imperial lease on Saviktok Point.

2.0 PROJECT SUMMARY

The Project-specific Remedial Action Plan (RAP) for the planned remediation works was submitted to the Inuvialuit Water Board (IWB) in March 2019 (Advisian 2019; Golder 2019), approved in July 2019 and amended in May 2020 (Golder 2020a). The RAP has been guiding the following Project tasks since 2019 and continuing until 2029.

- Surface debris (including the wood piles from the former wooden wharf) will be collected, removed and disposed of off site at an approved disposal facility.
- Hazardous material (stemming from historical operations) encountered on-site will be temporarily stored, transported off site and disposed of at an approved disposal facility.
- Soil impacted with light-end petroleum hydrocarbons (PHCs) will be treated on site and used as backfill.

- Soil impacted with heavy-end PHCs will be treated on site and/or disposed of off site at an approved disposal facility.
- Soils impacted with metals or polychlorinated biphenyls will be excavated and transported to an approved disposal facility.
- The Former Sewage Lagoon will be dewatered, backfilled and regraded/revegetated (as directed by the ILA).
- The North Dock will be utilized for the Project and then will either be repurposed (pending negotiations with the ILA) or demolished.
- The South Dock will be demolished.
- The concrete pads will be transported off-site for re-use or appropriate disposal.
- Site access for personnel and equipment will be via barge and crew boats from the Hamlet of Tuktoyaktuk during the summer field programs and ice road during the winter field programs.
- Accommodation during the winter and summer field programs may be provided by the 802-barge camp or the Arctic Star barge camp, anchored either at the Site, or close to Tuktoyaktuk; the location of the camp may change between these two locations seasonally, depending on the number of personnel required for the Site.

After Project completion, the Site will be left in a condition that promotes long term geotechnical stability and positive drainage in all disturbed areas. The end land use will be “parkland” as defined by the Canadian Council of Ministers of the Environment (CCME 1999a and updates).

2.1 Contaminated Soil Excavations

Contaminated soil areas that will need to be excavated include the North and South Landfill and multiple locations throughout the former operations area at the Upper Terrace as defined in the RAP (Advisian 2019). Each area will be excavated and, where possible, soil will be treated on site and used as backfill to promote positive drainage. Alternatively, soil that cannot be treated will be transported and disposed of off site at an approved, licensed facility. The disturbed areas will then be revegetated with native species (as directed by the ILA) to match surrounding land cover. The North and South Landfills will be the largest excavations on site.

2.2 North and South Landfills

The North Landfill is north of the lease boundary and contains approximately 2,000 cubic metres (m³) of impacted soil/debris (e.g., construction/demolition debris and general camp debris) that will be excavated, treated and/or removed and disposed of off site. The South Landfill is in the southeast portion of the Upper Terrace (Figure 2). It is considerably larger than the North Landfill and is currently (2025) estimated to contain roughly 18,000 m³ of impacted soil/debris (e.g., drums, domestic debris, rig mats, heavy tangled cables and possible metal decking materials) that will be excavated, treated and/or removed and disposed of off site. Following confirmatory soil sampling, both landfill excavations will be recontoured to promote positive drainage.

2.3 Draining and Reclamation of Former Sewage Lagoon

The Former Sewage Lagoon water will be sampled for water quality parameters to confirm there are no exceedances of applied guidelines. Upon analytical confirmation, the water will be pumped off to the land at a minimum of 30 metres (m) away from the nearest waterbody and 100 m away from the nearest fish bearing waters. The remaining berms will be used as backfill to re-contour the lagoon area to integrate into the

surrounding landscape. The reclaimed lagoon area will then be re-vegetated using a combination of live staking of willows, by harvesting live stakes from the surrounding area, seeding of native species and natural revegetation as approved by the ILA to avoid the establishment of invasive species.

2.4 North and South Docks

Structural assessments of the North and South Docks were completed in 2018 (Advisian 2018) which concluded that the North Dock is in servicable condition while the South Dock was found to be at the end of its servicable life. The North Dock is anticipated to remain intact during the remediation program while the South Dock will be removed. The granular material will be excavated to restore the natural shoreline and then the dock sheet piles will be removed. A Dock Repair and Removal Monitoring Plan was developed to mitigate possible sedimentation effects during South Dock removal (submitted to the IWB in March 2019).

2.5 Concrete Pads

Two concrete pads as well as a number of stockpiled smaller slabs remain on site. These slabs will be excavated and cut to size prior to being removed from Site for reuse or appropriate disposal.

3.0 WASTE MANAGEMENT PLANNING AND PROPONENTS' PRINCIPLES

This WMP incorporates the basic principles of waste management, which include source reduction, reuse, recycling/recovery, treatment and disposal. Imperial and their contractors are committed to conduct operations within the accepted environmental standards of the construction industry and applicable regulatory requirements. Management of waste is an important consideration of Imperial's operations. Where possible, every effort is made to minimize waste production by incorporating the principles of waste Reduction, Reuse, Recycle and Recover.

- Source reduction includes the elimination or reduction of the volume or toxicity of waste by adopting practical methods such as using alternative materials or processes. This principle can be achieved by material elimination, inventory control and management, material substitution, process modification and improved housekeeping, maintenance and training.
- Reuse is achieved by using a product more than once for the same application or different purposes. Reusing material such as certain food and beverage containers, pallets, etc. can reduce the amount of waste generated.
- Recycling/recovery of products that typically have one use is an excellent method of reducing the volume of waste generated at a worksite, sorting products so they can be managed in bulk eliminates the need for additional handling and allows for different products to be managed by efficient recycling processes.
- Waste treatment is used to reduce the volume, mass and/or toxicity of the material prior to disposal due to contaminants contained within the waste. There are a number of treatment options including biological and physical processing which may be used separately or combined to be the most effective and efficient (it is Imperial's intention to construct a waste treatment area onsite to treat waste to make it acceptable for reuse as backfill material on site).
- Disposal of waste is considered the final option for waste management. When disposing of waste, the type of waste, volume, location and final containment must be considered. The waste disposal options available to this Project include licensed off-site solid waste sites and municipal sewage lagoons. The physical and chemical characteristics as well as the regulatory requirements and liability associated with disposal may limit which options are available for waste disposal.

4.0 WASTE TYPES

4.1 Waste Definitions

Imperial and their contractors are responsible for ensuring that all existing and generated wastes are properly identified, characterized and classified as dangerous or non-dangerous to develop safe and efficient handling strategies that assure regulatory compliance. The WMP will be distributed to all crews and regular tailgate meetings will stress the importance of Imperial's Waste Management Principles and the various duties associated with waste segregation.

The following sections provide definitions of the different types of waste that may be encountered while carrying out the Project. Waste is defined as a product or substance that is no longer of any use to the Project and is intended for disposal.

4.1.1 Hazardous Waste

Hazardous waste includes hazardous waste products such as poisons, corrosive agents, flammable substances, ammunitions, explosives, radioactive substances or any other material that can endanger human health or well-being or the environment if handled improperly. Hazardous waste will be identified, handled, transported and disposed of in accordance with the 2017 Government of the Northwest Territories (GNWT) Guidelines for Hazardous Waste Management. Only properly trained individuals with current Transportation of Dangerous Good (TDG) certification will be collecting and preparing samples for shipment to third-party laboratories off site, for analysis and classification.

4.1.2 Hazardous Chemicals

A hazardous chemical can be any substance, class of substance or mixture of substances that is entering or is capable of entering the environment in a quantity or concentration that may constitute a danger to human health or well-being or the environment.

4.1.3 Dangerous Goods

Materials that are regulated by the *Transportation of Dangerous Goods Act* (TDGA; Government of Canada 1992) may be either one of the 3,400 chemicals identified by name in Schedule 1 of the Transportation of Dangerous Goods Regulations or may have chemical properties that fall within one of nine TDG Classes. The Northwest Territories *Transportation of Dangerous Goods Act* (GNWT 1988) is the territorial complement of the federal TDGA. The federal legislation applies to transportation via air, ocean, rail and road; whereas, the territorial act applies to road transport within the NWT.

4.1.4 Regulated Wastes

Regulated wastes include any waste material that is specifically regulated as hazardous in the *Canadian Environmental Protection Act* (CEPA; Government of Canada 1999) or through various guidelines issued by Environmental Protection Services (EPS) or Government of the Northwest Territories (e.g.; the 2017 GNWT Guidelines for Hazardous Waste Management), and dangerous for transport (in CEPA and TDGA).

4.2 Waste Classification and Characterization

Waste characterization is used to assess the appropriate handling, treatment, transportation and disposal of the waste. Characterization is the assessment of the physical, chemical and toxicological properties of the waste product. These properties are used to determine the potential risks relating to handling, storage and transportation of the waste on public roads, as well as to determine the environmental consequences of the waste so that an appropriate disposal option can be determined. Characterization allows the determination of a hazardous or non-

hazardous waste. Waste transportation and disposal is regulated by the GNWT or Environment and Climate Change Canada and the receiving jurisdiction.

4.2.1 Ignitability

This classification will apply to liquids, solids or gases; however, the most common are liquids or solutions which have a flash point of 23°C or below. Other materials included in this class are oxidizers which readily yield oxygen to support the combustion of organic materials, waste that can spontaneously combust and flammable compressed gases. Examples of ignitable wastes include acetone, hexane, methanol and isopropanol.

4.2.2 Corrosives

This classification applies to liquids only. A waste is corrosive if its pH is equal to or less than two, or equal to or greater than 10. Liquids which corrode steel at rates greater than 6.35 millimetres per year are also considered corrosive. Examples of corrosive wastes include mineral acids, sodium and potassium hydroxide.

4.2.3 Reactivity

This classification encompasses two types of hazards: physical and health. Wastes with reactive physical characteristics are those with the potential of reacting violently, presenting fire hazards and/or are capable of explosion at normal temperatures and pressures. Wastes with reactive health hazards are those that will release toxic or irritating vapors or fumes when mixed with water or acids. Examples are reactive laboratory wastes, such as sulphide solutions and water-reactive metals.

4.2.4 Toxicity

This classification includes those substances which are capable of causing acute, chronic or adverse effects in humans and/or the environment. Examples of toxic wastes include biocides, carcinogens and heavy metals such as lead, chromium and arsenic.

Generally, a waste is considered non-hazardous if it does not possess any of the above-mentioned characteristics; however extreme caution must be used when following these guidelines. Although some materials do not fall into these hazard classes, they still may pose a threat to the environment or humans and will be handled accordingly. The following compounds could be considered in this class:

- sulfur dioxide and other sulfur compounds;
- oxides of nitrogen compounds;
- carbon monoxide;
- organic compounds, in particular hydrocarbons (except methane);
- heavy metals and their compounds;
- dust, asbestos, glass and mineral fibers;
- chlorine and its compounds; and
- fluoride and its compounds

5.0 PREVIOUSLY DOCUMENTED HISTORIC WASTE ON SITE

The majority of Tuk Base infrastructure has already been demolished and removed from the Site. Previous studies (WorleyParsons 2012; Advisian 2018) have identified various types of historic waste on site which are summarized in the following sections.

5.1 North and South Landfills and Former Sewage Lagoon

Two historic landfills have been identified on-site (Advisian 2019; Figure 2). The South Landfill (currently [2025] estimated to contain 18,000 cubic metres [m^3] of contaminated soil/debris) was the main disposal area for historic camp-generated debris, which included drums, domestic debris, rig mats, heavy tangled cables and possible metal decking materials. The North Landfill (estimated to contain 2,000 m^3 of debris/soil) was used as a historic construction camp dump and contains construction/demolition debris and general camp debris.

An additional historic waste disposal area (sewage waste) was the former camp sewage lagoon (filled with approximately 2,000 m^3 of water). The Former Sewage Lagoon encompasses an area of approximately 2,000 square metres (m^2) and is approximately 1 metre (m) deep. The sewage lagoon as its longest length north to south is approximately 70 m and at its widest width east to west measures approximately 50 m. This is a historic lagoon and has not been in operation since the mid-1980s. There are no records of sewage quantity, quality and discharge events during its time of operation. Water samples will be collected and analyzed for metals and PHC exceedances.

5.2 Buildings and Surface Structures

Between 2001 and 2013, all of the buildings used during historic operations were demolished and removed from Tuk Base. Remaining infrastructure prior to the start of the Project included concrete pads, thermosyphons, North and South Landfills, a Former Sewage Lagoon, two docks and wood piles from the former wooden wharf.

5.3 Demolition Debris

In 2017, 27 bags (each approximately 100 litres [L] in size) of debris were collected and removed from the Site. Additionally, debris that was too large (i.e., steel/plastic debris) to manually remove from Site was stockpiled for future removal.

5.4 Contaminated Soils

As summarized in the RAP (Advisian 2019), an estimated total of 51,053 m^3 of soil had concentrations of PHCs, metals, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), barite, ammonia, nitrates, arsenic and mercury exceeding the remediation guidelines. Of this volume, approximately 12,015 m^3 were identified for on-site treatment, 288 m^3 for off-site disposal, and 38,750 m^3 for sorting (debris) and further management (Advisian 2019). The majority of the noted contaminated soil/debris is in the South Landfill (estimated at 36,750 m^3) (Advisian 2019). The volume of contaminated soil in the North and South Landfills was updated to approximately 18,000 m^3 in 2020 (Golder 2020b). The volume of contaminated soil/debris remaining in the South Landfill in 2025 is estimated to be approximately 18,000 m^3 . Other impacted soil locations include the North Landfill, the materials storage/original tank farm, barite overpack and other storage and equipment areas throughout Tuk Base.

5.5 Hazardous Materials

As summarized in the RAP, most of the hazardous material associated with Tuk Base was in the historical buildings. Similar to the materials encountered during the 2011 demolition program (WorleyParsons 2013), hazardous waste that could be found within the landfills may include asbestos containing materials (ACMs), polychlorinated biphenyls (PCBs), items painted with PCB amended paint, items painted with lead-based paint, batteries and waste fuel/oil.

5.6 North and South Docks

Structural assessments of the North and South Docks were completed in 2018 (Advisian 2018) which concluded that the North Dock is in servicable condition while the South Dock was found to be at the end of its servicable life. The North Dock will remain intact during the remediation program while the South Dock will be removed. The granular material will be excavated to restore the natural shoreline and then the dock sheet piles will be removed.

Approximately 2,200 m³ of excavated material and an estimated 374 m² sheet piling (estimated to weigh approximately 59,500 kilograms) will be removed from the South Dock. The dock will be removed by first excavating fill from behind the piling and then extracting the piling. Potential increases in sediment concentration are mitigated by best management practices to handle material such that it is removed directly back from inside the dock perimeter so that it cannot fall into water outside. Piles will be removed from the water's edge and erosion-control material used to prevent any material from being carried back into the water, such as by precipitation run-off. Monitoring of water quality during dock removal will be a check on the effectiveness of best practices and also will trigger additional mitigation measures if increased sediment concentration is detected (as outlined in the Dock Repair and Removal Monitoring Plan submitted to the IWB in March 2019).

After the dock is removed, the shoreline will be graded, employing best practices regarding placement of material and erosion-control measures may be used to stabilize the shore. Industrial machinery to excavate material and extract piling is a necessity, but its use poses a risk of introducing contamination. This is mitigated by using clean equipment free of external dirt, grease and biological contamination such as weeds. Equipment will be refueled at official bermed refuel locations 100 m away from any waterbody. The Project-specific Spill Contingency Plan will be implemented during all work activities.

As outlined in the Project-specific RAP, testing of soil from the dock met all criteria for soil quality and no metal or hydrocarbon contamination was detected in the materials to be excavated. Excavated soils from the dock will be used as backfill materials for other excavations and placed in such a way to allow for proper drainage. Sheet piles will be removed from the Site and disposed of at a licensed facility.

In addition to the two docks, there are the remaining pilings of the wooden dock on the northern end of the Site that need to be removed. This will take place at a time when water levels are lowest using an excavator and best effort to remove all the wood located above the mud line. Wood removed from this area will be sampled for potential contaminants, removed from Site and disposed of appropriately.

The North Dock will be utilized for the Project and then will either be repurposed (pending negotiations with the ILA) or demolished. If the North Dock should need to be removed at the end of the Project, the same removal procedure would apply, and the Waste Management Plan (and other relevant plans) would be updated to include this additional task.

5.7 Barrels

As summarized in the RAP (Advisian 2019), previous investigations at the Site identified buried barrels possibly containing product at the South Landfill. The barrel contents were not classified during previous Environmental Site Assessments and will be identified and appropriately disposed of during the Project.

5.8 Non-Hazardous Waste

The majority of the non-hazardous waste was removed during the demolition of historical buildings (WorleyParsons 2013). Waste remaining is primarily composed of wood, metal and concrete. Non-hazardous waste could include surface debris, former structures or debris within the landfills.

Two concrete pads as well as a number of stockpiled smaller slabs remain on site. These slabs will be excavated and cut to size prior to being removed from Site.

6.0 OTHER ANTICIPATED WASTES

In addition to the historic wastes previously identified on site (Section 5), the following wastes are anticipated to be generated during the Project:

- domestic non-hazardous waste (paper, food, tin cans, plastic packaging, metal and nonrecyclable glass jars);
- commercial non-hazardous waste (plastic packaging, flagging tape, stakes and similar items);
- grey water and sewage waste; and
- recyclable beverage containers.

7.0 WASTE TREATMENT METHODS

7.1 Physical Methods

Physical methods such as gravity separation, filtration and centrifugation are means of reducing solids and simplifying the handling of liquid and solid wastes. Pumping contact water through a barrel with filtration membranes and hydrocarbon sorbent pads will be one treatment method utilized.

7.2 Hydrocarbon Contaminated Soil Treatment Cells

Parts of the remaining concrete pads may be used as treatment cells for the PHC-impacted soil (or they will be repurposed off site). A soil treatment area will be constructed at the beginning of the Project, which will be bermed to prevent potential leachate from contaminated soil. Soil will be excavated and placed in piles within the treatment area where they will be aerated by mechanically rotating the piles. Nutrients will be added to increase the rate of biodegradation. An engineered drawing illustrating the soil treatment design was provided in July 2019 and is provided in Appendix B.

In August 2019, a modification to the Water Licence N5L8-1841 was provided to the IWB that requested the addition of a soil treatment cell. The additional soil treatment cell used a similar design as the accepted soil treatment cell and details were provided in a technical memorandum provided to the IWB, dated 16 August 2019. The approved engineered and stamped drawing is provided in Appendix B.

7.3 Incineration of Non-Hazardous, Combustible Camp Waste

Incineration of non-hazardous, combustible kitchen waste will occur at the Site. One dual-chamber incinerator, a Double-Chamber Cyclonator Incinerator (Series CY2000) manufactured by Westland Environmental Services Inc. will be deployed. Information on the incinerator is provided in Appendix A. The incinerator will be situated at the Site on a durable surface in an area with suitable ventilation. The incinerator will be operated by designated, trained personnel with appropriate personal protective equipment. Waste segregation and storage will be supervised and prior to each incineration event, waste will be inspected and weighed. The Project-specific Incinerator Management Plan will be provided to the regulators and staff on the barge. It outlines the incineration steps, including reporting and testing of the ash.

Incineration logs will be kept on-site describing quantities to be burned, time of burn, duration of burn and peak temperatures. The resulting ash will be labelled and temporarily stored in a designated, secured area. Prior to

transportation and disposal at a licensed landfill facility, all incinerator ash will be tested at an approved laboratory following the 2017 GNWT Guidelines for Hazardous Waste Management.

8.0 WASTE HANDLING

8.1 Hazardous Industrial and Domestic Waste

Hazardous industrial and domestic waste will consist of PCB and lead amended paints, ACMs, batteries, waste oil, oil and fuel filters and historical, highly contaminated soils. Hydrocarbon contaminated materials that may result from accidental spills may also fall into this category.

All hazardous waste will be properly packaged in approved transport containers and shipped to an Imperial approved, licensed disposal site.

The GNWT developed the Guideline for the General Management of Hazardous Waste in the NWT (GNWT 2017), which outlines the registration and tracking of generators, carriers and receivers of hazardous wastes in the NWT. Imperial is a registered generator of hazardous waste with the GNWT (Imperial Hazardous Waste Generator Registration # NTG-339). Imperial will contract registered shipping companies and will track the transport of hazardous waste from the Site to the appropriate, Imperial-approved, registered disposal facilities. All required documentation will be requested, completed and kept on file.

8.1.1 Shipping Procedure for Off-Site Disposal of Hazardous Waste

Any hazardous waste will be sent to Secure Energy (formerly Tervita) Northern Rockies Landfill (waste acceptance is provided in Appendix D), in Fort Nelson, British Columbia, or other approved off-site disposal facility. The following will apply to any shipment of hazardous waste leaving the Site;

- The TDG certified shipper is to fill out one (1) manifest for each shipment of goods that is sent off site. The manifest is the preliminary movement document to travel with the shipment from Tuk Base to the disposal facility. These manifests will be treated according to TDG practices (i.e., six copies sent by the responsible parties to the appropriate locations).
- It should be noted that 'Box 27', in the upper right-hand corner of the manifest, should be used to reference other manifests associated with a shipment. For example, if a quantity of soil that is shipped on manifest '1A', then split into trucks travelling under manifests '2A', '2B', and '2C', box 27 on each of these manifests should reference manifest '1A'.

8.2 Non-Hazardous Commercial and Domestic Waste

Non-hazardous industrial and domestic waste will consist of paper, food, tin cans, plastic packaging, metal and nonrecyclable glass jars. Waste will be stored onboard the barge camp and will be periodically transported and disposed of at a licensed landfill facility (e.g. the Inuvik Solid Waste Disposal Facility; waste acceptance is provided in Appendix D). Other non-hazardous commercial waste is expected to be composed of plastic packaging, flagging tape, stakes and similar items. All waste and debris will be collected daily and stored temporarily in wildlife proof containers and regularly transported to an approved landfill (e.g. the Inuvik Solid Waste Disposal Facility).

8.3 Grey Water and Sewage Waste

Grey water and sewage waste will be stored in tanks on the support barge adjacent to the barge camp and will be transferred to the Tuktoyaktuk Water Treatment Plant (waste acceptance is provided in Appendix D) when the

sewage tanks are near full capacity, or at the end of each season or once the Project is completed, whichever event occurs first.

8.4 Recyclables

Recyclable beverage containers will be collected in clearly labelled containers. All staff will be made aware of the recycling program and notes will be posted in the camp. Recyclables will be collected and transported to the bottle depot in the Hamlet of Tuktoyaktuk.

8.5 Off-site Disposal of Soils

Excavated soil from the landfills will be temporarily staged, stockpiled and stored onsite in designated Engineered Soil Staging Areas (ESSA) as shown in Appendix C. The ESSAs have been designed with berms and sumps to manage the soils and surface water. Excavated soils will be staged within the ESSA for sorting, sampling to determine final disposal and subsequently stockpiled. Treatable soils will be moved from the ESSA to the Soil Treatment Cell and non-treatable soils will be temporarily stockpiled within the ESSA for off-site disposal in future seasons. Prior to demobilization from site, the ESSA stockpiles will be prepared for winterization by surveying and flattening piles into pads. The soils will then be transported off site in a winter season on an ice road.

9.0 SUMMARY OF WASTE QUANTITIES, STORAGE AND DISPOSAL

All wastes will be identified, characterized, and classified as hazardous or non-hazardous to develop safe and efficient handling strategies that assure regulatory compliance. This WMP will be distributed to all personnel and regular tailgate meetings will highlight the importance of Imperial's waste management principles and the duties associated with waste segregation. A summary of the anticipated waste streams during the Project is provided in Table A.

Table A: Anticipated Waste Streams During the Project

Category	Waste Stream	Description	Approximate Amount Currently Stored on Site	Anticipated Volume	Proposed Disposal Location
Non-hazardous waste	Non-recyclable domestic wastes (organic and non-organic)	Combustible kitchen waste from the barge camp.	6.3 m ³ (as ash)	Minimal amounts (e.g., less than 1 cubic metres per week) [m ³ /week]	On-site incinerator. Ash will be disposed of off site at approved disposal facility at the end of the Project.
		Organic and non-organic waste including garbage, office garbage and barge camp waste.	None	Minimal amounts (e.g., less than 1 m ³ /week)	Off site disposal at Inuvik Solid Waste Disposal Facility.
	Construction materials	Pieces of material such as concrete, insulation, liner, metal debris, and wood pilings.	115 m ³ concrete 174 m ³ insulation 4 m ³ liner 1,544 m ³ metal and debris 43 m ³ wood pilings	Unknown due to uncertainty with South Landfill excavation contents	Concrete pads may be transported to the Hamlet of Tuktoyaktuk for re-use. Remaining material will be disposed of at Inuvik Solid Waste Disposal Facility or other approved off-site disposal facility.

Category	Waste Stream	Description	Approximate Amount Currently Stored on Site	Anticipated Volume	Proposed Disposal Location
	Recyclable domestic wastes	All material appropriate for recycling (i.e., beverage containers, tin cans, plastic and glass).	None	Less than 1 m ³ /week	Hamlet of Tuktoyaktuk bottle depot
Hazardous waste and sewage	Spill-soils and/or snow	Soil and/or snow contaminated with either diesel, oil or other accidental spill materials resulting from the Project.	255 m ³	All efforts will be made to avoid spills	Off site at Secure Energy (formerly Tervita) Northern Rockies Landfill or other approved off-site facility.
	Used hydrocarbon containers and absorbents	Containers used to store hydrocarbons and absorbent materials used for spill cleanup.	3 m ³ oil boom	All efforts will be made to avoid spills	
	Waste oils	Used engine oils and oil filters	None	50 litres (L) per month	
	Waste batteries	Recovered from excavations or from used batteries from equipment	16	2 per month	
	Waste antifreeze	Used antifreeze from equipment	None	60 L per month	
	Waste solvents	Solvents used to remove grease and oil from engine components and other machinery	None	10 L per month	
	Compressed Cylinders	Recovered from excavations	23	Unknown due to uncertainty with South Landfill excavation contents	
	PCB, PAP, ACM, lead painted steel	Recovered from excavations and other hazardous waste possibly encountered in the South Landfill	25 linear metres	Unknown due to uncertainty with South Landfill excavation contents	
	Contaminated soil	Soil that cannot be treated on site due to metal or Type A hydrocarbon contamination	11,000 m ³ in ESSA 1	Unknown due to uncertainty with South Landfill excavation contents	

Category	Waste Stream	Description	Approximate Amount Currently Stored on Site	Anticipated Volume	Proposed Disposal Location
	Camp greywater and sewage	From the barge camp flushing toilets, showers and kitchen facilities.	None	Maximum of 2 cubic metres per day [m ³ /day] (depending on camp occupancy)	Tuktoyaktuk Water Treatment Plant

10.0 REFERENCES

- Advisian. 2018. Tuk Base – Wharf D3 and Small Wharf, Level II Condition Assessment. Prepared for Imperial. Ref. 407074-00293-702. 8 November 2018.
- Advisian. 2019. Tuk Base: Remedial Action Plan. Prepared for Imperial. Ref. 407074-00293-701. 19 March 2019.
- CCME (Canadian Council of Ministers of the Environment). 1999a and updates. Canadian Environmental Quality Guidelines: Soil Quality Guidelines for the Protection of Environmental and Human Health.
- Golder (Golder Associates Ltd.). 2019. Re: Remediation Action Plan for Tuk Base. 25 March 2019.
- Golder. 2020a. Re: Remediation Action Plan for Tuk Base. 8 May 2020.
- Golder. 2020b. N5L8 – 1841 Tuk Base Plans Amendments. Submitted to the Inuvialuit Water Board, May 2020.
- Government of the Northwest Territories (GNWT). 2017. Guidelines for Hazardous Waste Management. Available at: (https://www.enr.gov.nt.ca/sites/enr/files/resources/128-hazardous_waste-interactive_web.pdf).
- GNWT. 1988. *Transportation of Dangerous Goods Act*. RSNWT 1988,c.81. Last amended 2022.
- Government of Canada. 1992. *Transportation of Dangerous Goods Act*. S.C. 1992, c.34. Last amended on 28 August 2019.
- Government of Canada. 1999. *Canadian Environmental Protection Act*. S.C. 1999, c.33. Last amended on 14 February 2025.
- WorleyParsons (WorleyParsons Canada Services Ltd.). 2012. Hazardous Materials Survey at Esso Tuk Base, Tuktoyaktuk, Northwest Territories. Prepared for Imperial. 17 July 2012.
- WorleyParsons (WorleyParsons Canada Services Ltd.), 2013. 2011 Tuk Base Demolition, Tuktoyaktuk Base Camp. Prepared for Imperial Oil. 26 July 2013.

Figures



LEGEND

LEASE BOUNDARY

02505001,000

METRES

1:20,000

NOTE(S)
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. COORDINATE SYSTEM IS UTM ZONE 8 NAD 83.

REFERENCE(S)
1. BASE MAP: VANTOR

CLIENT

IMPERIAL OIL LIMITED

PROJECT

TUKTOYAKTUK BASE REMEDIATION, INUVIALUIT SETTLEMENT REGION, NORTHWEST TERRITORIES

TITLE

SITE LOCATION

CONSULTANT



YYYY-MM-DD

2026-03-09

DESIGNED

J.REDSTONE

PREPARED

J.REDSTONE

REVIEWED

V.ANDERSON

APPROVED

B.SUEN

PROJECT NO.

CA-GLD-18105460

YEAR/DOC

2026/IWB

REV.

0

FIGURE

1



LEGEND
— CURRENT ROAD EDGE

0 50 100 200
1:3,250 METRES

NOTE(S)
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. COORDINATE SYSTEM IS UTM ZONE 8 NAD 83.

REFERENCE(S)
1. PRE-CONSTRUCTION SURVEY CONDUCTED BY INUKSHUK GEOMATICS INC. DATED: AUGUST 25-29, 2015.
2. RECORD SURVEY CONDUCTED BY INUKSHUK GEOMATICS INC., SUMMARIZING CONSTRUCTION ACTIVITIES UP TO AUGUST 10, 2022. PROVIDED BY GOLDER, RECEIVED: OCTOBER 13, 2022.
3. AERIAL IMAGERY SUPPLIED BY INUKSHUK AND COLLECTED ON AUGUST 26, 2024 BY THE PLEIADES SATELLITE CONSTELLATION.

CLIENT
IMPERIAL OIL LIMITED

PROJECT
TUKTOYAKTUK BASE REMEDIATION, INUVIALUIT SETTLEMENT REGION, NORTHWEST TERRITORIES

TITLE
SITE PLAN

	CONSULTANT	YYYY-MM-DD	2026-03-09
	DESIGNED	J.REDSTONE	
	PREPARED	J.REDSTONE	
	REVIEWED	V.ANDERSON	
	APPROVED	B.SUEN	

PROJECT NO.	YEAR/DOC	REV.	FIGURE
CA-GLD-18105460	2026/IWB	0	2

APPENDIX A

Incinerator Specifications



CY-2050-FA "D"

Designed for Petroleum, Mining, and Lumber Industries

- **Built In Safety Features**
- **Readily Transportable**
- **Economical Operation**
- **Clean Burning**

Capacity

1.4 m³, 90 kg per hour.
Type No. 1, 2, & 3 waste.

Power Requirements

115 volts 60 cycle single phase.

Stack

Stainless Steel

- 14 gauge.
- 38cm diameter.
- 3m high.
- c/w stainless steel spark arrester.
- a hinged base plate for moving.

Casing

12 gauge steel.
Lining: high heat duty castable refractory over high temperature insulation.

Hearth

Refractory hearth over 6.35mm steel base.

Doors

6.35cm steel plate c/w heavy-duty blade latch.

Charging: - 61cm-x 71cm clear opening
- Refractory lined over steel plate.

Ash: - 61cm x 40cm clear opening
- Refractory lined over steel plate

Air Supply

Forced air fan c/w duct to primary air jets and to secondary over-fire air jets.

Timers

Cycle timer interconnected to air supply fan and gun type burner enclosed in burner housing.

Burners

650,000 BTU gun type primary burner.
Gun burner enclosed in protective plate steel housing.
450,000 BTU in secondary chamber.

Fuel Supply: Oil Fired Unit Only

1350-liter fuel storage tank c/w filter and flexible hose type connection.

Transporter

Incinerator and fuel storage mounted on skid type frame 4.27m long x 1.83m wide. Height: 3.2m tall, with stack folded. Constructed of W150 I-Beam c/w bumper posts.

Weight

5000 kg.

Options

- * LPG Fired burner.
- * Diesel fired burner.
- * 2.3m Electric power cord.
- * Stack winch.
- * Cold climate assembly.

MANUFACTURED BY:

DISTRIBUTED BY:



Environmental Services Inc.

20204 – 110 Avenue, Edmonton, AB Canada T5S 1X8

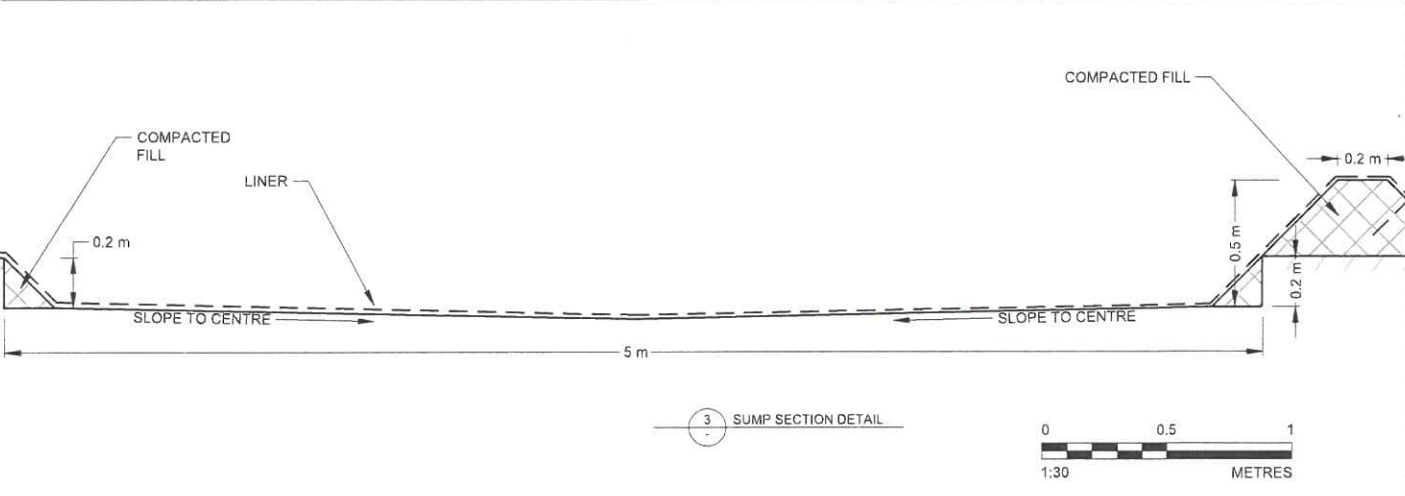
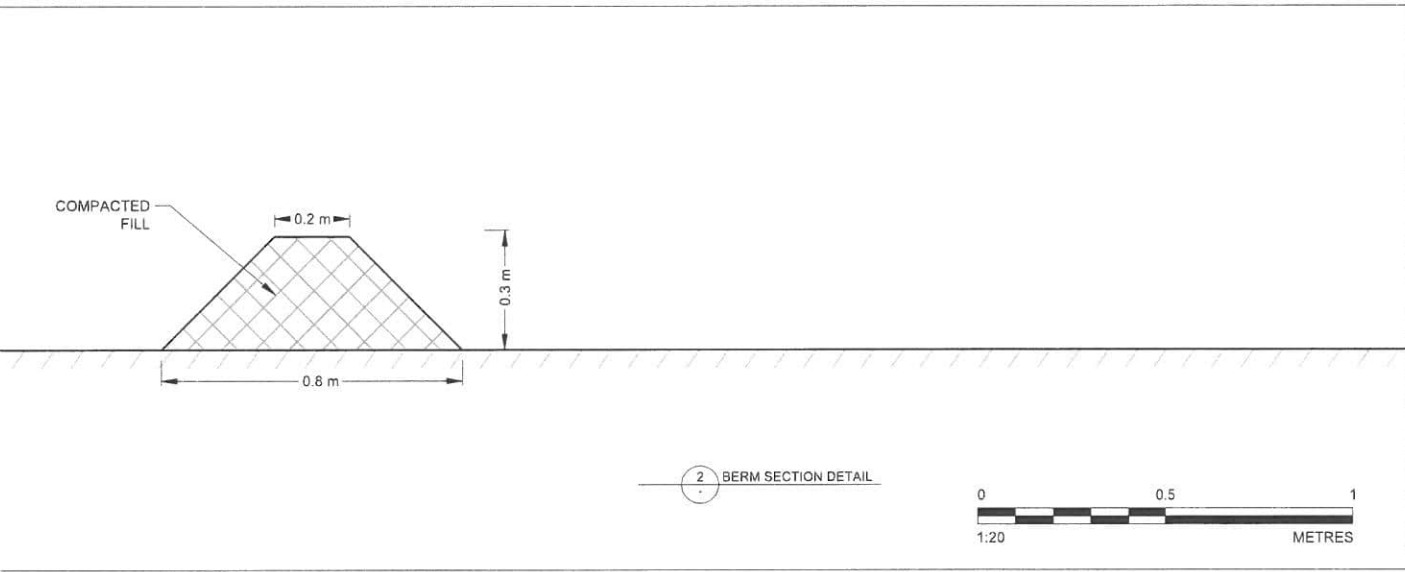
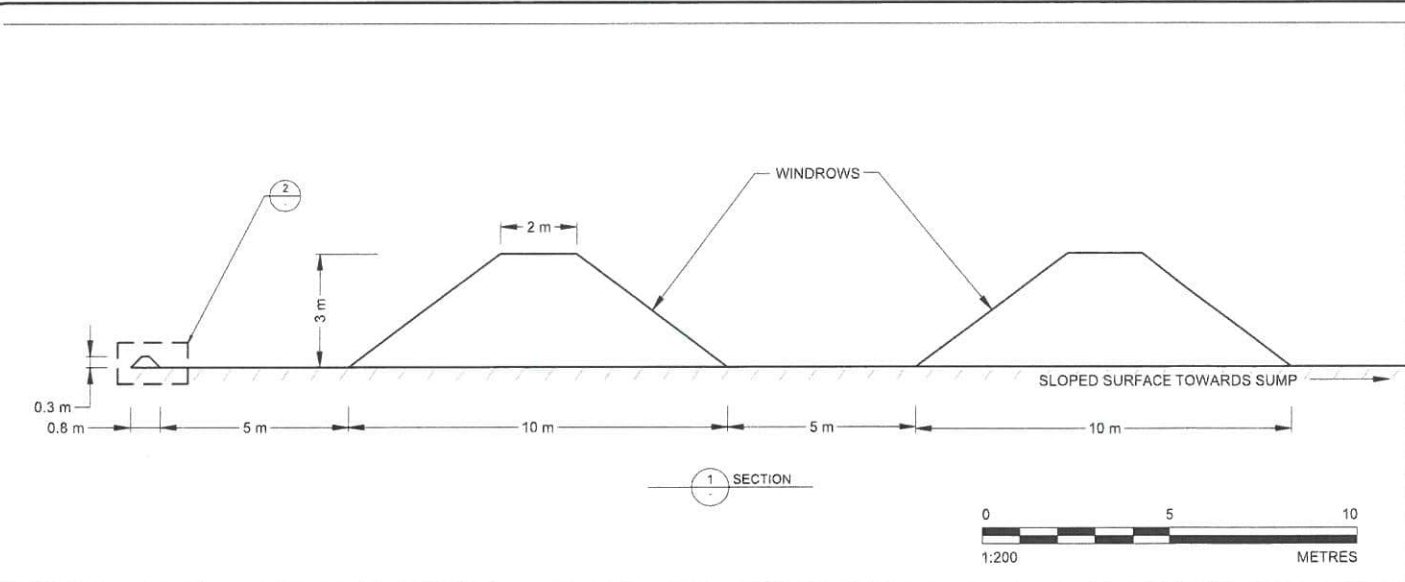
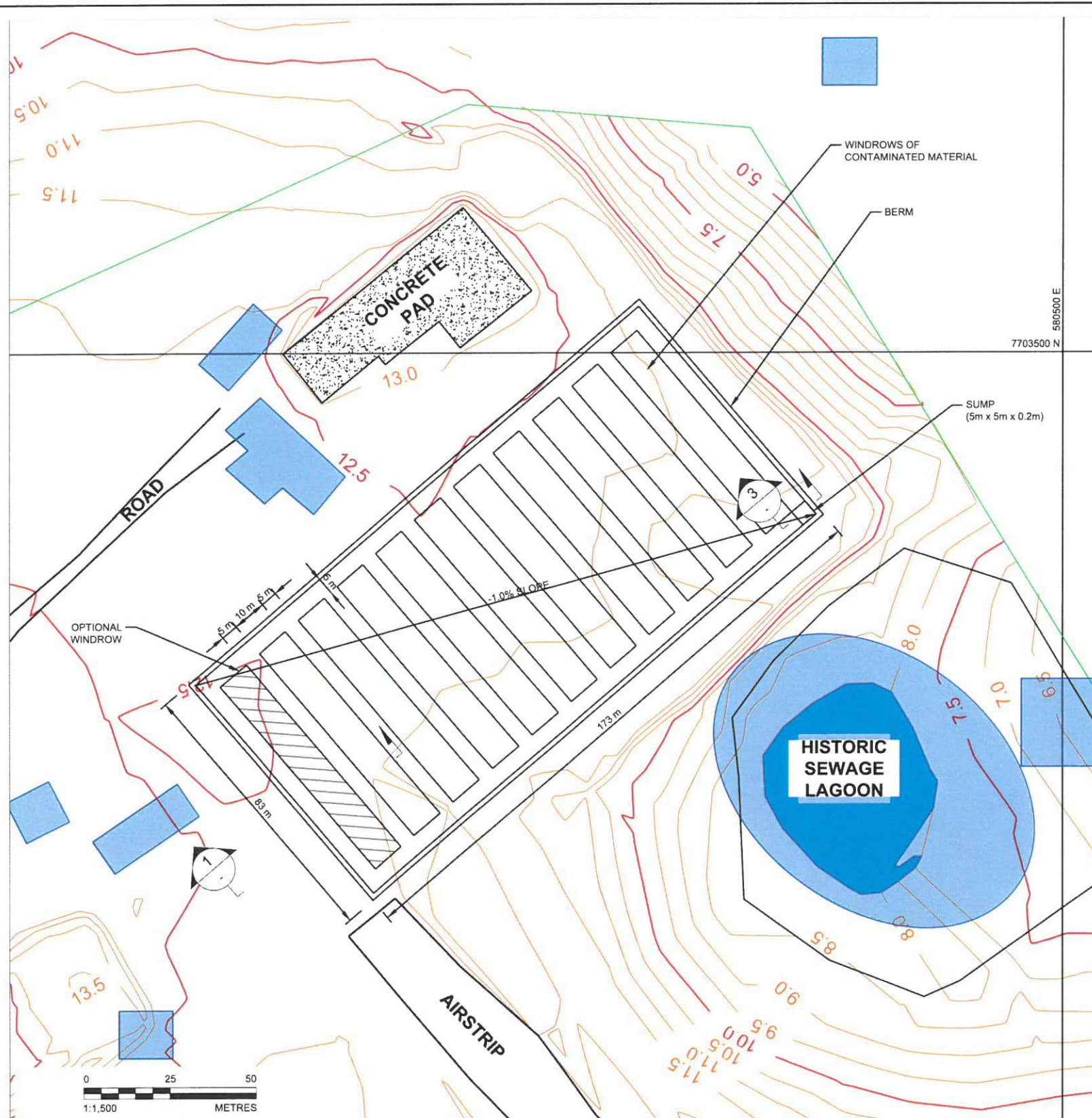
Phone: (780) 447-5052 Fax: (780) 447-4912

E-MAIL info@westlandenvironmental.com

APPENDIX B

Soil Treatment Engineering Designs

Path: C:\Users\chc\Golder Associates\18105460 - Imperial Oil Base Remediation\AB - Project Files\18105460 - Imperial Oil Base Remediation\Golder.dwg | File Name: Tuk Base - Soil Treatment Cell.dwg | Last Edited By: chc | Date: 2019-07-19 | Time: 1:53:03 PM | Printed By: chc | Date: 2019-07-19 | Time: 3:14:02 PM



- LEGEND**
- EXCAVATION AREAS
 - LEASE BOUNDARY

PERMIT TO PRACTICE
GOLDER ASSOCIATES LTD.
Signature *John Ching*
Date *19 July 2019*
PERMIT NUMBER: P 049
NT/NU Association of Professional
Engineers and Geoscientists



CLIENT
IMPERIAL OIL LTD.

CONSULTANT



YYYY-MM-DD	2019-07-19
DESIGNED	BS
PREPARED	EC
REVIEWED	JM
APPROVED	KR

PROJECT
TUKTOYAKTUK BASE REMEDIATION

TITLE
SOIL TREATMENT CELL

PROJECT NO.	PHASE	REV.	FIGURE
18105460	1000	1	2A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/24

APPENDIX C

**Proposed Engineered Soil Staging
Area Locations**

Path: \\golder-gis.com\plandata\Office\Vanouver\east-gis\Client\Imperial_Oil_Limited\Tuk_Remediation_NT99_PROJECTS\18105460\1000\1001\Waste_Management_Plan02_PRODUCTION\DWG\ | File Name: 18105460-1000-1001-C1.dwg | Last Edited By: jhopson Date: 2020-05-01 Time: 4:01:47 PM | Printed By: jhopson Date: 2020-05-01 Time: 4:08:30 PM



LEGEND

- LEASE BOUNDARY
- ROAD
- AUGUST 2015 PRE-CONSTRUCTION SURVEY GROUND CONTOURS (0.5 m INTERVAL)
- 2019 RECORD SURVEY GROUND CONTOURS (0.5 m INTERVAL)
- PROPOSED ENGINEERED SOIL STAGING AREA
- PROPOSED SUMP LOCATION

NOTES

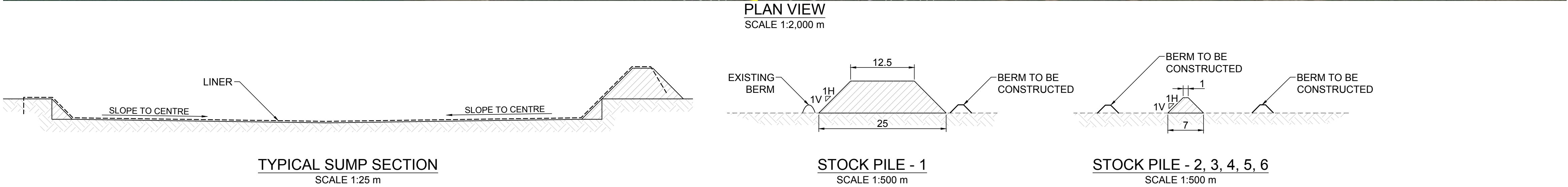
- ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
- COORDINATE SYSTEM IS UTM ZONE 8 NAD 83.
- ELEVATIONS ARE REFERRED TO ACP TUKT (M039007) AND ARE ORTHOMETRIC.

REFERENCES

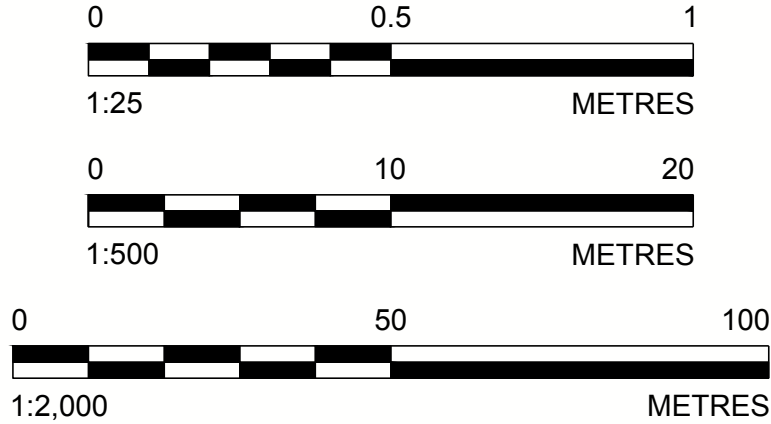
- PRE-CONSTRUCTION SURVEY CONDUCTED BY INUKSHUK GEOMATICS INC. DATED: 25-29 AUGUST 2015, PROVIDED BY IMPERIAL OIL LIMITED, RECEIVED: 4 MARCH 2018.
- RECORD SURVEY CONDUCTED BY INUKSHUK GEOMATICS INC., SUMMARIZING CONSTRUCTION ACTIVITIES UP TO 24 SEPTEMBER 2019. PROVIDED BY GOLDER CONSTRUCTION INC., RECEIVED: 2 DECEMBER 2019.

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NOT FOR CONSTRUCTION
DRAFT



A				2020-05-01				FOR REVIEW				S.McLEAN J.HOPSON L.HADERLEIN K.RATTRAY			
REV.				YYYY-MM-DD				DESCRIPTION				DESIGNED PREPARED REVIEWED APPROVED			

SEAL

CLIENT
IMPERIAL OIL LTD.

CONSULTANT
 GOLDER

VANCOUVER OFFICE
SUITE 200 - 2920 VIRTUAL WAY
VANCOUVER, B.C.
CANADA
[+1] (604) 296 4200
www.golder.com

PROJECT
TUK BASE REMEDIATION

TITLE
2020 PROPOSED ENGINEERED SOIL STAGING AREA LOCATIONS

PROJECT NO. 18105460

PHASE/TASK 1000/1001

REV. A

1 of 1

DRAWING **C1**

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

APPENDIX D

Landfill Acceptance Letter

April 14, 2026

WSP

Attention: Stephanie Villeneuve, Environmental Scientist

RE: SECURE Waste Infrastructure Corp. - Waste Acceptance – Northern Rockies Landfill

As requested, SECURE is providing the following information to confirm that upon approved analytical, SECURE can receive solid waste contaminated with hydrocarbon and heavy metals from the Tuk Base (NWT) Remediation Project.

These wastes will be received at the following SECURE Facility:

SECURE Northern Rockies Landfill

SECURE's Northern Rockies Landfill is a British Columbia Secure Landfill operating under the authorization of British Columbia Ministry of Environment and Parks (Approval No. PR-16078 as amended). The solid wastes listed above will be received at this facility as a Non-Hazardous Solid for final disposal.

The final waste acceptance is pending on updated analytical results that satisfy the requirements of SECURE's acceptance criteria, including analytical being completed and signed by an accredited 3rd Party Laboratory. Please see the attached, Solid Waste Acceptance Protocol, for full analytical requirements that must be met prior to waste disposal.

We trust this information satisfies your current requirements. If you have any questions, please do not hesitate to contact the undersigned at 780-267-2315 or jcowen@secure.ca.

Sincerely,



Jennelle Cowen
Environment & Regulatory Advisor

SECURE

Attachment 1: Solid Waste Acceptance Protocol, BC

SOLID WASTE ACCEPTANCE PROTOCOL: BRITISH COLUMBIA

This form will assist you in identifying if the waste(s) can be accepted and assist in the analytical testing requirements.

SECURE Landfills will accept solid hazardous waste (except those prohibited) and non-hazardous industrial/oilfield solid wastes.

EXAMPLES OF COMMON ACCEPTABLE SOLID WASTES (NO FREE LIQUIDS)

1. Activated Carbon
2. Asbestos
3. Catalyst(s) Sulphur and Non-Sulphur
4. Cement (Crushed, Dry Returns)
5. Contaminated Debris and Soil(s) with:
 - Chemical/Solvent(s)
 - Crude Oil/Condensate
 - Dry Cleaning/Industrial Related
 - Mercury/Metals
 - Methanol
 - Produced/Salt Water
 - Refined Fuel(s) (i.e. Gasoline)
 - Sulphur
6. Construction and Demolition (C&D) Debris
7. Desiccant(s)/Molecular Sieve(s)
8. Frac Sand (non-radioactive)
9. Incinerator Ash
10. Sand – Produced
11. Sludge - No Free Liquids (Solids ONLY) from:
 - Flare Pit
 - Hydrocarbon
 - Lime
 - Process
 - Sulphur
12. Drilling Mud(s)/Cuttings:
 - Advanced Gel Chem
 - Gel Chem
 - Invert (Diesel Fuel)
 - Potassium Chloride (KCl)
 - Potassium Sulphate (K₂SO₄)
13. Treated Wood/Wood Waste (e.g. railway ties)
14. NORM (Naturally Occurring Radioactive Material) solid waste

PROHIBITED WASTES

1. Liquids (Paint Filter Test)
2. Wastes materials which contain free liquids
3. Wastes containing Benzene, Toluene, Ethylbenzene and/or Xylene(s) in total combined concentrations > 1,000.0 mg/kg (Total BTEX Analysis)
4. Containers holding free liquids
5. Lube oil filters (spin on/off) and

- containers covered under the BC Used Oil Management Association
6. Recyclable Oily Rags
7. Wastes containing halogenated organic compounds in total concentrations > 100.0 mg/ kg (EOX Analysis), excluding tetrachlorethylene
8. Waste containing tetrachloroethylene in total concentrations > 500.0 mg/kg
9. Waste which contain dioxin TEQ, as defined by the Hazardous Waste Regulation, in a concentration greater than 100 parts per billion by weight
10. PCB Wastes
11. Wastes as defined by the [Transportation of Dangerous Goods Regulations of Canada](#) (TDG) (Transport Canada, 2011) which:
 - Fall under TDG Classes 1 to 9 but **excluding** Class 4.1 UN 3175: Solids Containing Flammable Liquids
 - Are listed as forbidden in Column 3 of Schedule 1. These are dangerous goods that must not be transported (some example substances are UN3097: Flammable Solids and UN3100: Oxidizing Solids)
12. Wastes as defined by the Hazardous Waste Regulation (Government of British Columbia, April 2009) which:
 - Contain any liquid or solid containing > 50 ppm by weight of chlorobiphenyls (PCB)
 - Contain dioxin TEQ in a concentration of > 100 ppb (dioxin TEQ is determined by adding the products of the measured concentrations of each congener listed in Schedule 1: Column 1 multiplied by the TEF in Column 2)
 - contains one or more contaminants listed in Schedule 4: Table 1 with > than the concentration specified in Column 2 EXCEPT BTEX (when subjected to the Modified Leachate Extraction Procedure – refer to Schedule 4: Part 2 – Modified Leachate
 - Extraction Procedure in the Hazardous Waste Regulation)

LANDFILL DISPOSAL CRITERIA

The following is a list of landfill disposal criteria that may be required based on the description, origin and history of the solid waste:

- Analytical data provided must support the solid waste classification
- Analytical data provided must be current (not older than one (1) calendar year)
- It is the responsibility of the waste generator to determine the characteristics of the waste
- Un-used non-hazardous solid products require a SDS/Data Sheet

MULTI-WELL PADS

- SECURE Application Form (SAF) and analytical is required for each surface location;
- All downholes are to be listed on the SAF;
- An analytical is required for each drilling product for every SAF; and
- If the product or formation changes, an updated analytical is required

CLASS II INDUSTRIAL LANDFILL DISPOSAL CRITERIA

The following associated regulatory levels are common compounds and the maximum allowable concentrations. Any material that exceeds these levels will not be approved for disposal. Refer to Schedule 4, Table 1 from the [Hazardous Waste Regulation](#) (as amended) for additional parameters

CONSTITUENTS	REGULATORY LEVELS	CONSTITUENTS	REGULATORY LEVELS
BTEX:		Common Leachable Substances:	
Total combined BTEX	1,000.0 mg/kg	Arsenic	2.5 mg/L
Benzene*	0.5 mg/L	Barium	100.0 mg/L
Ethylbenzene*	0.24 mg/L	Boron	500.0 mg/L
Toluene*	2.4 mg/L	Cadmium	0.5 mg/L
Xylenes*	30.0 mg/L	Chromium	5.0 mg/L
		Cyanide	20.0 mg/L
*Leachable BTEX levels classified as Hazardous Waste if > stated regulatory levels:		Copper	100.0 mg/L
Halogenated Organic Compounds:		Fluorides	150.0 mg/L
EOX	100.0 mg/kg (total)	Lead	5.0 mg/L
(Extractable Organic Halides)		Mercury	0.1 mg/L
Tetrachloroethylene	500.0 mg/kg	Nitrate	4,500.0 mg/L
Volatile Organic Compounds (VOCs):		Nitrite	320.0 mg/L
Discrete compound limits		Selenium	1.0 mg/L
Other:		Silver	5.0 mg/L
Additionally, the waste must meet the following requirements:		Uranium	10.0 mg/L
- pH ≥ 2.0 and ≤ 12.5 (Except Wood Ash) - No Free Liquids can be present (US EPA Method 9095 Paint Filter Test)		Zinc	500.0 mg/L
		PCBs:	50.0 mg/kg
		NORM Waste:	≤ 70 Bq/g and Radium 226 at ≤ 5Bq/g (Silverberry Only)

Note(s):

- Not all regulated compounds are listed. Refer to Schedule 4, Table 1 above from the [Hazardous Waste Regulation](#) (as amended) for additional parameters
- Dry Cleaner and/or other Industrial related impacted solids may require specific analytical parameters; please contact SECURE for full details

BASIC PARAMETERS

The following basic analytical testing is required for all wastes regardless of the composition:

FP – Flash point for solid samples

pH – pH of solid waste material

TBTEX – Total Benzene, Ethylbenzene, Toluene and Xylene(s)

LBTEX – Leachable Benzene, Ethylbenzene, Toluene and Xylene(s) (TCLP and/or MLEP)

LMETALS – Leachable Metals (TCLP and/or MLEP)

LMERCURY – Leachable Mercury (TCLP and/or MLEP)

PFT – Paint Filter Test

ANALYTICAL – SUPPLEMENTAL WASTE SPECIFIC PARAMETERS

The following additional analysis MAY be required depending on the waste description and/or type (refer to guidance below). Additional analysis may be requested depending on the type of waste and source of generation.

Sol Scan – Landfill Solvent Screen in solid waste EPA 8240

PCB – Polychlorinated Biphenyls

PAH – Polycyclic Aromatic Hydrocarbons

EOX – Extractable Halogenated Organic Compounds (TCLP and/or MLEP)

VOC – Volatile Organic Compounds (TCLP and/or MLEP)

Waste Oil – Means automotive lubrication oil, cutting oil, fuel oil, gear oil, hydraulic oil and any other refined petroleum based oil or synthetic oil, including diesel fuel where the oils in the waste in a total concentration greater than 3% by weight and the oils through use, storage or handling have become unsuitable for the original purpose due to the presence of impurities or loss of original properties (if the total concentration of oil in waste is > 3% by weight, the waste is

considered waste oil and falls under the definition for hazardous waste)

Spontaneous Combustion (Self-Heating)

Sulphur – Elemental Sulphur (S⁰) and Sulphides (S²⁻)

Water Reactivity (ΔT)

% ANC – % Acid Neutralizing Capacity – Additional testing recommended for Sulphur impacted wastes

% CCE – % Calcium Carbonate Equivalent – Additional testing recommended for Sulphur impacted wastes

WASTE SPECIFIC ANALYTIC PARAMETERS

WASTE DESCRIPTION	ANALYTICAL REQUIREMENTS
1. Activated Carbon	Basic and Spontaneous Combustion (Self-Heating) *
2. Catalyst (sulphur)	Basic, Elemental sulphur and sulphides, Spontaneous Combustion (Self-Heating)*
3. Catalyst (non-sulphur)	Basic, Spontaneous Combustion* (Self-Heating)*
4. Desiccant(s)/Molecular Sieve(s)	Basic, Water Reactivity (ΔT)*
5. NORM Solids	Radiochemistry (Bq/g)

***Please contact the Facility Manager to discuss the requirements of these parameters.**

Note: The analytical requirements for waste approval include but are not limited to those listed above. SECURE may request additional testing prior to issuing approval. If a waste differs from the descriptions above please contact the SECURE facility.

HELPFUL INFORMATION (Laboratory Requirements)

- Spontaneous combustion testing requires a four (4) liter pail of sample.
- BTEX sampling requires methanol preservation, EPA 5035A.
- Analytical reports must be the signed copy.

The following analyses are used to aid in the determination of the waste classification:

1. **FP** – Flash Point for solid samples (solids with a flash point < to 60.5°C using the closed-cup test method are considered flammable, fall under the category TDG Class 4.1 UN3175 Solids Containing Flammable Liquids, are acceptable at the Silverberry and Northern Rockies landfill).
2. **Leachable Toxic Waste** – Means waste when subjected to the extraction procedure described in the US EPA Method 1311 produces an extract with a contaminant concentration greater than those prescribed in Table 1 of Schedule 4 of the Hazardous Waste Regulations.
3. **Waste Oil** – Determination of Waste Oil Content in Solids and Liquids for HWR – PBM (March 31,2005)
4. **Modified Leachate Extraction Procedure (MLEP)** – Method used to determine suitability for waste disposal in a SECURE landfill, see Schedule 4 Part 2 of the Hazardous Waste Regulation.

From: [Lloyd Gruben](#)
Sent on: April 9, 2026 1:27:51 PM
To: [Mclean, Scott \(Applied Solutions\)](#)
CC: [Villeneuve, Stephanie](#); [Hawes, Franziska](#); [Anderson, Virginia \(Applied Solutions\)](#)
Subject: RE: Imperial Tuk Base Site Disposal

For the camp less than 50 people, no water license required, but yes, dispose at the Hamlet of Tuktoyaktuk lagoon, additionally, the non hazardous can be disposed at the Inuvik landfill.

Lloyd Gruben

From: Mclean, Scott (Applied Solutions) <scott.mclean@wsp.com>
Sent: April 9, 2026 10:57 AM
To: Lloyd Gruben <Lloyd_Gruben@gov.nt.ca>
Cc: Villeneuve, Stephanie <stephanie.villeneuve@wsp.com>; Hawes, Franziska <Franziska.Hawes@wsp.com>; Anderson, Virginia (Applied Solutions) <virginia.anderson@wsp.com>
Subject: Imperial Tuk Base Site Disposal

You don't often get email from scott.mclean@wsp.com. [Learn why this is important](#)
Hi Lloyd,

We are planning to ramp up work again at the Imperial (Esso/Exxon) Tuk Base site, across the harbour from Tuk, this coming summer. As part of the planning process, I am looking to receive approval from yourself for disposing of sewage/grey water at the Tuk sewage treatment facility. The sewage/grey water will be generated from a camp of up to ~30 people in the summer and ~15 people in the winter. Additionally, we would like to dispose of non-hazardous / non-contaminated waste (~1,500t) at the Inuvik landfill.

Please let me know if this is acceptable and/or if you have any concerns.

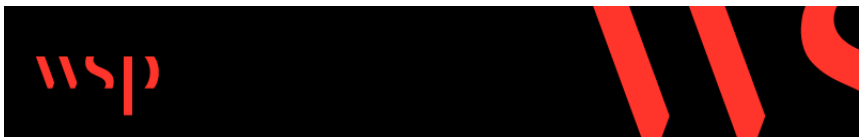
Thanks,

Scott McLean, P.Eng, PMP
Lead Project Manager

M +1 604-679-5538

WSP
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Kelowna, BC
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