

Operations and Maintenance Plan

Inuvik Soil Treatment Facility
Gwich'in Land and Water Board
Water Licence G17L1-002



KBL ENVIRONMENTAL LTD.
Inuvik Soil Treatment Facility Operations and Maintenance Plan
V.2.2

July 9, 2021

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EXECUTIVE SUMMARY

This Operations and Maintenance Plan details how KBL Environmental Ltd. will operate and maintain the Inuvik Petroleum Hydrocarbon Contaminated Soil Treatment Facility. The Facility includes a single bermed, lined cell for the treatment of petroleum hydrocarbon contaminated soil in addition to an engineered water retention pond for the collection of runoff generated from precipitation; the retention pond also serves to hold contaminated water and snow received at the Facility. The contaminated soil is treated using mechanical aeration to stimulate microbial activity to promote bioremediation. Amendments including fertilizers or surfactants are sometimes added to the soil dependant on soil composition to enhance conditions to foster microbial activity/bioremediation.

The Facility is located within the Town of Inuvik Solid Waste Disposal Facility (SWDF) footprint, including the Inuvik landfill. Once treated to specified criteria, the soil is used as a daily cover for the municipal solid waste facility for disposal.

No soil will be accepted at the Facility unless the generator can provide laboratory analysis or is the result of fuel spills that require immediate removal from the generating location. Any soil that cannot be treated to meet approved criteria for use as landfill daily cover will be transported to a licensed waste receiving Facility for disposal.

Plan Revisions

The effective date for the Petroleum Hydrocarbon Contaminated Soil Treatment Facility Operations and Maintenance Plan is upon approval of the Plan from the Gwich'in Land and Water Board. The Plan will be reviewed annually and revised whenever there is an operational change at the Facility, changes to contact personnel, or otherwise required by the Gwich'in Land and Water Board.

Table 0-1: Plan Revisions Table

Date of Revision	Title, Section #, or Page # of Revised Sections	Summary of Changes
08/2017	V2.0 Section 3 Section 6	Update to reflect issued License Revised according to license conditions and to reduce the footprint of the soil treatment pad.
10//2017	V2.1 Section 6	Update wording for clarity and alignment with License
01/2021	V2.2 Section 1 Section 2 Section 5 Section 6.2 Section 6.3 Section 6.4	Update to include acceptance of contaminated water Updated contact information Updated to include electronic storage Updated to include water acceptance & in-situ water treatment Updated to include in-situ water treatment Updated to include water acceptance

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1.0 INTRODUCTION

KBL Environmental Ltd. (KBL) and the Town of Inuvik (the Town) have agreed to allow KBL to construct and operate a petroleum hydrocarbon contaminated soil treatment facility (the Facility) to receive and treat soil, snow, and water contaminated with petroleum hydrocarbons (PHCs). The Facility is located within the existing Town of Inuvik Solid Waste Disposal Facility (SWDF), operated under Gwich'in Land and Water Board (GLWB) license G17L3-001.

2.0 FACILITY OPERATIONS AND MAINTENANCE CONTACTS:

Facility Operations and Maintenance Contacts:

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Project Location

Town of Inuvik Solid Waste Disposal Facility

Lot 65, Group 1355, CLSR 61339

Inuvik, Northwest Territories

Coordinates: (N) 7582173.14; (E) 554308.00

The Inuvik SWDF is located on the east side of the Dempster Highway (locally referred to as Airport Road), approximately 1.56 km east of the Mackenzie River. The Facility is accessed through the SWDF, which is gated. A security fence surrounds the Facility, which acts as a secondary access restriction. The Facility operating hours mirror those of the Inuvik SWDF operating hours. Facility operating hours may be adjusted based upon project needs with approval from the Town. The Town of Inuvik and KBL have an agreement to share the main gate access.

The Facility is designed to treat soil contaminated with petroleum hydrocarbons. Contaminated soils are delivered to the Facility and stored in a linear low-density polyethylene (LLDPE) lined cell surrounded by a berm (soil treatment pad). The Facility also includes a water retention pond engineered to collect runoff from precipitation; the pond can also accommodate contaminated water and snow.

3.0 ROLES AND RESPONSIBILITIES

As the licensee, KBL is solely responsible for the management and operation of the Facility. As specified in the contractual agreement between the Town and KBL, KBL will manage Facility operations, control (including analytical verification) treatment performance, and address all regulatory compliance requirements. All technical, logistical, and operations requirements required for soil, snow, and water treatment are managed by KBL. Responsibility for the preparation and submission of annual reports will be with KBL. Maintaining ongoing communication with the Town regarding facility operations will be the responsibility of KBL.

Table 3-2: Summary of Responsibilities

Organization	Responsibilities	Party Responsible
KBL	Annual reporting	Manager, Licensing & Compliance
	Day to day operations	Manager, Environmental Compliance
	Emergency response contact	Manager, Environmental Compliance
	Contractor orientation	Manager, Environmental Compliance
	Management and movement of soil, water, and treatment materials	Manager, Environmental Compliance
	Groundwater monitoring as established in Water License	Manager, Environmental Compliance
	Monitoring of retention pond freeboard	Manager, Environmental Compliance
	Facility inspections and daily activity logs	Manager, Environmental Compliance
	Water license reporting	Manager, Licensing & Compliance
Town of Inuvik	Accepting treated soil for daily cover at the Town landfill	Public Works Director

4.0 ENVIRONMENTAL POLICY

KBL's commitment to protecting the environment is demonstrated in how we conduct our day-to-day business operations. All employees take the highest standards of care to minimize the environmental impact of all operations. The company management team is responsible for taking a leadership role and developing policies and procedures that minimize environmental effects. Employees and contractors are responsible for bringing to the attention of their immediate supervisor procedures and incidents that may impair the environment. Our policy is to:

1. Comply with all applicable government regulations and license requirements;
2. Consider the environmental effects of our operations;
3. Provide staff with all the necessary information, training, and equipment; and

4. Develop processes, policies, and procedures that minimize the occurrence and consequences of environmental incidents and utilize standard operating procedures (SOP's) specific to the Facility's tasks.

5.0 PURPOSE & SCOPE

The purpose of this Plan is to outline the requirements for operating and maintaining the Facility. KBL will manage operations responsibly and comply with all licenses, permits, and applicable laws and regulations related to Facility operations and maintenance. The following table lists applicable regulations and guidelines governing Facility operations.

Table 5-3: Regulations and Guidelines

Jurisdictional Authority	Regulation or Guideline
Canadian Council of Ministers of the Environment	Water Quality Guidelines for the Protection of Aquatic Life
Government of the Northwest Territories, Department of Environment and Natural Resources	Guideline for the General Management of Hazardous Waste in the NWT (1998)
	Northwest Territories Water Act (2014)
	Environmental Guideline for Contaminated Site Remediation
	Environmental Protection Act 2015
Mackenzie Valley Land and Water Board	Guideline to the Water Licensing Process (2020)
	Guideline for the Design, Operation, Monitoring, Maintenance and Closure of Petroleum Hydrocarbon-Contaminated Soil Treatment Facilities in the Northwest Territories (2020)
	Engagement Guidelines for Applicants and Holders of Water Licenses and Land Use Permits (2018)
	Guidelines for Developing a Waste Management Plan (2011)
Environment and Climate Change Canada	Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils (SAIC 2006)
Transport Canada	Transportation of Dangerous Goods Regulation (2016)

The purpose of this project is to operate and manage a soil treatment facility in Inuvik, NT. The Facility includes operation and maintenance of a soil treatment pad and a water retention pond which operates primarily during the summer months. Following bioremediation, treated soil meeting license criteria are transferred for daily cover at the Inuvik landfill. Soil determined through laboratory analysis to be unsuitable for re-use will be transported to an approved facility for treatment or disposal.

The Facility includes one engineered cell for receiving, storage, and treatment of petroleum hydrocarbon contaminated soil, one lined water retention pond for the collection of leachate from the soil treatment pad and the receipt and storage of contaminated snow and water, two above-ground storage tanks for holding water (each ~60 m³) and temporary storage shed. Facility documentation, including a copy of this Plan, is maintained on-site. Copies of shipping documents detailing the movement of contaminated soil to the Facility and records of treated soil being removed for daily landfill cover are maintained electronically by KBL. Similar documentation regarding the storage, use, treatment, discharge, and/or disposal of retention pond water is maintained electronically by KBL. All on-site documentation is kept at the SWDF gatehouse; electronic copies of all documentation are maintained on KBL's data management system.

6.0 SUMMARY OF OPERATIONS

Potential environmental impacts associated with facility operations are mitigated and/or managed through facility design, implementation of mitigation and maintenance measures, and strict adherence to the conditions specified in the Facility water license and through a monitoring program. A description of each of these measures is detailed below.

6.1. Facility Design

The Facility consists of one engineered, bermed storage and treatment cell (design drawings are provided in Appendix A). The soil treatment pad is constructed entirely above ground and graded to direct precipitation to a water retention pond. The cell is built with a 60-mil linear low-density polyethylene (LLDPE) liner. The dimensions are approximately 75 m x 36 m; the berms are 1.0 m high and 2.5 m wide. Should the liner or berms become damaged during operations, repairs will be made immediately using materials and construction techniques that meet the applicable design specifications.

6.2. Facility Operations

The Facility is designed to treat petroleum hydrocarbons to specified criteria, which can be found in Appendix B –Criteria, Sampling, and Handling. Material accepted for treatment is predominately petroleum hydrocarbon contaminated soil, snow, and water from off-site sources, including residential, commercial and, industrial properties where a hydrocarbon release has occurred. Before acceptance at the Facility, soil analysis by an accredited laboratory is completed for contaminants of concern to determine suitability for treatment and/or review of Safety Data Sheets (SDS). In the event of an environmental emergency such as a spill of a known substance (i.e. soil contaminated with fuel from a vehicle rollover), the material may be accepted into the Facility without analysis, then sampled upon receipt. Soil meeting acceptance criteria is placed onto the soil treatment pad. Soil from a single generating site is characterized, segregated, and tracked through a unique numerical identifier. Once the soil has completed the remediation process, the soil is sampled to confirm it meets the criteria specified in the Facility's operating licence. Soil sampling is conducted following KBL's sampling protocol (detailed in Appendix B). The inspector will be provided with laboratory analytical results confirming the suitability of the treated soil for the specific re-use application. When the treated soil is suitable for daily cover at the landfill, the confirmatory analytical results will be provided to the Town before removing the soil from the soil treatment facility. Treated soil to be used by alternate end users will be reviewed

by KBL in consultation with the GLWB and the inspector on a case-by-case basis for approval under the terms of the Water Licence. Soil not meeting re-use criteria will be transported off-site for disposal at an approved receiving facility. Records, including certificates of analysis and movement documents, are kept electronically with KBL. All supporting documentation and laboratory certificates of analysis will be included in the Facility Annual Report.

Tonnages of soil delivered to the Facility are recorded from the weigh scale located at the SWDF and on the waste movement documents. Copies of received manifests, records of the movement of soil suitable for daily cover to the landfill, and records of soil being moved off-site are stored electronically with KBL.

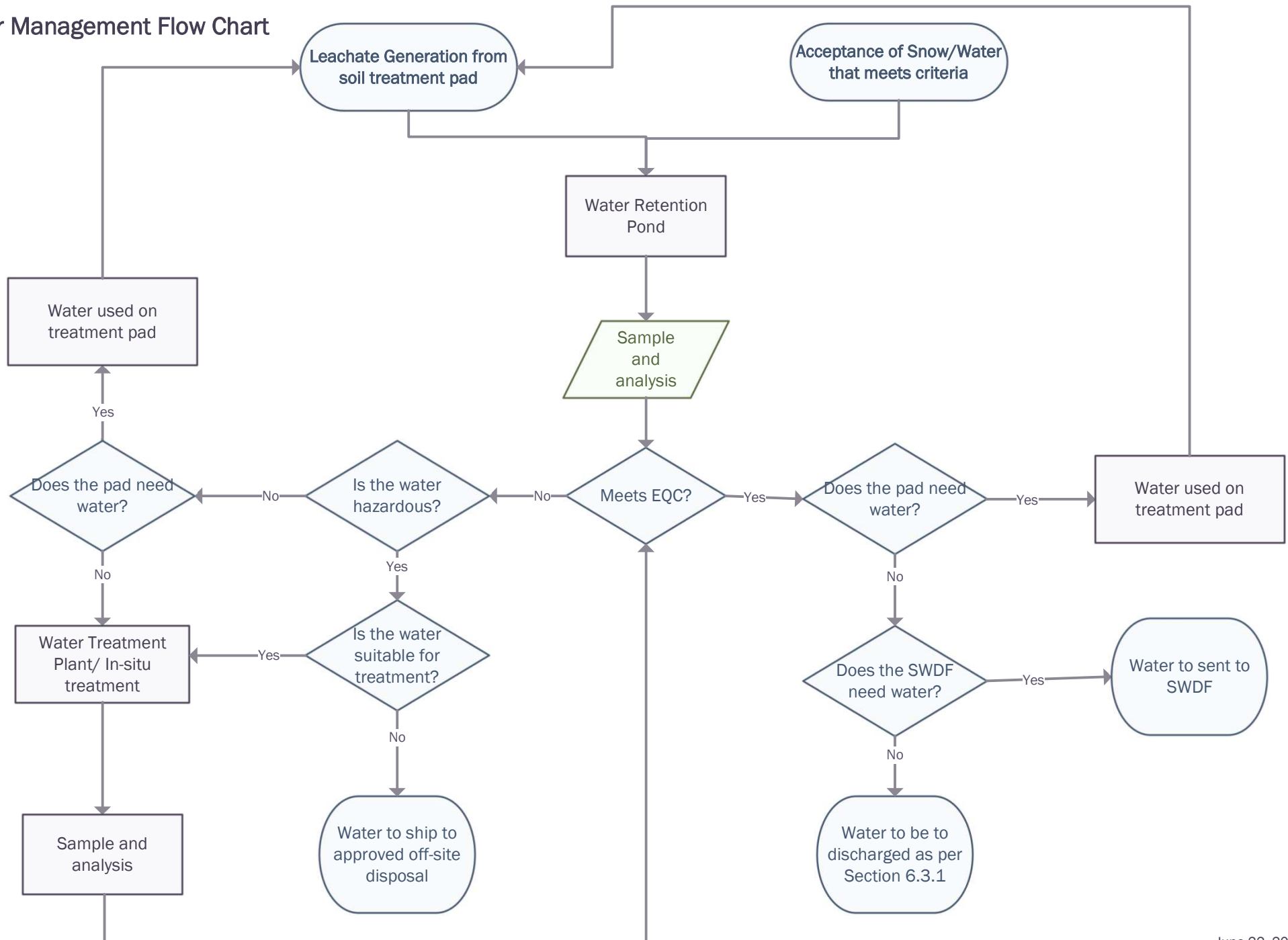
During the winter season, operations at the Facility consist of receiving contaminated soil and snow that meet the acceptance criteria. Regularly scheduled inspections are completed during the winter months. Operations during the summer season will include receiving contaminated material, treatment of soil, snow, and water, and sampling of treated material before re-use, discharge, or disposal.

Facility operations incorporate the following:

- A soil treatment pad constructed entirely above ground, lined with 60-mil LLDPE and graded to direct precipitation to the water retention pond;
- The water retention pond is lined with a light coloured, 60-mil LLDPE liner;
- Soil berms surrounding the soil treatment pad to divert precipitation away from the pad and act to contain soil within the treatment pad;
- Soil for remediation is placed in windrows not exceeding a height of 4 m; the top of the windrow will be no closer to the toe of the berm than 4 m (on the horizontal), allowing for a 1:1 angle of repose;
- Soil is held in the treatment area until it is cleared for use as daily cover for the Inuvik landfill based on analytical results;
- Signage located at the Inuvik SWDF that indicates the shared entrance for the Facility;
- Entrance/exit signs denote a single entrance and single exit to the soil treatment pad. The signage specifies that the site is restricted to authorized vehicles due to operating equipment. All Facility signage is maintained in good condition;
- Off-load areas which are kept clear of contaminated soil in a manner that prevents contaminants from being tracked out of the Facility by heavy equipment; and,
- Mechanical and, if necessary, manual track cleaning completed before excavators exiting the pad to avoid tracking contaminated soils.

At the onset of each annual Facility operation (summer) season, KBL staff and contractors working at the Facility receive an orientation on operations, safety, and routine practices at the site.

Water Management Flow Chart



6.3. Water Retention Pond (SNP 0037-1)

The water retention pond is designed to store up to 205 m³ of water at any one time, maintaining a freeboard of at least 0.9 m at all times. The pond is rectangular and approximately 18 m by 30 m with side slopes of 2.5 horizontal to 1 vertical. The overall pond capacity is 362 m³ (no freeboard). Please refer to Appendix A for water retention pond design and drawings.

The water retention pond volume is monitored regularly during the summer season by a KBL representative. Inspection results and measurements are recorded in a log kept on site. More frequent water level monitoring will occur when the freeboard begins to decrease or in the event of heavier than normal precipitation events. During periods of precipitation when there is no work happening at the Facility, a KBL representative will be dispatched to ensure sufficient freeboard is maintained. If less than 1 m for freeboard is present or this condition is imminent, a vacuum truck or pumps will be dispatched to remove water from the retention pond to ensure the pond freeboard is maintained.

Two water holding tanks (SNP 0037-2) with a capacity of approximately 63,000 L each are located on-site. The water holding tanks (ASTs) are used to store excess water from the water retention pond in the event water levels increase above optimal freeboard. One AST will remain empty at all times and be dedicated for use as a holding tank if water removal from the retention pond is required. If it is anticipated that the ASTs are unable to accommodate estimated retention pond volumes, KBL will mobilize vacuum trucks and/or additional tanks as needed. The ASTs will be near the water retention pond and within the lined area of the treatment cell.

Retention pond water management may include pumping the pond water into ASTs to maintain sufficient freeboard in the pond. Water may be reapplied to the soil treatment pad, as conditions dictate. The ASTs may hold pond water before application on the treatment pad or until water treatment events have been conducted. Additionally, temporary storage of water in the ASTs may be necessary for pond maintenance or inspection.

Drainage patterns from the soil treatment pad are assessed as part of the regular inspections to ensure that runoff water is diverted to the retention pond as per the design. Should it be determined that drainage is not occurring efficiently or that water is ponding in the soil treatment pad, equipment will be used to reconfigure soil piles to improve drainage.

Monthly Facility inspections during snow-free months include visual assessment for erosion, exposure of liner, leakage, and water retention pond volume measurements. Inspections are conducted by trained personnel (KBL staff or an on-site operator/contractor). The inspector is prompted to inspect the above-noted features by using a standardized inspection log (a copy is provided in Appendix C). The records are maintained on-site and electronically.

Water held in the retention pond is analyzed and compared with the Effluent Quality Criteria (EQC) specified in the Facility Water Licence. The retention pond water management approach is determined by laboratory analytical results as detailed below:

Water meeting EQC

- Be utilized for application within the soil treatment pad for the provision of moisture to the soil. Moisture is an integral part of promoting microbial activity responsible for the degradation of petroleum hydrocarbons. Water application for bioremediation is permissible provided the water is not hazardous as defined by the "*Guideline for the General Management of Hazardous Waste in the NWT (1998)*".
- Be discharged to the receiving environment (details outlined in 6.3.1. On-Site Water Discharge).
- Be used as a dust suppressant within the boundaries of the SWDF.

Water exceeding EQC

- Be utilized for application within the soil treatment pad for the provision of moisture to the soil. Moisture is an integral part of promoting microbial activity responsible for the degradation of petroleum hydrocarbons. Water application for bioremediation is permissible provided the water is not hazardous as defined by the "*Guideline for the General Management of Hazardous Waste in the NWT (1998)*".
- Be sampled and if analytical results are determined to be suitable for contaminated treatment using KBL's portable water treatment plant (details outlined in 6.3.2. Portable Water Treatment Plant), or the application of coagulants directly into the pond for treatment (details outlined in 6.3.3. Insitu Water Treatment). The water will be treated, and water quality will be re-analyzed.
- Be beyond the treatment capacity of KBL's treatment capabilities, the water will be transferred for transport and disposal to an approved receiving facility.

A copy of the analytical results will be submitted to an inspector before discharge. In addition, a record of all water removal, treatment, disposal, or discharge will be kept electronically with KBL and summarized in the annual report.

6.3.1. On-Site Water Discharge

Upon laboratory analysis and comparison against the EQC, the retention pond water may be pumped (with or without treatment) into the designated AST for storage. If the water meets the EQC, it may be discharged to the receiving environment at the drainage ditch (SNP 0037-3). Before discharge, a copy of the water analysis result will be submitted to the inspector. The discharge location is identified in Appendix A. The discharge area consists of a shallow trench with riprap. The volume of water discharged will not exceed 50 m³ per discharge event unless authorized by the inspector. The water will be discharged into the riprap at a rate of no more than 300 L min⁻¹. A design drawing of the discharge area is included in Appendix A.

6.3.2. Portable Water Treatment Plant

The mobile water treatment plant consists of a series of inline bag filters designed to remove sediment and suspended solids. Following the filter bag train, effluent enters the bottom of treatment vessels,

which contain granular activated carbon and an organoclay. Water treatment is designed to occur in a manner to promote contact between the effluent and the media, enhancing treatment success. Treated water would be stored in one of the ASTs and sampled for comparison against the parameters specified in the Water Licence. The performance of the treatment system is dependent on the contaminant. Organic contaminants are likely to be removed easily from the water. Inorganic constituents have been successfully removed by activated carbon and organoclay filtration; however, less reliably so. Sampling before and after treatment will be required to determine treatment efficacy. Additional media may be used for the treatment of specific contaminants of concern. The inspector will be provided with analytical water quality results before discharge as per the Water Licence.

As per the manufacturer's instructions, the filter units only require periodic monitoring.

- **Pressure:** Check inlet and outlet pressure. An increase in pressure differential may indicate a build-up of filtered solids. Never exceed the maximum design pressure of the filter. If the differential pressure exceeds 20 PSIG, it may become necessary to perform a backwash.
- **Sample:** Inlet and outlet sample points are provided for liquid analysis to determine system performance. Before pulling the sample, the valve should be opened and allowed to flow freely for a few minutes to ensure a fresh sample is obtained. If the water has a hydrocarbon sheen, the water treatment plant is shut down, and the activated carbon and organoclay are changed out.
- **Air:** Check for trapped air by opening the upper vent valve and allowing a small amount of liquid to flow out.
- **Inspect the discharge stream periodically for filtration media.** If filter media is present in the exit stream, shut down the system and contact the manufacturer.

KBL will provide a water treatment plant to treat retention pond water during the summer operating season as required. A final treatment event at the close of the summer season will be scheduled to provide maximum storage capacity in the retention pond through the winter and early spring. Please refer to Appendix F – Water Treatment Plan for a copy of the design schematic.

6.3.3. In-situ Water Treatment

Should laboratory analytical not meet EQC due to metals, the water may also be treated in-situ using a coagulant. The type of coagulant would be dependent on the contaminants and be added directly to the water treatment pond. After the residence time is completed, the metals will have precipitated out. The treated water would be stored in one of the ASTs and sampled for comparison against the EQC specified in the Water Licence. Sampling before and after treatment will be required to determine treatment efficacy. The precipitated solids would be removed from the pond as needed. The inspector will be provided with analytical water quality results before discharge as per the Water Licence.

KBL will provide in-situ water treatment for the retention pond water during the summer operating season as required. A final treatment event at the close of the summer season will be scheduled to provide maximum storage capacity in the retention pond through the winter and early spring.

6.4. Waste Acceptance Procedures

No soil, snow, or water will be accepted at the Facility without all the information to complete a Waste Profile Form (Appendix D) unless otherwise authorized by an inspector. The information documented on the form includes the generator, source, type of material and confirmation that soil sampling for analysis was completed to satisfy technical standards. Analytical results (from an accredited laboratory) for petroleum hydrocarbons, metals, and regulation-specific analyses must accompany the Waste Profile Form. If it is determined that the required information is incomplete or the analytical results fail to meet acceptance criteria, the material will not be accepted and will remain the responsibility of the generator. Before accepting soil, snow, or water at the Facility, the analytical results or waste profile must be submitted to the inspector.

Acceptance criteria for the Facility were established based on contaminant treatability and regulatory standards. Volatile petroleum hydrocarbon compounds (benzene, toluene, ethylbenzene, xylene) have no applicable criteria due to their ease of volatilization. Petroleum hydrocarbon fractions F1 – F4 have been assigned acceptance criteria based on the degradability of the hydrocarbons and thus treatability. Metals are not treated in the soil at the Facility. Please refer to Appendix B – Soil Sampling and Handling at the STF for the acceptance criteria.

The maximum volume of soil that the soil treatment pad can hold while maintaining adequate space for drainage of runoff water and active working/treating space is approximately 6,361 cubic meters (m³). Updated sketches or drawings will be generated periodically as the soil is moved during acceptance, treatment, and removal. The availability of space within the soil treatment pad will be assessed before accepting new material to ensure that adequate working space is maintained and that volumes do not exceed pad capacity.

To ensure that the pond maintains an adequate capacity for a 1 in a 25-year storm event, before the acceptance of contaminated snow at the Facility, the following calculation will be done:

Available Pond Capacity = current available storage space (measured) – required freeboard (157m³ or 0.9m)

Snow to Water Ratio = 10 inches of snow to 1 inch of water (10:1)

Quantity of Snow for Acceptance = Volume of snow as water < Available Pond Capacity

If the quantity of contaminated snow to be received is less than the available pond capacity, it can be received into the Facility for treatment.

In the event of an environmental emergency such as a spill of a known substance (i.e., fuel vehicle, rollover, fuel tank leak) and with approval by the inspector, the material may be accepted into the Facility without advance analysis. The soil will be tracked using load weights/manifests from each delivery to the pad; this tracking will be done to ensure that volumes are calculated daily. Records will be available electronically, and a record of all shipments will be kept on hand at the SWDF gatehouse for review.

6.5. Soil Treatment

Upon approval for acceptance by KBL, the soil will be deposited into a designated area of the cell and

placed in windrows. The windrows will be created to segregate soils from different sources, allow ease of access for equipment and technical staff to conduct sampling events and treatment campaigns, and provide appropriate grading and drainage. Once placed, each windrow is identified by a unique project identifier and recorded on a Facility sketch.

Soil from each project will be managed and treated separately. Co-mingling of soil from different projects and dilution of contaminated soils with cleaner soils are not permitted.

Bioremediation is used as the primary treatment method of PHCs; this is completed mechanically using equipment such as excavators and screeners depending on soil volumes and contaminant concentrations. Bioremediation occurs by promoting microbial activity in the soil and increasing bioavailability, thus degrading the contaminants. This may be achieved by:

- Application of nutrients: addition of fertilizers with nitrogen and phosphorous at calculated dosing ratios based on chemical analysis of soils with application frequency determined by soil and contaminant characteristics;
- Air circulation: soil turning to enable air movement within the soil pile providing oxygen to microorganisms;
- Application of bulking agents: for fine grain and dense soils such as clay, small amounts of wood chips or compost can be added to increase porosity, increasing air, water and nutrient availability to microbes;
- Application of water from the retention pond or WHTs to maintain optimum soil moisture content. Moisture will be assessed by reviewing laboratory analytical results. Water application will be aimed at achieving a water-filled pore space of between 0.4 to 0.6; and
- Application of chemical oxidants or surfactants¹.

Typically, two to three treatment campaigns will be conducted each year over the summer/fall season.

6.6. Sampling

To assess the progress of the bioremediation process, a photoionization detector (PID) may be utilized to measure volatile organic compounds. To confirm whether the remedial endpoint has been reached, soil sampling will determine compliance with re-use criteria. Testing may occur at any frequency; however, most often will occur:

- After a course of treatment;
- After the treatment season; and
- At the beginning of the treatment season.

By following the sampling protocol outlined in Appendix B and avoiding co-mingling of soils between biopiles, measures are in place to ensure that confirmatory sampling is unbiased and that samples represent existing conditions and contaminated soils are not diluted with cleaner soils.

Sampling involves establishing sample points in each biopile. Samples will be collected by qualified

¹ Sourcing and application of any oxidants or bio-surfactants will be reviewed with GNWT-ENR prior to application. Amendments selected may be stored within appropriate containers at the site.

personnel (KBL staff or sub-contractors) trained in accordance with KBL standard operating procedure. All samples will be collected in laboratory-supplied containers, stored in ice-packed and temperature-controlled coolers, and submitted to an accredited laboratory under the chain of custody protocols for analysis within the approved holding time. Field Quality Control/Quality Assurance (QC/QA) parameters are outlined in Appendix B. The laboratory also conducts internal QA/QC verification measures during sample analysis. If results from either field or lab QA/QC analysis are considered significantly different (Relative Percent Difference >20%), sample results will be regarded as invalid, and re-sampling will occur.

6.7. Re-Use and Disposal

Laboratory analytical results determine whether the bioremediated soil meets re-use criteria, requires additional treatment, or must be transported off-site for disposal at an approved facility. Soil suitable for industrial re-use is determined by analytical results meeting the criteria specified in the Facility Water Licence. Material meeting re-use criteria will be used as daily cover at the Town's landfill. Before re-using as daily cover, KBL will provide analytical data to the Town for final approval and a copy to the inspector.

Soils not meeting industrial criteria and considered unsuitable for further treatment will be profiled and transferred for disposal at an approved waste receiving facility. The soil will be removed from the soil treatment pad using an excavator and dump truck. Volumes of soils transferred for off-site disposal and soil sampling results will be logged and summarized in the annual reports.

6.8. Wildlife

Bear activity in the proximity to the SWDF is a concern for the safety of facility personnel. The STF will be secured with fencing along the entire perimeter of the lease area. Inspections of the Facility and fencing will be conducted regularly for signs of bear interference. Should inspections and daily activity logs indicate that bears are an issue, further bear deterrents will be investigated, and the most appropriate deterrent will be selected for implementation.

Any domestic waste generated by facility personnel will be removed from the site daily to minimize the potential to attract wildlife. Regular inspections of the STF will record any impacts from wildlife which will be documented, and if necessary, an investigation will be conducted to determine if further deterrents are needed.

Due to the small size of the pond and lack of vegetation, it is unlikely to attract waterfowl. However, to discourage waterfowl activity in proximity to the STF, bird netting will be installed as a deterrent to prevent waterfowl from landing on the pond. The pond will also be kept free of vegetation to further discourage waterfowl from frequenting the pond. The pond will be regularly visually monitored for the presence of waterfowl to confirm that the pond is not attracting waterfowl. Should any bird be observed in proximity to the pond showing signs of distress, the facility operator will contact NWT – ENR for guidance or assistance in managing the distressed bird.

6.9. Inspections

Regularly scheduled (monthly) Facility inspections will occur during snow-free months (May to October). The inspections will include a visual assessment for erosion, subsidence, exposure of liner, leakage,

drainage systems, to detect evidence of deterioration, malfunction leaks, or improper operation. The leachate collection system will be inspected to ensure it is functioning properly and to determine whether leachate is being generated or accumulating. The monthly inspection will also include observations along the Facility perimeter for evidence of wildlife intrusion, the integrity of the fencing, and evidence of any security breach. The pond volume will also be monitored monthly. Brief daily inspections will be completed during routine work, and additional site visits will be completed during periods of increased precipitation. Inspections will be conducted by trained personnel (on-site operators). Inspection logs will be maintained on-site. A copy of the inspection form is attached in Appendix C.

6.10. Wind Erosion Mitigation

Strong winds can carry soil from stockpiles to areas outside the soil treatment pad. A contingency plan is required to mitigate soil erosion and the potential spread of contaminants. The main factors influencing wind erosion from soil stockpiles are the threshold wind speed, stockpile contents, and surrounding conditions.

Wind erosion can be effectively controlled by maintaining moisture content within soil piles. Moisture is also an essential factor in the bioremediation process; therefore, it is necessary to maintain adequate moisture content for microbial activity. Wind erosion control through moisture control will be satisfied by topical applications of water from the retention pond. As required, water from the pond will be sprayed over the soil stockpiles at a rate sufficient to minimize erosion by wind and minimal enough not to create ponding within the soil treatment pad.

If wind conditions are such that substantial dust is created during soil handling and treatment, activities will be shut down until conditions stabilize. Where possible, operations may shift to another area within the treatment cell that is more sheltered.

6.11. Containment of Impacted Soil.

Equipment working in and around the soil treatment pad presents a risk of spreading contaminated material from machinery tracks or tires as the equipment moves at the edges of the soil treatment pad or when soil is being handled for discharge. Also, other conditions may result in soil moving beyond the soil treatment pad, such as unstable piles and inadequate soil berms. To minimize the spread of impacted soil, the following measures are in effect:

1. Operators of track-mounted equipment working in the soil treatment pad are required to shovel/remove soil off the tracks before leaving the area.
2. Trucks delivering contaminated soil to the Facility are required to use a spotter or other indicator to ensure they are not backing into the treatment pad further than necessary.
3. Soil piles and windrows should be stably built with piles at or near the angle of repose.
4. Soil berms should be high enough and at an adequate distance to prevent soil that has rolled off piles from leaving the soil treatment pad.

5. Any soil tracked or dropped outside the treatment cell will be immediately scraped up and put back into the soil treatment pad.

7.0 SAFETY AND EMERGENCY RESPONSE

The operations at the Facility require the use of heavy equipment to process the material stored within the biotreatment pad and of heavy truck traffic. The wastes handled on-site consist of soils with varying levels of hydrocarbon contamination.

All operations will be performed in conjunction with KBL's Health, Safety and Environmental Policies and Procedures, industry best practices, and applicable regulations and standards. All personnel on-site must wear basic personal protective equipment (PPE): hard hat, high visibility vest or striping, and CSA-approved steel-toed footwear. Other PPE requirements are specific to the tasks undertaken by the employees on site. Refer to the KBL Health, Safety, and Environment Manual available at the SWDF gatehouse.

Emergency Contact Information for the Inuvik Soil Treatment Facility:

Police (867) 777-1111

Fire (867) 777-2222

Ambulance (867) 777-4444

NWT 24-hour Spill Report Line (867) 920-8130

KBL (867) 873 5263

Town of Inuvik Public Services (867) 777-8615

ENR Inspector (867) 678-0590

7.1. Fire Control Plan

The purpose of this Plan is to provide information to KBL employees and contractors if a fire occurs at or near the Facility. Specifically, the Plan establishes who is responsible for various aspects of the fire control procedure.

7.1.1. General Guidelines

DO NOT PANIC; the greatest danger lies not in fighting the fire but in the panic that arises from a fire. Spend a few minutes assessing the situation. Go through the steps of notifying the appropriate authorities and follow the basic steps in the Fire Control Plan.

1. Notify all other nearby employees.
2. Notify the Site Manager immediately; follow his instructions.
3. Notify the Fire Department. Provide information on the location of the fire, the materials

burning, and whether it looks like the fire will spread beyond the immediate area.

4. Notify surrounding property owners, particularly if it appears that the fire could spread beyond the Facility.
5. When the Fire Department arrives, follow their instructions.
6. Do not attempt to fight the fire alone.
7. If it is determined that a group of employees will attempt to control the fire spread, ensure that everyone has safe access to the point of exit before beginning.
8. Do not place yourself or others in danger while fighting the fire.
9. When safe to do so, notify ENR inspectors of fire using the emergency contact information above.

7.2. Electrical Storms

During an electrical storm, gatehouse staff should remain indoors. While indoors, keep away from doors, windows, radiators, stoves, metal pipes, sinks, or other metallic objects. Disconnect electrical appliances such as computers and radios. Do not handle any electrical equipment or the telephone.

Outside workers should relocate to an indoor location, staying away from any metal objects such as fences, metal pipes, or rails that may conduct electricity. Heavy equipment operators should get off and away from their equipment and move indoors. If not possible, stay inside the cab and move to an area of lower elevation. If you are in a vehicle, stay there, as it will protect you from lightning. Pull away from any trees or other objects that have the potential to fall on the vehicle.

7.3. Extreme Winds or Tornadoes

During high wind events (potentially occurring between May and September), take shelter immediately. If heavy equipment operators cannot evacuate, move to lower elevations. Workers can take shelter underneath the weigh scale or (should no alternative exist) beneath heavy equipment. Do not stay in the scale trailer or the workshop in the case of a tornado.

7.4. Spill Response Plan

For this Plan, a spill is considered to be the unauthorized release of substances to land or water. Most potential spill sources will only be present during normal Facility working hours. As a result, sufficient personnel and equipment are available to respond to any spill-related emergency. With the equipment housed at the Facility, it is possible to respond immediately to a spill event, apply spill containment, and complete cleanup. The immediate requirement will be to construct temporary earth berms around the spill area to control the release and initiate cleanup measures directed by the Site Manager and the Hazardous Material Response Team (if applicable).

The Facility is operated in conjunction with KBL's Spill Contingency Plan (Appendix E). The Spill Contingency Plan addresses spills from:

1. Fuel and oils from equipment.
2. Soils contaminated by equipment fuel and oil releases.
3. Unauthorized release of water from the retention pond.
4. Soil chemical amendments such as fertilizer.

8.0 FACILITY CLOSURE

The Facility is anticipated to be incorporated into the Town of Inuvik SWDF footprint at the end of Facility life or the active lease period. The final closure of the Facility will involve the decommissioning of the lined soil treatment pad, the lined retention pond, and the removal of security installations associated with the site.

Final closure and decommissioning of the soil treatment pad will begin once any soil remaining in the Facility is treated to the criteria required to satisfy use as daily cover in the Inuvik landfill. If closure of the Facility is required before all contaminated soil has completed the treatment program, the soil will be transported to a suitable facility for secure disposal.

Following the discharge or removal of all soil from the soil treatment pad, the liner below the cell will be excavated and disposed of at the Inuvik landfill. Long-term monitoring of the Facility will continue during the active life of the Inuvik SWDF and following the final closure of the site. As the Facility is being operated as a temporary treatment and holding operation and not for disposal of any waste, there are no long-term effects anticipated following Facility decommissioning.

9.0 DOCUMENTATION AND REPORTING

A daily log of activities will be kept at the Facility detailing personnel on-site, activities undertaken, weather conditions, and retention pond freeboard. Monthly inspections will be conducted on Facility operations and component; a copy of the forms are located in Appendix C.

An annual report will be submitted by KBL per the terms and conditions of the water license and permits assigned to the Facility. In conjunction with annual reporting, this Operation and Maintenance Plan will be reviewed annually and updated as needed to maintain compliance. As required under the License and applicable regulations, analytical test results will be submitted to the Town of Inuvik. A copy of all licenses and permits will be maintained on-site.

10.0 TRAINING

Personnel managing waste are certified in the Workplace Hazardous Material Information System (WHMIS) and Transportation of Dangerous Goods (TDG). Any waste shipment requiring a Federal Movement Document will be filled out by an individual holding a valid certificate in TDG. Personnel responsible for the operation and maintenance of the Facility will receive task-specific training before beginning work. A kickoff meeting will be performed for KBL employees and contractors before the beginning of work each year.

11.0 REFERENCES

Transportation of Dangerous Goods Regulations. SOR/2016-95

BC Ministry of the Environment. 2009. Technical Guidance on Contaminated Sites, Site Characterization and Confirmation Testing.

Canadian Council for the Ministers of the Environment (CCME). 2014. Canadian Environmental Quality Guidelines, Water Quality Guidelines for the Protection of Aquatic Life. Accessed on Jan 31, 2014.

Environment Yukon. 2001. Protocol 11 – Sampling Procedures for Land Treatment Facilities.

Government of the Northwest Territories (GNWT). 1998. Guideline for the General Management of Hazardous Waste in the NWT. Department of Environment and Natural Resources.

Government of Northwest Territories (GNWT). 2003. Environmental Guidelines for Contaminated Site Remediation.

Mackenzie Valley Land and Water Board (MVLWB). 2013. Engagement Guidelines for Applications and Holders of Water Licenses and Land Use Permits.

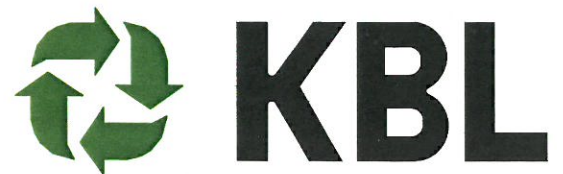
MVLWB. 2011a. Guidelines for Developing a Waste Management Plan.

MVLWB. 2011b. Water and Effluent Quality Management Policy.

Science Applications International Corporation (SAIC). 2006. Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils. Presented to Contaminated Sites Division and Emergencies Engineering Technologies Office (EETO), Environmental Technology Centre, Environment Canada.

APPENDIX A

Design and Facility Drawings



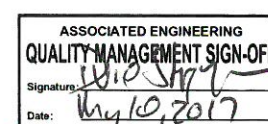
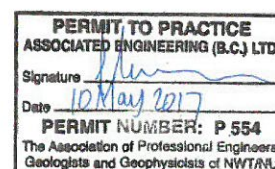
INUVIK
SOIL TREATMENT FACILITY
INUVIK, NORTHWEST TERRITORIES

MAY 2017
PROJECT NUMBER: 20173924-00
ISSUED FOR: APPROVAL

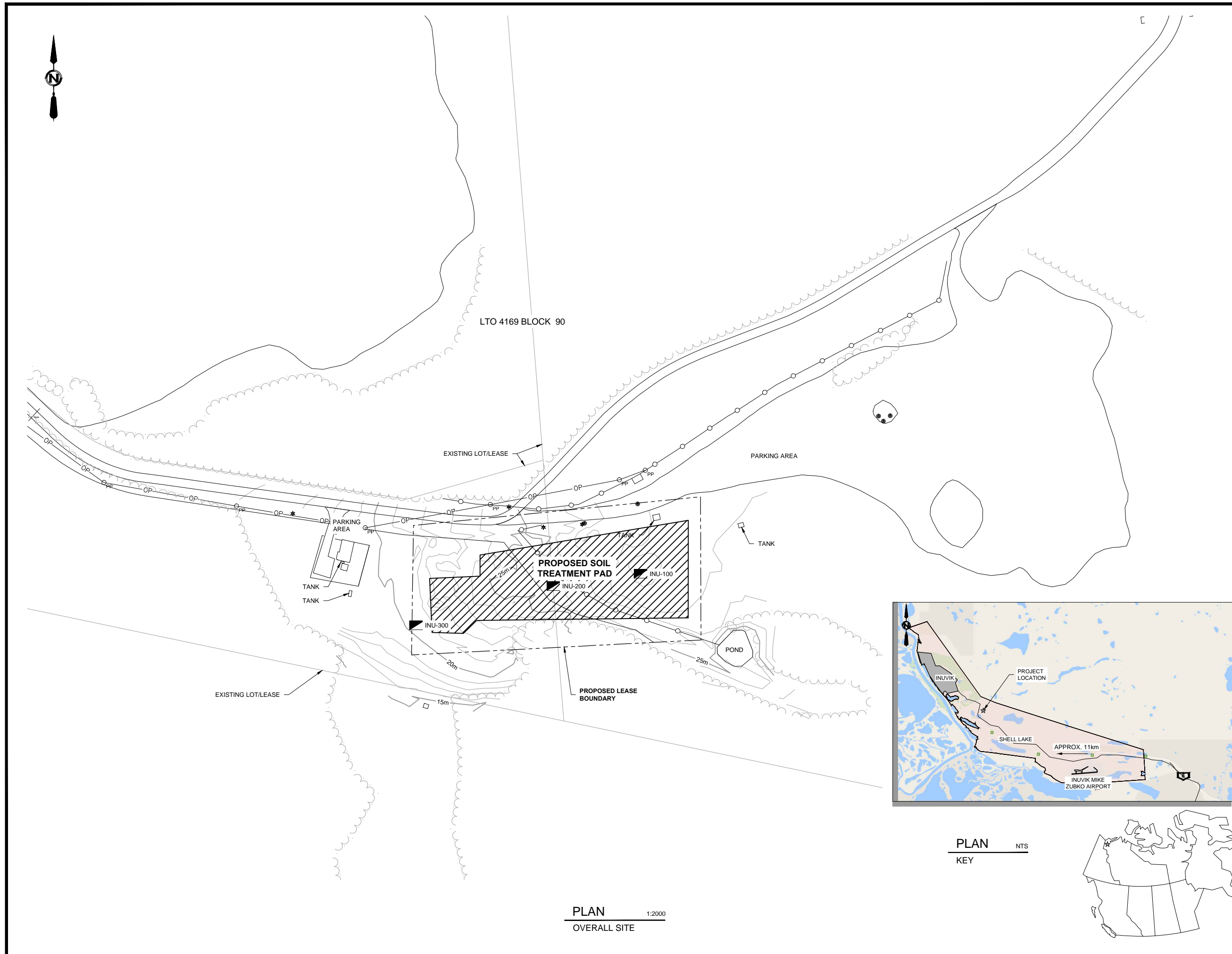
LIST OF DRAWINGS

3924-00-000	COVER PAGE
<u>SOIL TREATMENT FACILITY</u>	
3924-00-101	OVERALL SITE PLAN / KEY PLAN
3924-00-102	ROAD LAYOUT PLAN
3924-00-103	DEVELOPMENT PLAN
3924-00-104	DEVELOPMENT SECTIONS
3924-00-105	DETAILS SHEET 1 OF 2
3924-00-106	DETAILS SHEET 2 OF 2

NLR/AE
CONSULTANTS



Brett Smith 2017-May-10
PROJECT MANAGER DATE



LEGEND

- 28 m TOPOGRAPHIC MAJOR CONTOUR (LOCAL SITE ELEVATIONS) CONTOUR INTERVAL = 5.0m
- TOPOGRAPHIC MINOR CONTOUR
- TREES
- EXISTING FENCE
- EXISTING OVERHEAD POWER LINE
- EXISTING POWER POLE
- EXISTING LIGHT
- EXISTING TANK
- EXISTING TEST PIT LOCATION
- INU-100
- PROPOSED WORK AREA

NOT FOR CONSTRUCTION

NOTES:

- DATUM: UTM NAD83 ZONE 8.
- CONTOURS PROVIDED BY KBL.
- BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.

No.	DATE	REVISION	BY	APP.
D	2017MAY10	ISSUED FOR APPROVAL	NAR	BJ
C	2017MAY04	ISSUED FOR 90% REVIEW	BJ	BJ
B	2017APR03	ISSUED FOR DRAFT	JH	BJ
A	2017MAR29	ISSUED FOR 30% REVIEW	JH	BJ

PROJECT No.	20173924-00	INITIALS
DRAWN BY	J HUBERT	
DESIGNED BY	S BARTSCH / B JARDINE	
SCALE	AS SHOWN	

REGISTERED PROFESSIONAL ENGINEER

S. BARTSCH

NTNU

PERMIT TO PRACTICE

ASSOCIATED ENGINEERING (B.C.) LTD.

Signature: [Signature]

Date: 10 May 2017

PERMIT NUMBER: P 554

The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NLR/AE CONSULTANTS

CLIENT

KBL

PROJECT

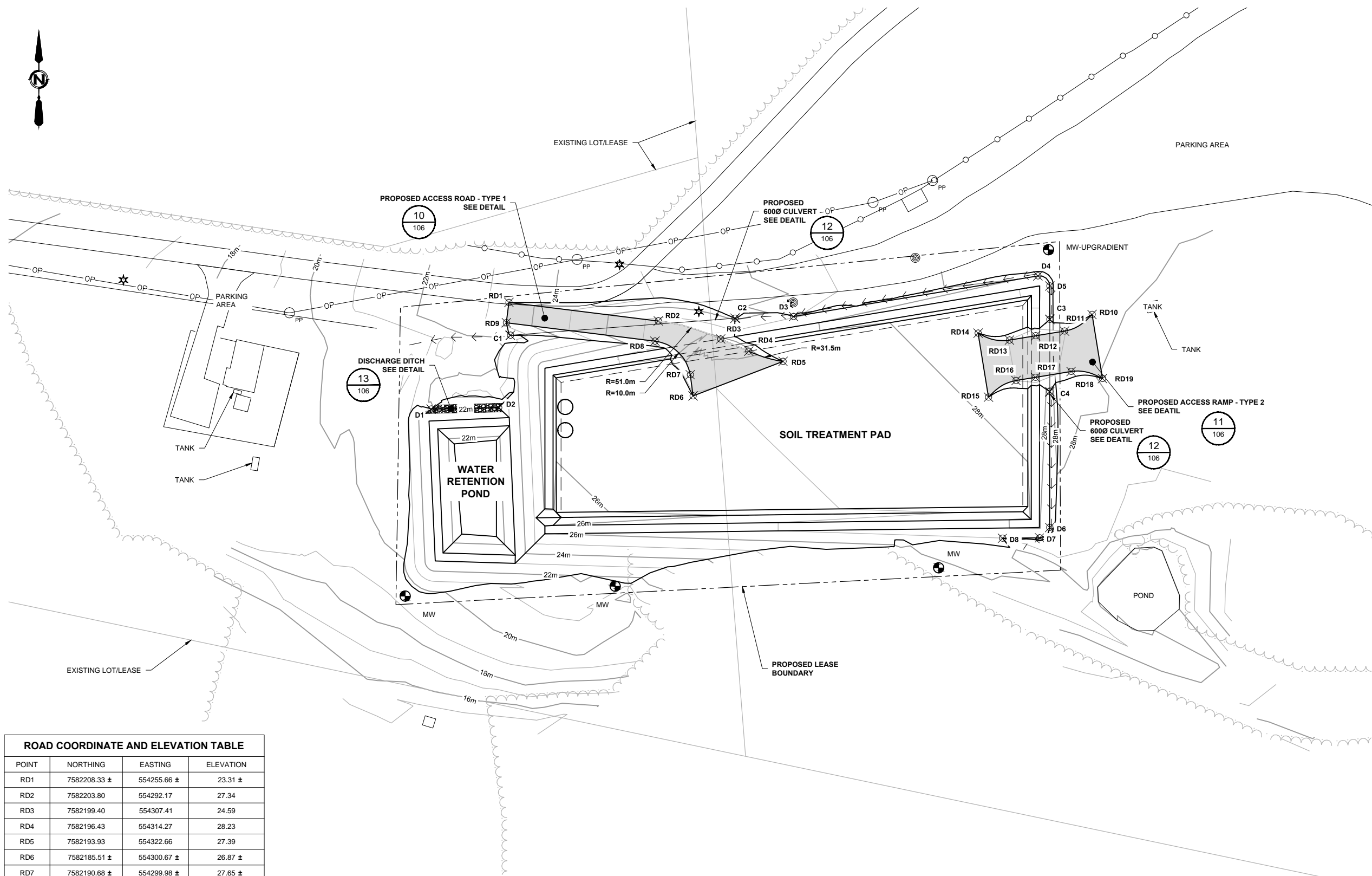
INUVIK

SOIL TREATMENT FACILITY

TITLE

OVERALL SITE PLAN / KEY PLAN

DRAWING NUMBER	REV. NO.
3924-00-101	D



ROAD COORDINATE AND ELEVATION TABLE

POINT	NORTHING	EASTING	ELEVATION
RD1	7582208.33 ±	554255.66 ±	23.31 ±
RD2	7582203.80	554292.17	27.34
RD3	7582199.40	554307.41	24.59
RD4	7582196.43	554314.27	28.23
RD5	7582193.93	554322.66	27.39
RD6	7582185.51 ±	554300.67 ±	26.87 ±
RD7	7582190.68 ±	554299.98 ±	27.65 ±
RD8	7582198.86	554291.36	27.32
RD9	7582203.37	554255.05	23.31
RD10	7582205.37	554398.14	28.15
RD11	7582201.32	554391.42	29.03
RD12	7582200.17	554384.37	29.68
RD13	7582199.12	554377.96	29.03
RD14	7582200.83	554370.30	28.33
RD15	7582185.20	554372.85	28.10
RD16	7582189.25	554379.57	29.02
RD17	7582190.03	554384.32	29.50
RD18	7582191.45	554393.03	28.70
RD19	7582189.74 ±	554400.69 ±	27.98 ±

DITCH COORDINATE AND ELEVATION TABLE

POINT	NORTHING	EASTING	ELEVATION
D1	7582182.273	554236.671	21.848
D2	7582182.615	554253.161	22.000
D3	7582204.891	554325.216	26.883
D4	7582214.806	554384.918	28.054
D5	7582212.340	554387.827	28.054
D6	7582153.352	554387.805	27.096
D7	7582150.853	554385.338	27.096
D8	7582150.738	554376.272	26.970

CULVERT COORDINATE AND ELEVATION TABLE

POINT	NORTHING	EASTING	ELEVATION
C1	7582200.333	554256.037	22.308
C2	7582204.453	554310.905	25.832
C3	7582204.176	554387.825	27.951
C4	7582186.553	554387.818	27.643

LEGEND

- 28 m TOPOGRAPHIC MAJOR CONTOUR (LOCAL SITE ELEVATIONS) CONTOUR INTERVAL = 2.0 m
- TOPOGRAPHIC MINOR CONTOUR
- TREES
- EXISTING FENCE
- OP EXISTING OVERHEAD POWER
- PP EXISTING POWER POLE
- ★ EXISTING LIGHT
- ⊙ EXISTING TANK
- PROPOSED ROAD AREA
- → → DRAINAGE DIRECTION
- PROPOSED CULVERT
- SITE LIMITS
- PROPOSED MONITORING WELL
- RIP RAP

NOT FOR CONSTRUCTION

NOTES:

- DATUM: UTM NAD83 ZONE 8.
- CONTOURS PROVIDED BY KBL.
- BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.
- MONITORING WELLS EXACT LOCATION TO BE DETERMINED ON SITE.

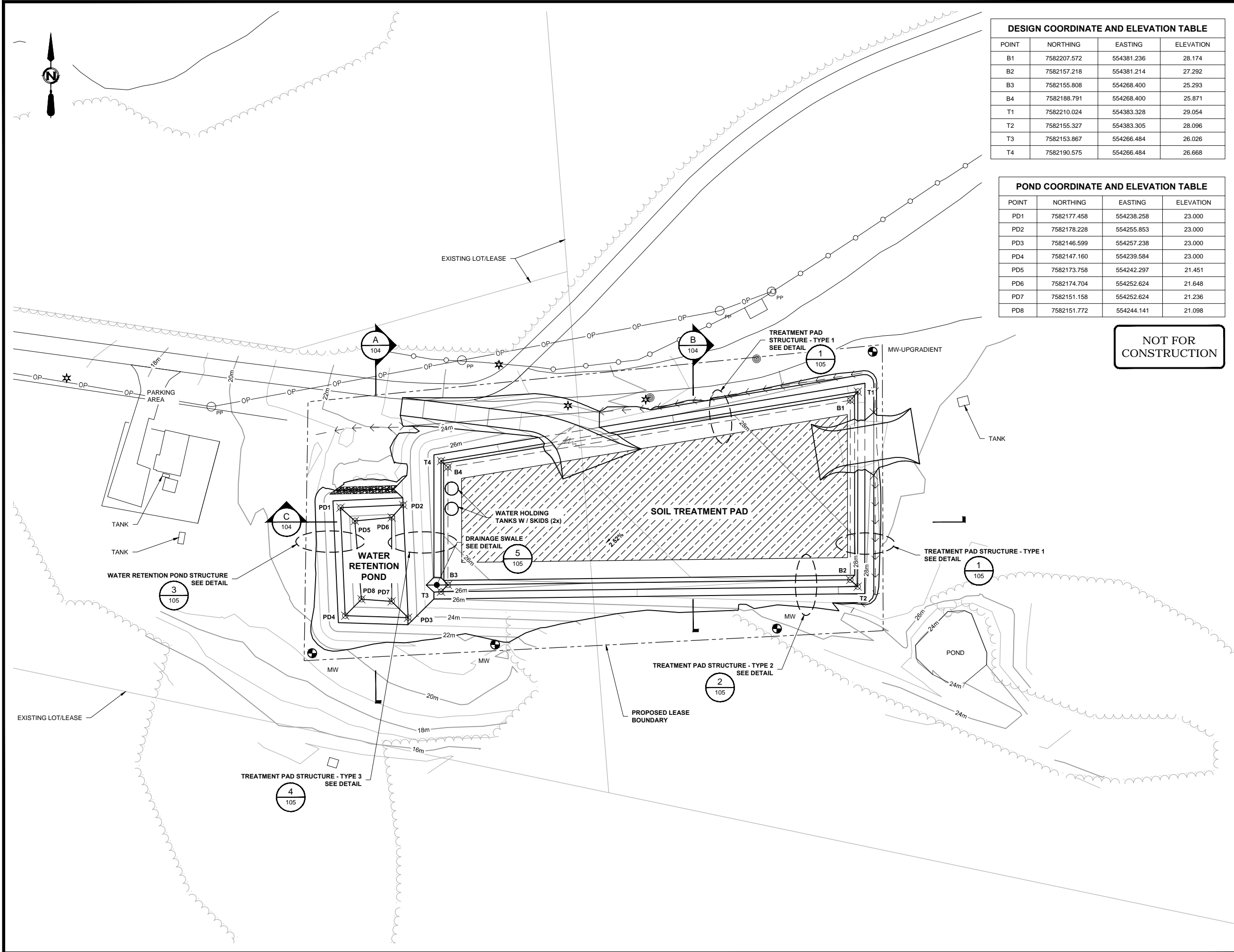
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C	2017MAY04	ISSUED FOR 90% REVIEW	BJ	BJ
B	2017APR03	ISSUED FOR DRAFT	JH	BJ
A	2017MAR29	ISSUED FOR 30% REVIEW	JH	BJ
No.	DATE	REVISION	BY	APP.

PROJECT No.	20173924-00	INITIALS
DRAWN BY	J HUBERT	
DESIGNED BY	S BARTSCH / B JARDINE	
SCALE	1:1000	

PERMIT TO PRACTICE
ASSOCIATED ENGINEERING (B.C.) LTD.
Signature: *[Signature]*
Date: *10 May 2017*
PERMIT NUMBER: P 554
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NV

NLR/AE
CONSULTANTS

CLIENT	
PROJECT	INUVIK SOIL TREATMENT FACILITY
TITLE	ROAD LAYOUT PLAN
DRAWING NUMBER	3924-00-102
REV. NO.	D



DESIGN COORDINATE AND ELEVATION TABLE			
POINT	NORTHING	EASTING	ELEVATION
B1	7582207.572	554381.236	28.174
B2	7582157.218	554381.214	27.292
B3	7582155.808	554268.400	25.293
B4	7582188.791	554268.400	25.871
T1	7582210.024	554383.328	29.054
T2	7582153.327	554383.305	28.096
T3	7582153.867	554266.484	26.026
T4	7582190.575	554266.484	26.668

POND COORDINATE AND ELEVATION TABLE			
POINT	NORTHING	EASTING	ELEVATION
PD1	7582177.458	554238.258	23.000
PD2	7582178.228	554255.853	23.000
PD3	7582146.599	554257.238	23.000
PD4	7582147.160	554239.584	23.000
PD5	7582173.758	554242.297	21.451
PD6	7582174.704	554252.624	21.648
PD7	7582151.158	554252.624	21.236
PD8	7582151.772	554244.141	21.098

NOT FOR
CONSTRUCTION

LEGEND

- 28m TOPOGRAPHIC MAJOR CONTOUR (LOCAL SITE ELEVATIONS) CONTOUR INTERVAL = 2.0m
- TOPOGRAPHIC MINOR CONTOUR
- TREES
- EXISTING FENCE
- EXISTING OVERHEAD POWER
- EXISTING POWER POLE
- EXISTING LIGHT
- EXISTING TANK
- WASTE COVERAGE AREA
- DRAINAGE DIRECTION
- PROPOSED CULVERT
- SITE LIMITS
- PROPOSED MONITORING WELL
- RIP RAP

- NOTES:**
- DATUM: UTM NAD83 ZONE 8.
 - CONTOURS PROVIDED BY KBL.
 - BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.
 - MONITORING WELLS EXACT LOCATION TO BE DETERMINED ON SITE.

No.	DATE	REVISION	BY	APP.
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C	2017MAY04	ISSUED FOR 90% REVIEW	BJ	BJ
B	2017APR03	ISSUED FOR DRAFT	JH	BJ
A	2017MAR29	ISSUED FOR 30% REVIEW	JH	BJ

PROJECT No.	20173924-00	INITIALS
DRAWN BY	J HUBERT	
DESIGNED BY	S BARTSCH / B JARDINE	
SCALE	1:1000	

REGISTERED PROFESSIONAL ENGINEER
S. BARTSCH
NT/NU
10/17

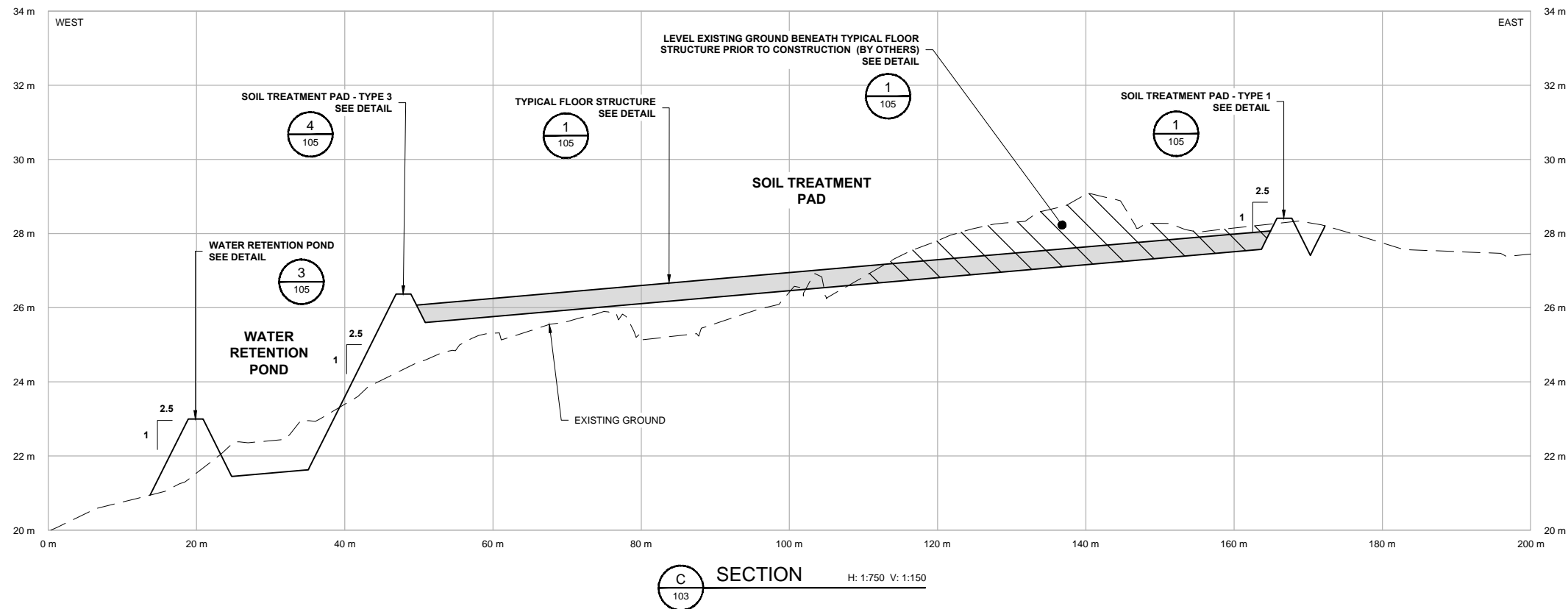
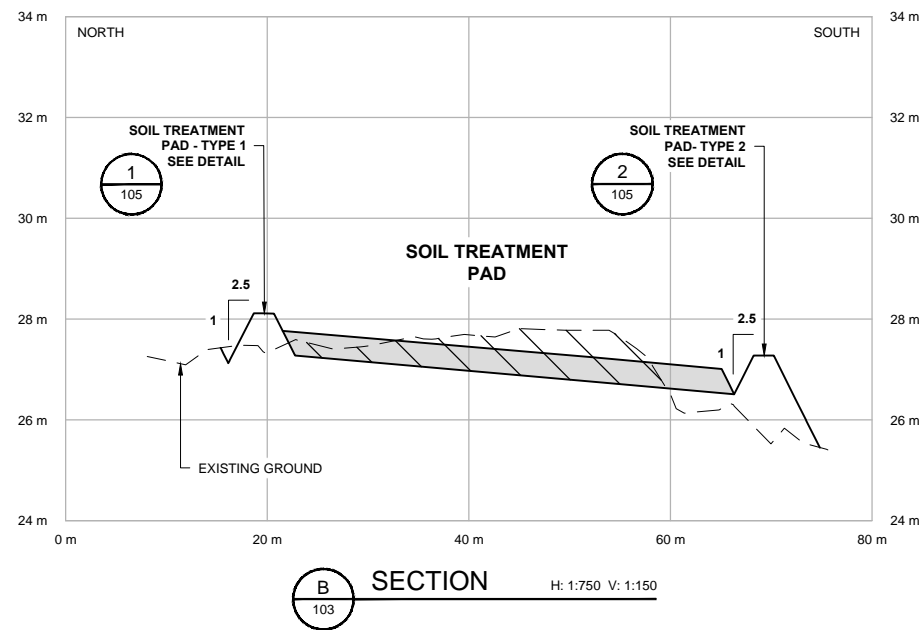
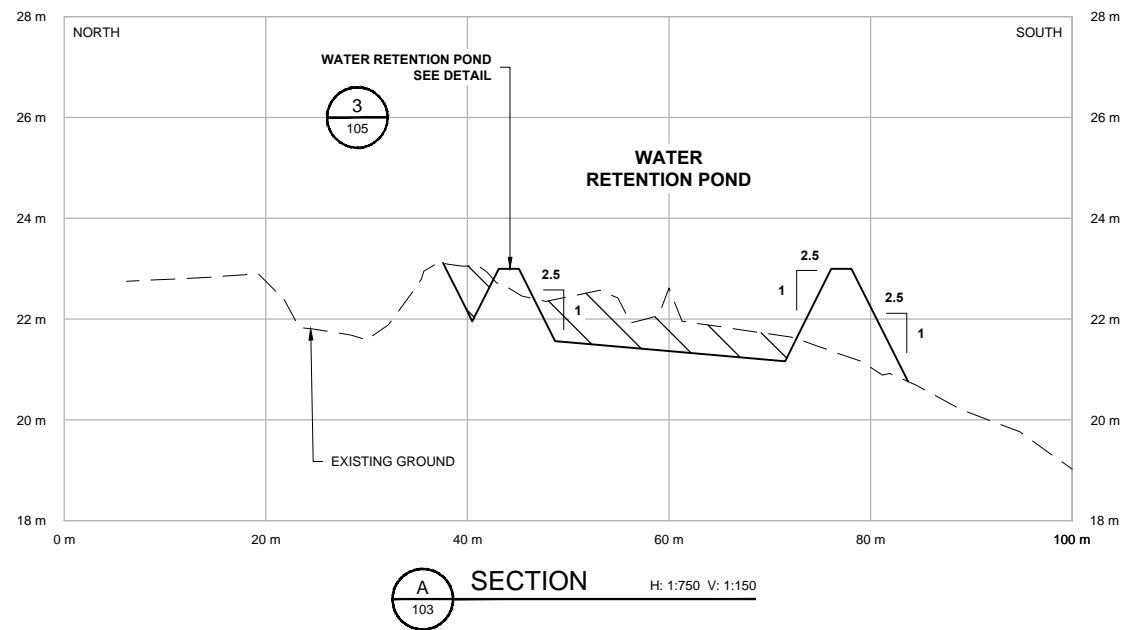
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Signature: [Signature]
Date: 10 May 2017
PERMIT NUMBER: P 554
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KBL

PROJECT INUVIK SOIL TREATMENT FACILITY	
TITLE DEVELOPMENT PLAN	
DRAWING NUMBER 3924-00-103	REV. NO. D



NOT FOR
CONSTRUCTION

NOTES:

- BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.

No.	DATE	REVISION	BY	APP.
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C	2017MAY04	ISSUED FOR 90% REVIEW	BJ	BJ
B	2017APR03	ISSUED FOR DRAFT	JH	BJ
A	2017MAR29	ISSUED FOR 30% REVIEW	JH	BJ

PROJECT No.	20173924-00	INITIALS
DRAWN BY	J HUBERT	
DESIGNED BY	S BARTSCH / B JARDINE	
SCALE	AS SHOWN	

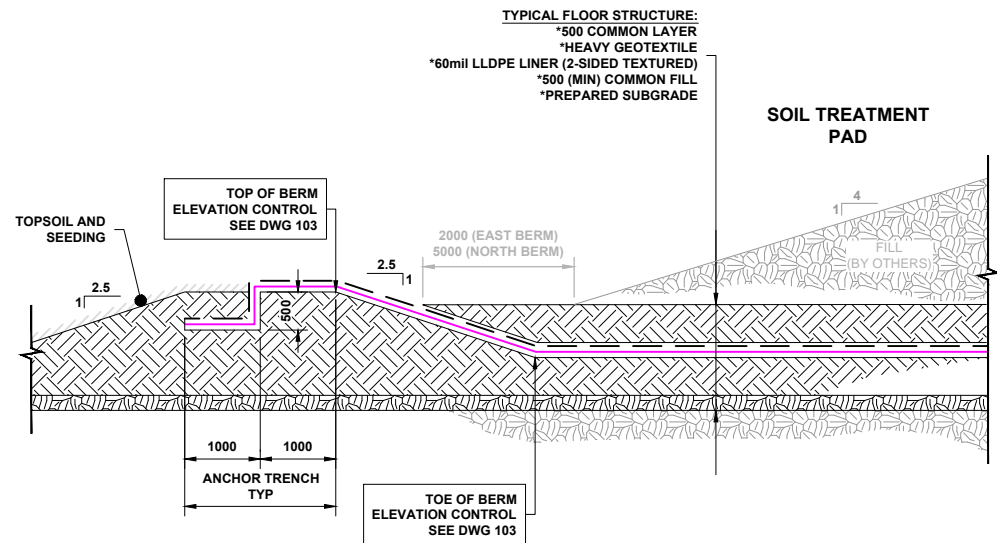


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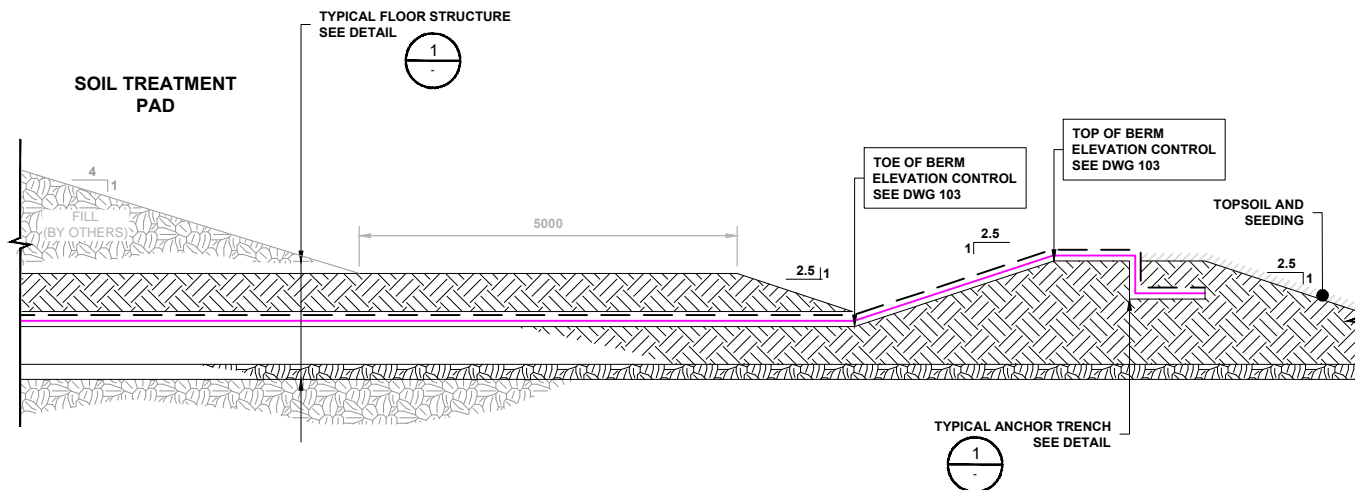


PROJECT
INUVIK
SOIL TREATMENT FACILITY

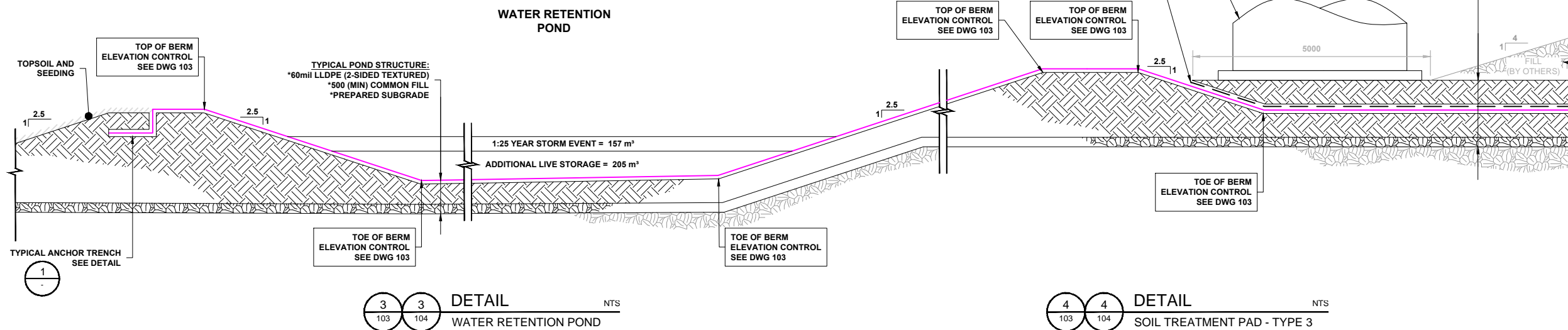
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REV. NO.	D



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SOIL TREATMENT PAD - TYPE 1
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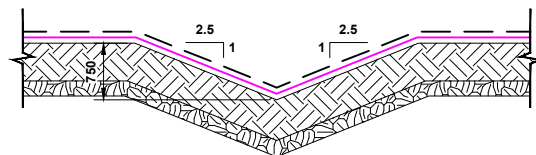


2 2
103 104
DETAIL
SOIL TREATMENT PAD - TYPE 2
NTS



3 3
103 104
DETAIL
WATER RETENTION POND
NTS

4 4
103 104
DETAIL
SOIL TREATMENT PAD - TYPE 3
NTS



5
103
DETAIL
DRAINAGE SWALE
NTS

LEGEND

— — —	HEAVY GEOTEXTILE
— — —	60mil LLDPE LINER
▨	COMMON FILL

NOT FOR
CONSTRUCTION

NOTES:

1. BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.
2. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

No.	DATE	REVISION	BY	APP.
D	2017MAY10	ISSUED FOR APPROVAL	NAR	BJ
C	2017MAY04	ISSUED FOR 90% REVIEW	BJ	BJ
B	2017APR03	ISSUED FOR DRAFT	JH	BJ
A	2017MAR29	ISSUED FOR 30% REVIEW	JH	BJ

PROJECT No.	20173924-00	INITIALS
DRAWN BY	J HUBERT	
DESIGNED BY	S BARTSCH / B JARDINE	
SCALE	AS SHOWN	

REGISTERED PROFESSIONAL ENGINEER
S. BARTSCH
P. 554
NWT/NV

PERMIT TO PRACTICE
ASSOCIATED ENGINEERING (B.C.) LTD.
Signature: [Signature]
Date: 10 May 2017
PERMIT NUMBER: P 554
The Association of Professional Engineers,
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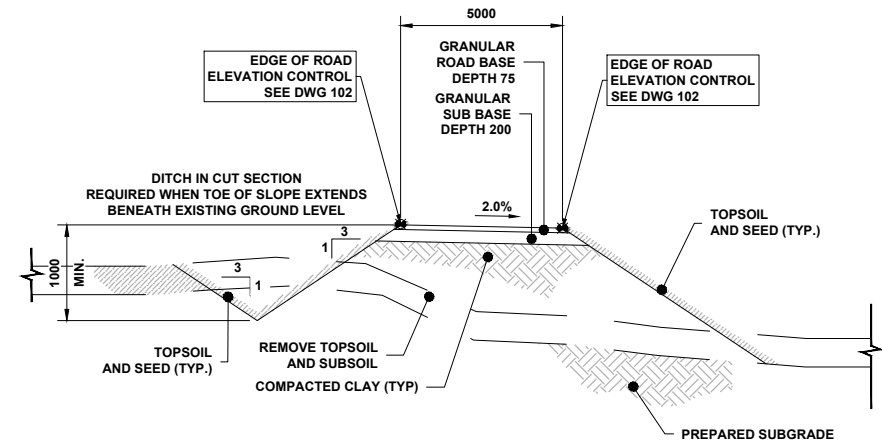
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CONSULTANTS



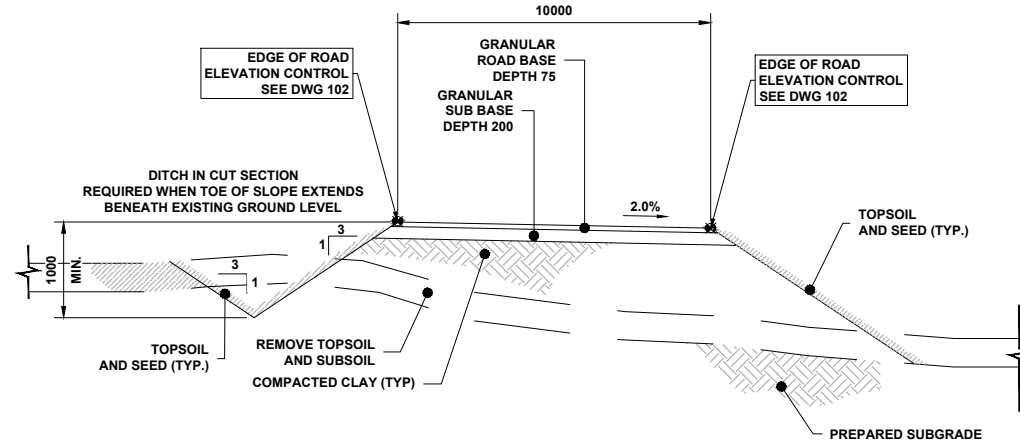
PROJECT
INUVIK
SOIL TREATMENT FACILITY

TITLE
DETAILS
SHEET 1 OF 2

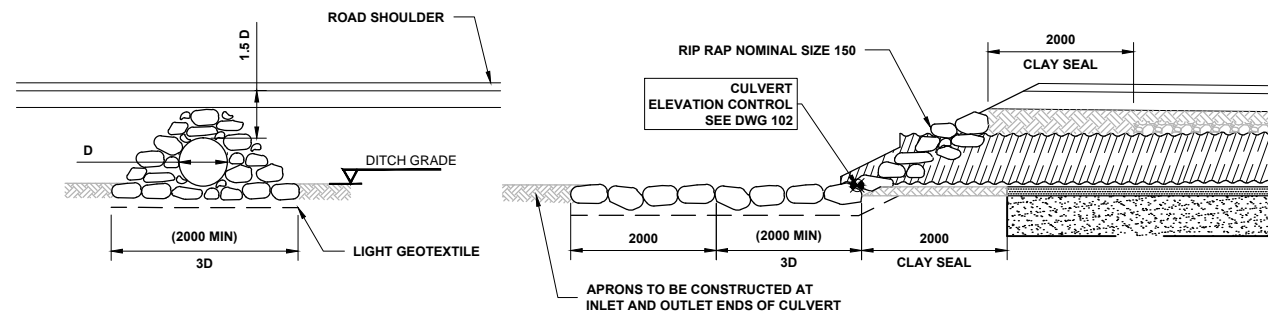
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3924-00-105	D



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DETAIL
ACCESS ROAD - TYPE 1
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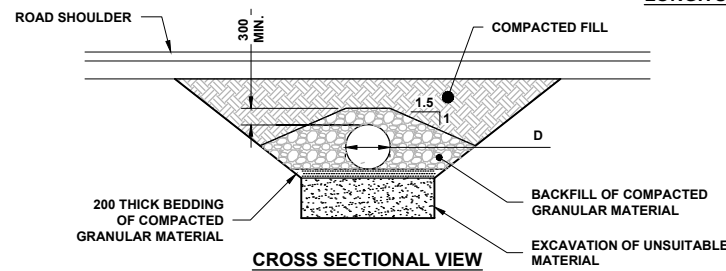


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102
DETAIL
ACCESS ROAD - TYPE 2
NTS



END VIEW

LONGITUDINAL VIEW

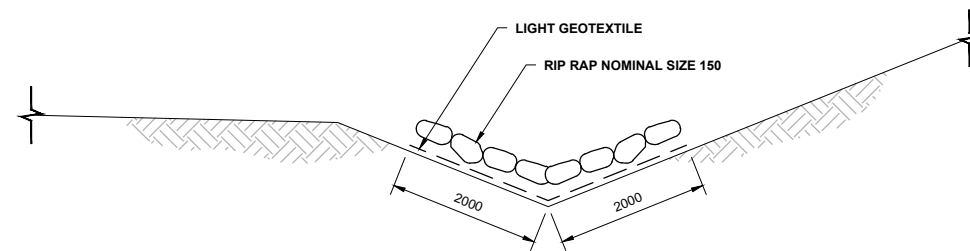


CROSS SECTIONAL VIEW

NOTES:

1. DRAINAGE GRAVEL USED FOR BEDDING/BACKFILL
2. BACKFILL TRENCH AREA TO 98% COMPACTION TO 300mm ABOVE TOP OF PIPE ELEVATIONS. EXCAVATE FOR AND PROCEED WITH TYPE 1 BEDDING AND PIPE INSTALLATION
3. "D" SEE DWG 102

12
102
DETAIL
CULVERT
NTS



13
102
DETAIL
DISCHARGE DITCH
NTS

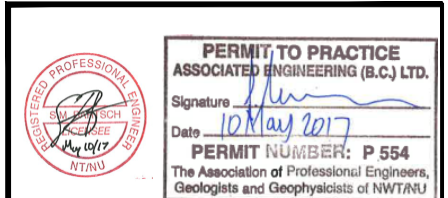
NOT FOR
CONSTRUCTION

NOTES:

1. BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.
2. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

B	2017MAY10	ISSUED FOR APPROVAL	NAR	BJ
A	2017MAY04	ISSUED FOR 90% REVIEW	NAR	BJ
No.	DATE	REVISION	BY	APP.

PROJECT No.	20173924-00	INITIALS
DRAWN BY	N A RICHARDS	
DESIGNED BY	S BARTSCH / B JARDINE	
SCALE	AS SHOWN	



NLR/AE
CONSULTANTS

CLIENT	
PROJECT	INUVIK SOIL TREATMENT FACILITY
TITLE	DETAILS SHEET 2 OF 2
DRAWING NUMBER	REV. NO.

3924-00-106	B
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APPENDIX B

Criteria, Sampling, and Handling

Table B-1: Soil Acceptance Criteria

Parameter	Soil Maximum Concentration (mg/kg)
pH	6 – 8 pH units
Antimony	40
Arsenic	120
Barium	2,000
Beryllium	8
Cadmium	22
Chromium (total)	87
Cobalt	300
Copper	91
Lead	600
Mercury	50
Molybdenum	40
Nickel	89
Selenium	2.9
Silver	40
Thallium	1
Tin	300
Uranium	300
Vanadium	130
Zinc	360
F1 (C6 – C10)	< 3% dry weight
F2 (>C10 – C16)	< 3% dry weight
F3 (>C16 – C34)	< 3% dry weight
F4 (>C34)	< 3% dry weight

Table B-2: Snow and Water Acceptance Criteria

Parameter	Criteria
F1 (C6 – C10)	No free-phase hydrocarbon product
F2 (>C10 – C16)	
F3 (>C16 – C34)	
F4 (>C34)	
pH	6 – 8 pH units

Table B-3: Soil Re-Use Criteria

Parameter	Soil Maximum Concentration
CCME Industrial Guidelines for Metals in Soil (mg/kg)	
pH	6 – 8 pH units
Antimony	40
Arsenic	120
Barium	2,000
Beryllium	8
Cadmium	22
Chromium (total)	87
Cobalt	300
Copper	91
Lead	600
Mercury	50
Molybdenum	40
Nickel	89
Selenium	2.9
Silver	40
Thallium	1
Tin	300
Uranium	300

Vanadium	130	
Zinc	360	
Petroleum Hydrocarbon Re-Use Criteria	ADC Fine-Grained Soil (mg/kg)	ADC Coarse-Grained Soil (mg/kg)
F1 (C6 – C10)	660	310
F2 (>C10 – C16)	1,500	760
F3 (>C16 – C34)	2,500	1,700
F4 (>C34)	6,600	3,300
Benzene	5.0	5.0
Toluene	0.8	0.8
Ethylbenzene	20	20
Xylenes	20	20

* If testing for particle size is not completed to determine if the soil is Coarse or Fine-Grained, the soil must be treated to achieve the Coarse-Grained soil criteria.

Table B-4: Material Acceptance Sampling Requirements

Soil Volume (m³)	Sample Quantity
1 – 50	1
51 – 500	2
501 – 1,000	3
1,001 – 2,000	4
2,001 – 4,000	5
Snow or Water Volume (m³)	Sample Quantity
1 – 50	1
51 – 275	2

Table B-5: Treated Effluent Discharge Criteria

Parameter	Maximum Grab Sample Concentration (mg/L)
pH	6.5 – 8.5 pH units
Antimony	0.006

Arsenic	0.005
Barium	1
Beryllium	100
Boron	1.5
Iron	0.3
Manganese	0.05
Selenium	0.001
Uranium	0.02
Zinc	0.03
F1	2.2
F2	1.1
Benzene	0.005
Toluene	0.024
Ethylbenzene	0.0024
Xylene(s)	0.3
Styrene	0.072
Acenaphthene	0.0058
Acenaphthylene	0.046
Anthracene	0.000012
Fluoranthene	0.00004
Fluorene	0.003
Naphthalene	0.0011
Phenanthrene	0.0004
Pyrene	0.000025
Carcinogenic PAHs (as B(a)P TPE	0.00001
Benzo(a)anthracene	0.000018
Benzo[b+j]fluoranthene	0.00048
Benzo[k]fluoranthene	0.00048
Benzo[a]pyrene	0.000017
Chrysene	0.0014

Dibenz[a,h]anthracene	0.00028
Indeno[1,2,3-c, d]pyrene	0.00023
Phenol	0.004
Polychlorinated Biphenyls (PCBs)	0.0094

APPENDIX C

Inspection Report

Weekly Inspection Checklist

Inuvik Soil Treatment Facility

Date (MM/DD/YY): _____ Time: _____
 Inspector: _____ Weather: _____
 Current activities on site: _____

 _____ Freeboard in ditch _____
 Water in Cell? _____ Freeboard in Pond _____
 Soil on Pad? _____ If yes, fill out page 2 (x) _____
 Treated water tank in use? _____ # of TW tanks _____
 Review Maintenance Log (Y/N) _____ Outstanding work order (Y/N) _____

Site Conditions		OK (x or N/A)	Needs Attention (x)	Entered into Maintenance Log (Y/N, Initial)	Comment <i>*additional comments on Page 2</i>
Access	Gate in working order				
	Signage visible/in good condition				
Spill Kit	On site				
	Lid secured				
	Contents checked				
Storage Shed	Locked				
	PPE available				
	Trash pump in containment				
	Pump fuel in containment				
	Soil amendments in containment				
	SDS' available				
	Sample kit contents checked				
Wildlife	Observed on site (identify type)				
	Damage to facility				
	Birds on or near pond				
	Bears in or near facility				
Facility Grounds	Evidence of spills/leaks/staining				
	Rutting				
	Ice				
	Evidence of soil tracking				
Soil Pad	Berm stability				
	Liner visible				
	Road stability				
	Drainage system working				
	Dust control				
	Soil piles in good condition				
	Water tanks in good condition				
Water Retention Pond	Erosion				
	Liner visible				
	Filter cloth on pump intake				
	Tarp intact & secure				
	Pond level				
WTP	Water conveyance pipes/hoses				
	Water Treatment Equipment				
	Flow meter working				
	System function				
	Evidence of spills/leaks/staining				
	Water discharge location				

**placing an X in a shaded box requires entry into Maintenance Log and follow-up.*

Office Back-up: Date (DD/MM/YY) Initial _____

Weekly Inspection Checklist

Inuvik Soil Treatment Facility

Soil Currently on Pad

[illegible]

**placing an X in a shaded box requires entry into Maintenance Log and follow-up.*

Comments

APPENDIX D

Waste Profile Form

Section A: General Information

Customer Name: _____ Contact: _____
 Address: _____ City / Town: _____ Prov/Terr: _____
 Postal Code: _____ Phone: _____ Fax: _____
 Cell Number: _____ Email Address: _____
 Generator Site Location: _____

Billing:

Bill to the address above ☐ If there is an alternate billing address please provide the information below:

PO# / AFE or Job#: _____ Bill to: _____
 Bill to Address: _____ City: _____ Prov: _____ Postal Code: _____
 Acct. Contact: _____ Phone Number: _____ Fax Number: _____

Section B: Waste Description

Description: _____ Source: _____
 Quantity: _____ ☐ Tonne ☐ Pail ☐ Drum ☐ m³ Lab ID #s: _____

Section G: Certification

I hereby certify that to the best of my knowledge the information contained above is accurate and contains no willful or deliberate omissions. The sample for which the analytical data was provided is representative of the waste and was collected and preserved in a manner consistent with accepted technical standards. The waste described is not hazardous according to EUB or AENV regulations. If it is determined that the waste stream does not conform to this profile, KBL Environmental Services Ltd. reserves the right to re-profile the waste, reject the waste or surcharge the quoted disposal price.

Authorized Signature: _____ Print: _____
 Title: _____ Date: _____

Section H: KBL Environmental Internal Use

Profile Approval: Yes ☐ No ☐ Project #: _____
 HAY RIVER HIGH LEVEL YELLOWKNIFE CAMBRIDGE BAY Inuvik: ☐
 Facility Destination: ☐ ☐ ☐ ☐ ☐
 Approval Number: _____ KBL Representative: _____
 Date: _____ Landfill Representative: _____
 Acceptance Conditions:
 A. ADC: ☐ Credit Approval: ☐
 B. Treatment: ☐
 C. Disposal: ☐

APPENDIX E

Spill Contingency Plan

Spill Contingency Plan

Inuvik Soil Treatment Facility
Gwich'in Land and Water Board
G17L1-002



Spill Contingency Plan

Inuvik Soil Treatment Facility
V.1.1

July 8, 2021

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APPENDICES

Appendix A	Safety Data Sheets
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1.0 SOIL TREATMENT FACILITY DESCRIPTION

The soil treatment facility (the Facility) is an engineered biotreatment facility able to receive hydrocarbon contaminated soil, water and snow originating from spills or contaminated sites. The contaminants in the material entering the Facility and the material in the treatment process are primarily diesel heating oil and gasoline. The Facility is predominantly active during the summer months when temperatures allow for soil treatment activities. A limited amount of fuel is stored on-site to manage retention pond water and operate the water treatment plant.

Location

The Facility is located at the Inuvik Solid Waste Disposal Facility (SWDF) in the Town of Inuvik, along the south-western section of the SWDF.

Lot 65, Group 1355, Inuvik, NT

Coordinates: (N) 7582173.14; (E) 554308.00

Directions from Highway 8 and Mackenzie Road in Inuvik:

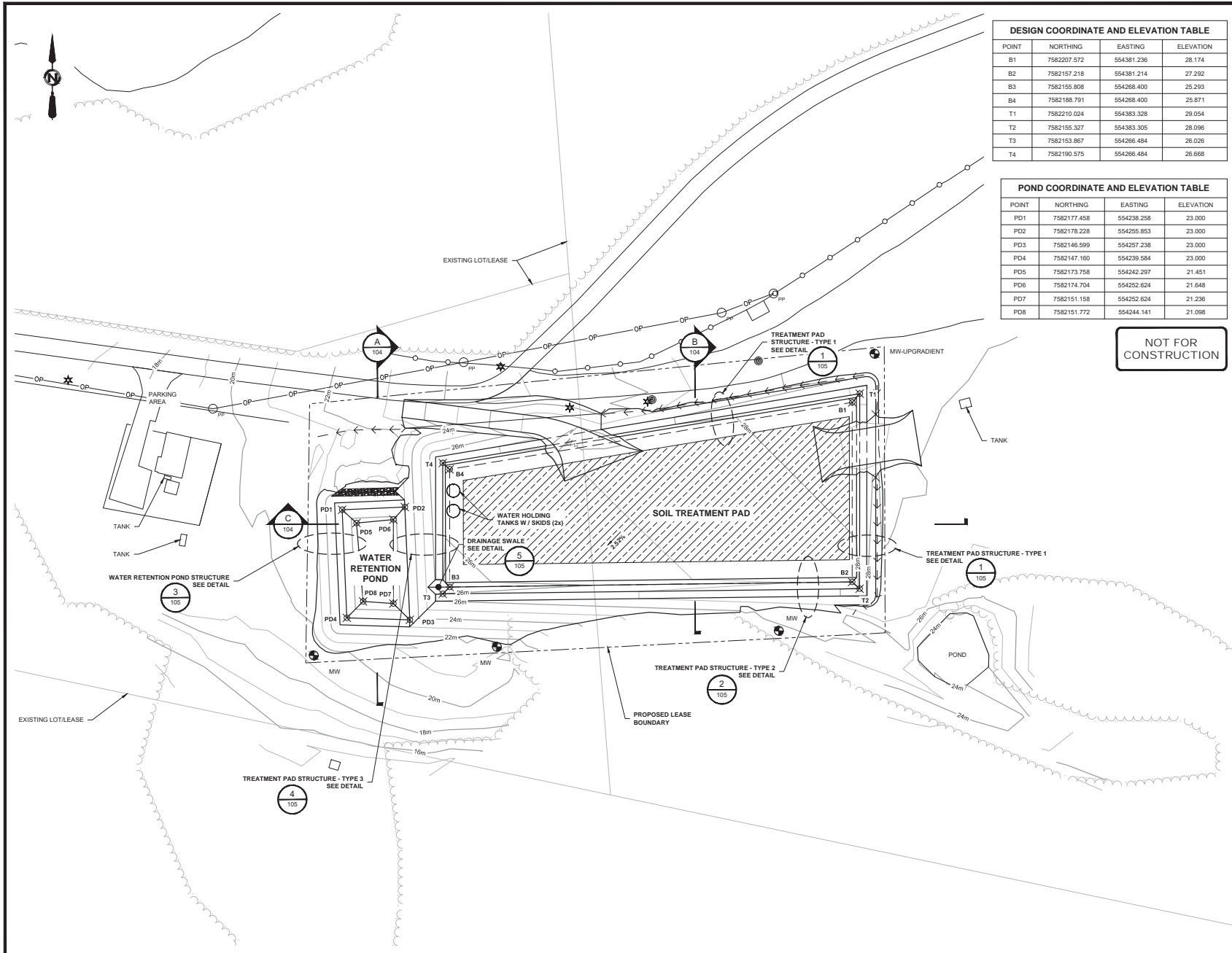
Proceed south on Highway 8 for 350 meters;

Turn Left on Okpik street proceed for 20 meters;

Bear right on High Road Proceed for 700 m to site entrance.

Site Access

The Facility is accessible by road, from the main access to the Inuvik SWDF, off Airport Road. Access is restricted; the main access point to the site has a gate. A location of the site is provided on the following page.



DESIGN COORDINATE AND ELEVATION TABLE			
POINT	NORTHING	EASTING	ELEVATION
B1	7582207.572	554381.236	28.174
B2	7582157.216	554381.214	27.292
B3	7582155.808	554268.400	25.293
B4	7582188.791	554268.400	25.871
T1	7582210.024	554383.328	29.054
T2	7582155.327	554383.305	28.096
T3	7582153.867	554266.484	26.026
T4	7582190.575	554266.484	26.668

POND COORDINATE AND ELEVATION TABLE			
POINT	NORTHING	EASTING	ELEVATION
PD1	7582177.458	554238.258	23.000
PD2	7582178.228	554255.853	23.000
PD3	7582146.999	554257.238	23.000
PD4	7582147.160	554239.584	23.000
PD5	7582173.758	554242.297	21.451
PD6	7582174.704	554252.624	21.648
PD7	7582151.158	554252.624	21.236
PD8	7582151.772	554244.141	21.098

NOT FOR
CONSTRUCTION

LEGEND

- 28m TOPOGRAPHIC MAJOR CONTOUR (LOCAL SITE ELEVATIONS)
- TOPOGRAPHIC MINOR CONTOUR
- TREES
- EXISTING FENCE
- EXISTING OVERHEAD POWER
- EXISTING POWER POLE
- EXISTING LIGHT
- EXISTING TANK
- WASTE COVERAGE AREA
- DRAINAGE DIRECTION
- PROPOSED CULVERT
- SITE LIMITS
- PROPOSED MONITORING WELL
- RIP RAP

- NOTES:**
- DATUM: UTM NAD83 ZONE 8.
 - CONTOURS PROVIDED BY KBL.
 - BOLD LINES & TEXT REFERS TO NEW CONSTRUCTION.
 - MONITORING WELLS EXACT LOCATION TO BE DETERMINED ON SITE.

NO.	DATE	REVISION	BY	APP.
D	2017MAY10	ISSUED FOR APPROVAL	NAR	BJ
C	2017MAY04	ISSUED FOR 90% REVIEW	BJ	BJ
B	2017APR03	ISSUED FOR DRAFT	JH	BJ
A	2017MAR29	ISSUED FOR 30% REVIEW	JH	BJ

PROJECT NO.	20173924-00	INITIALS	
DRAWN BY	J. HUBERT		
DESIGNED BY	S. BARTSCH / B. JARDINE		
SCALE	1:1000		

PERMIT TO PRACTICE
ASSOCIATED ENGINEERING (B.C.) LTD.
Signature: [Signature]
Date: 10 May 2017
PERMIT NUMBER: P 554
The Association of Professional Engineers, Geologists and Geophysicists of NWT (APGGN)

NLR/AE
CONSULTANTS

KBL

CLIENT

PROJECT
INUVIK
SOIL TREATMENT FACILITY

TITLE	DEVELOPMENT PLAN
DRAWING NUMBER	3924-00-103
REV. NO.	D

2.0 SPILL CONTINGENCY PLAN

2.1. Introduction

This Spill Contingency Plan and any subsequent revisions will be effective for the duration of the Facility's lease by KBL Environmental Ltd.

The effective date for the Facility Spill Contingency Plan (Plan) is the date that the Plan is approved and is in effect until such time that an updated plan is in place. In the event of a spill during a period of review, this Plan shall take precedence. This Plan applies to all operations and activities conducted within the boundaries of Inuvik. This Spill Contingency Plan was developed to comply with the *Environmental Protection Act*. R.R.N.W.T. 1990, c.

2.2. Plan Revisions

This Plan will be reviewed annually and revised whenever there is an operational change at the Facility, changes to contact personnel, or otherwise required by the Gwich'in Land and Water Board.

Date of Revision	Title, Section #, or Page #	Summary of Changes
May 2017		Version 1
July 2021	Section 2.5.2 & 2.5.3 Appendix A	Updated contact information Additional SDS'

2.3. Purpose

The purpose of this Plan is to outline response actions for potential spills of any size, including a worst-case scenario in the event of an accidental release at the soil treatment facility. The Plan identifies critical response personnel and their roles and responsibilities in the event of a spill and the equipment and other resources available to respond to a spill. It details spill response procedures that will minimize potential health and safety hazards, environmental damage, and cleanup efforts. The Plan has been prepared to ensure quick access to all the information required in responding to a spill.

2.4. Environmental Policy

KBL's commitment to protecting the environment is demonstrated in how we conduct our day-to-day business operations. The highest standards of care are to be taken by all employees to minimize the environmental impact of all operations. KBL's management team is responsible for taking a leadership role and developing policies and procedures that minimize environmental effects. Employees have the responsibility to bring to the attention of their immediate supervisor procedures and incidents which

may impair the environment. Our policy is to:

- 1) Comply with all applicable regulations.
- 2) Consider the environmental effects of our operations.
- 3) Provide staff with all the necessary information, training and equipment.
- 4) Develop processes, policies and procedures that minimize the occurrence and consequences of environmental incidents.

KBL Environmental also agrees to:

- Provide such protection of the environment as it is technically feasible and economically practical;
- Cooperate with other groups on the protection of the environment; and
- Keep employees, government officials, and the general public informed.

2.5. Contact Information, Roles, and Responsibilities

An immediately reportable spill is defined as a release of a substance that is likely to be an imminent environmental or human health hazard or meets or exceeds the volumes shown in the attached table.

Spills must be reported to the NWT 24-hour Spill Report Line at (867) 920-8130.

2.5.1. KBL Environmental Ltd. Corporate Office:

17 Cameron Road
P.O. Box 1895
Yellowknife, Northwest Territories X1A 2P4

867.873.5263

2.5.2. Responsibility for Spill Contingency Plan Activation:

Katie Oliver
Manager, Environmental Consulting, KBL Environmental Ltd.
koliver@kblenv.com
867.873.5263 (Yellowknife Office)
780.893.3305 (mobile)


Alternate

Richard Reimer
Vice President, KBL Environmental Ltd.
rreimer@kblenv.com
867.873.5263 (Yellowknife Office)
780.218.1969 (mobile)

2.5.3. Spill Contingency Plan Off-Site Resources

Off-site resources for assistance in the event of a spill are listed below. Help from outside the community

may not reach the site until at least the next business day. The KBL representatives identified above will coordinate with the facility technician to determine whether additional resources may be required. Resources include:

• NWT/NU Spill Report Line	(867) 920-8130
• GNWT Environmental Protection Division	(867) 873-7654
• ENR Inspector	Inuvik Region  (867) 878-8878
• AANDC Northwest Territories Region	(867) 669-2440
• ECCC Environmental Enforcement	(867) 669-4730
(enforcement and reporting requirements for CEPA and Fisheries Act)	
• GNWT Environmental Health Officer	During business hours (867) 767-9066 ext. 49262
	After hours and weekends (867) 920-8646
• RCMP (Yellowknife)	(867) 669-1111
• Stanton Territorial Health Authority	(867) 669-4111
• Medivac (Yellowknife)	(867) 669-4115
• Great Slave Helicopters (Yellowknife)	(867) 873-2081
• Matrix Helicopters (Yellowknife)	(867) 766-3134
• Trinity Helicopters (Yellowknife)	(867) 669-7031
• Remote Helicopters (Hay River)	(867) 874-6999
• Thebacha Helicopters (Fort Smith)	(867) 872-4354
• Air Tindi (Yellowknife)	(867) 669-8218
	or 669-8200
• Arctic Sunwest Charters (Yellowknife)	(867) 873-4464

2.5.4. Emergency Phone Location

The KBL field personnel is equipped with a mobile telephone.

2.6. Spill Contingency Plan Distribution

A copy of this Plan will remain with the KBL field personnel, and a copy is stored at the Inuvik SWDF gatehouse. A copy of the Plan is also on file with the Gwich'in Land and Water Board.

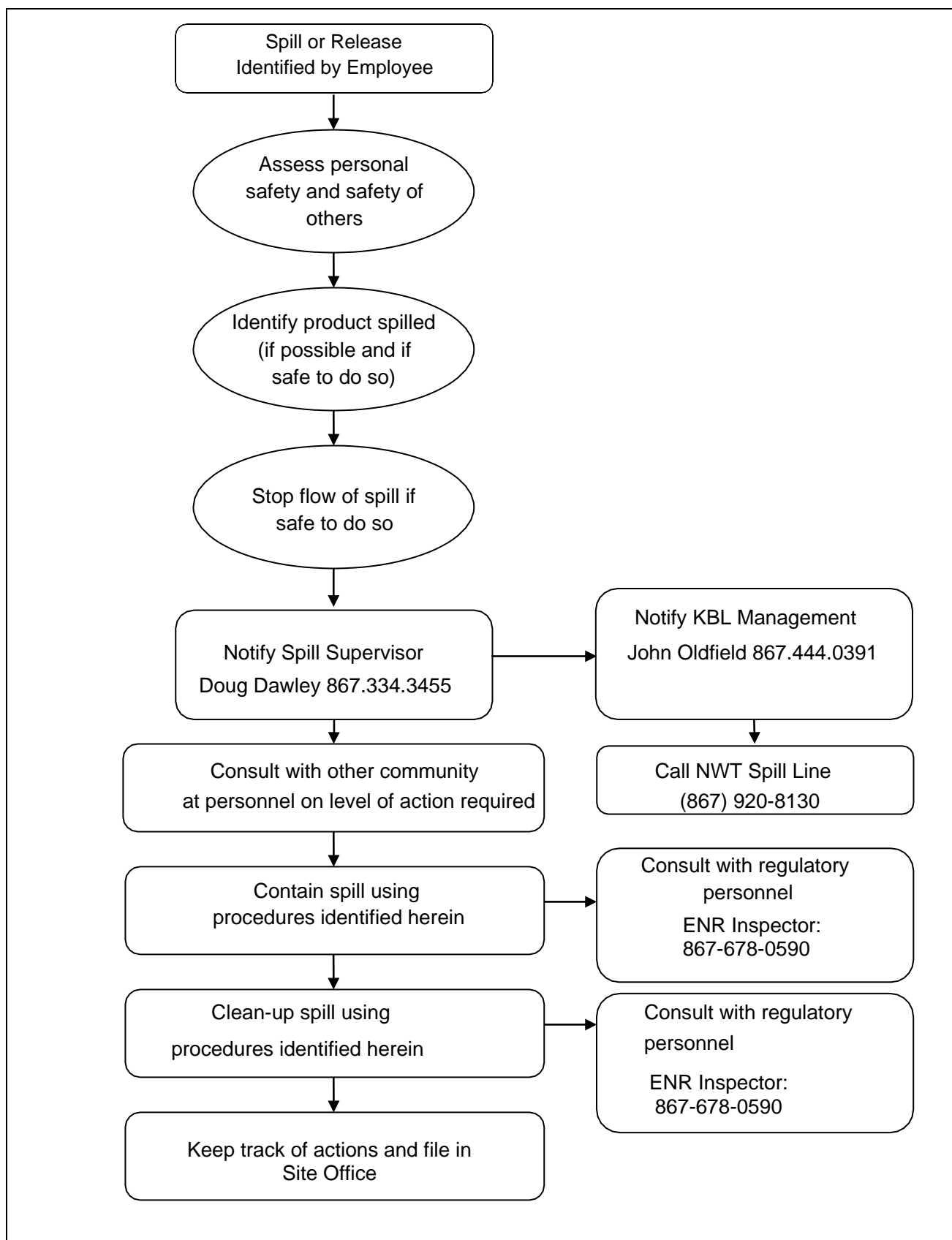
2.7. Potential Spill Material Inventory

The Facility itself receives hydrocarbon-contaminated soil water and snow originating from spills or contaminated sites. The hydrocarbon sources from the inbound material for treatment are primarily diesel heating oil and gasoline.

While heavy equipment refuelling will occur, on-site using appropriate mobile transfer systems, no fuels or fluids for heavy equipment operation will be stored on site. Heavy equipment will be contractor supplied and operated; fuel dispensing for heavy equipment will be completed by the contractor. The contractor will be responsible for equipping each vehicle with an appropriately sized spill response kit. No maintenance of heavy equipment will occur on-site.

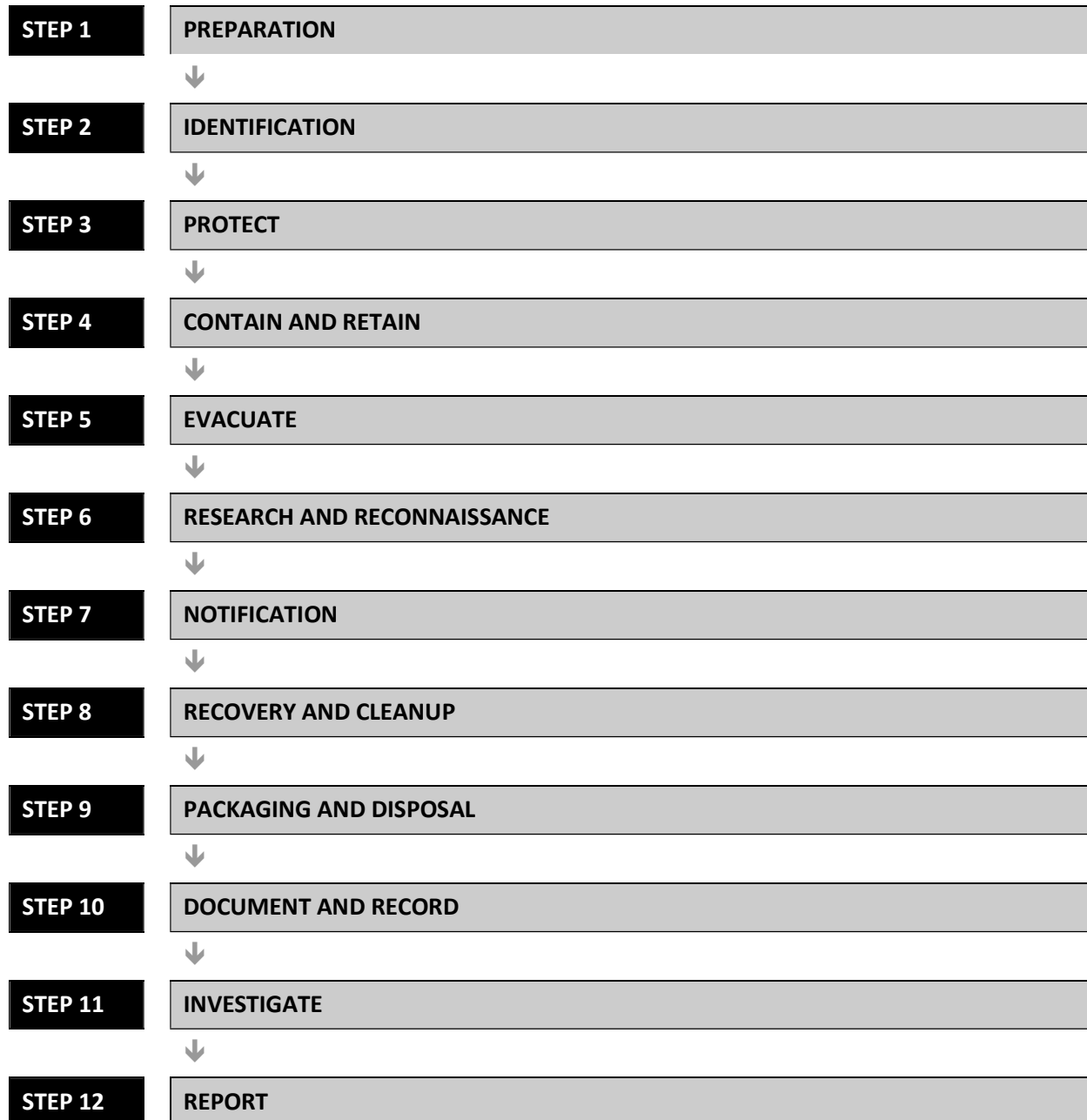
Potential materials released include:

Material	Type of Storage Container	Quantity Normally on Site	Max. Quantity on Site	Storage Location and Uses
Gasoline	Jerry Can	20 L	< 50 l	Stored in locked utility shed on site. Used to operate the Facility water pump. No storage of gasoline on-site during winter months.
Diesel oil	In equipment	< 300 L	400 L	Tidy tanks on crew trucks and used in heavy equipment operating on-site during summer months.
Hydraulic oil	In equipment	Not stored on-site		Not stored on-site. Housed in heavy equipment operating on-site during summer months.
Antifreeze	In equipment	Not stored on-site		Not stored on-site. Housed in heavy equipment operating on-site during summer months.
Engine oil	In equipment	Not stored on-site		Not stored on-site. Housed in heavy equipment operating on-site during summer months.
Nitrogen Fertilizer (Urea)	UN rated IBCs (bulk bags)	< 2 m ³	4 m ³	Utility shed



2.8. KBL Spill Response Protocol

KBL's spill response protocol was developed to minimize the impact on human health, safety, and the environment when releases occur. The protocol ensures that all releases are adequately reported, ensures that all releases are investigated, and preventative or corrective actions are implemented.



2.8.1. Process Steps

STEP 1: PREPARATION

- 1) Managers must ensure that suitable personal protective equipment (PPE) is available to all personnel potentially responsible for performing cleanup.
- 2) Managers shall ensure spill kits must be located at all worksites and service vehicles that handle liquid waste and/or products.
- 3) Employees shall ensure that they are competent in the use of PPE and initial spill response.
- 4) Employees shall ensure that they have been fit-tested if respirator use is necessary.
- 5) Employees shall ensure that all hazardous chemicals are handled, stored, transferred, transported and disposed of safely.

STEP 2: IDENTIFICATION

- 1) **NEVER RUSH IN.**
- 2) Warn others in the immediate area.
- 3) Try to remotely identify the spilled product or waste to assess potential hazards and adverse effects.

STEP 3: PROTECT

- 1) **NEVER RUSH IN.**
- 2) Eliminate all avoidable sources of ignition.
- 3) Stay upwind of vapours. Stay out of low areas.
- 4) Ensure that the released product and the associated potential hazards have been identified and mitigated before approaching the release.
- 5) Use appropriate personal protective equipment.
- 6) Don't touch or walk through the spilled product.

STEP 4: CONTAIN AND RETAIN

- 1) Act quickly. Only attempt to stop the product flow if it is safe to do so.
- 2) Set containers upright (e.g. drums, pails).
- 3) Close valves, shut off pumps, plug leaks.
- 4) Carry out emergency repairs.
- 5) Prevent entry into waterways, sewers, or confined areas by blocking drains, culverts, ditches, and other escape points.
- 6) Contain spill with sorbents, earth, sand, or other non-combustible materials, *if safe to do so and following direction from authorities if available.*

NOTE: Hydrocarbon vapours are heavier than air and settle in low-lying places and places sheltered from the wind.

STEP 5: EVACUATE

- 1) Clear the area of non-essential or untrained personnel.
- 2) Isolate the immediate area and consider a more extensive downwind evacuation based on product information.
- 3) Limit or prevent access to the site/area.

STEP 6: RESEARCH AND RECONNAISSANCE

- 1) Quickly and accurately gather spill details that need to be communicated to response personnel and authorities. This information will generally include:
 - the name, telephone and address of the person who is reporting the spill;
 - the name and telephone of the person(s) or parties who caused the spill;
 - the location (LSD, coordinates, street address or other), time, duration and rate of release of the substance spilled;
 - the type, quantity and concentration of the substance spilled;
 - the cause and effect of the spill, including risks to human health and safety;
 - a description of the spill location and the area surrounding the spill, including the location of the nearest water body, dwelling and town or city;
 - the details of further action contemplated or required;
 - the names of agencies on the scene;
 - the names of other persons or agencies advised concerning the spill;
 - equipment involved;
 - affected area(s);
 - situation under control or escalating;
 - initially proposed tactics to contain/control spill; and
 - assistance required.

NOTE: Do not delay your call for help because you do not have complete information.

STEP 7: NOTIFICATION

- 1) Incident date and time of release.
- 2) Release information (composition of the material, duration, amount, etc.).
- 3) Circumstances surrounding the release (e.g. leaking tank, etc.).
- 4) Status of corrective actions (clean up, remediation, steps to prevent reoccurrence etc.).
- 5) Employee shall follow company and client notification procedures.
- 6) The KBL General Manager or the SFW Project Manager will notify applicable regulatory bodies.
- 7) Notification must be made as soon as reasonably practicable to the 24-hour Spill Report Line by calling (867) 920-8130. Use the NT-NU Spill Report Form for reporting (the form is provided in Appendix C). Contact information is also located on the top right corner of the form.
- 8) An electronic copy of the Spill Form is available at:
http://www.enr.gov.nt.ca/sites/default/files/128-spill_report_form_e_fillable_1.pdf

NOTE: If in doubt about reportable quantities, adverse effects or reporting responsibilities, contact the KBL Compliance and Licensing Manager. Release reporting quantities are listed in Appendix B.

STEP 8: RECOVERY AND CLEANUP

The use of sorbent material or other appropriate techniques should be used to recover the product. For large quantities of pooled product, the trained employees shall pump to the appropriate storage device (ensure equipment is non-sparking and adequately grounded and bonded). The recovered product can be stored in empty drums, tank trucks, port-a-tanks, or vacuum trucks. Contaminated soil should be placed into a secure area that is contained (lined and covered).

STEP 9: PACKAGING AND DISPOSAL

- 1) Collect used sorbent material using clean, non-sparking tools.
- 2) Place waste materials in leak-proof sealed containers or appropriate 6-mil bags.
- 3) Store waste containers temporarily in a secure location. Used sorbent material represents a severe fire hazard (particularly gasoline-soaked sorbents). Used sorbent materials should be kept in a well-ventilated area away from heat sources, direct sunlight, and wet weather.
- 4) Wear appropriate personal protective equipment (PPE).

STEP 10: DOCUMENT AND RECORD

Employee, KBL Licensing & Compliance Manager and HSE Administrator, are to:

- 1) Initiate incident investigation process (obtain statements, pictures, analysis, etc.).
- 2) Complete and initial Incident Report form.
- 3) Determine and implement remedial corrective action to control repeat incidents.

STEP 11: INVESTIGATE

- 1) KBL Management and HSE Administrator shall investigate the cause of the spill.
- 2) KBL Management, HSE Administrator and the employee shall develop recommendations for corrective and preventive action.
- 3) Corrective and preventive actions shall be implemented.

STEP 12: REPORT

- 1) The follow-up report must contain all the details included in the immediate report with any additional follow-up information. Written report requirements are to be determined in consultation with applicable authorities based on spill circumstances and quantities.

2.9. Spill Response Resources Inventory

The Facility is equipped with an appropriately sized spill kit; spill kit contents include:

- Universal spill pads; 17" x 19" (200);
- Oil sorbent mini-booms, 2"x 4' (6);
- Oil sorbent mini-booms, 5" x 10' (2);
- Granular absorbent (1 bag); and
- 95-gallon approved DOT salvage drum.

General PPE is also stored on-site, including disposable gloves, safety eyewear, work gloves, and coveralls. Other materials used in spill response stored at the Facility include tarps, duct tape, and hand tools, including shovels.

If heavy equipment is required, the licensee has ready, local access to mobile equipment, including a loader and an excavator.

2.10. Spill Response Training

All KBL personnel managing waste are certified in Workplace Hazardous Material Information System (WHMIS) and Transportation of Dangerous Goods (TDG). Any waste shipment requiring a Federal Movement Document will be filled out by an individual holding a valid certificate in TDG.

The Facility personnel receive task-specific training, including spill response procedures and protocols. A facility orientation will be performed for KBL employees at the beginning of work each season. The location of spill response materials and supplies will be reviewed during each orientation session. The orientation will also include a review of this Plan.

APPENDIX A

Safety Data Sheets

“CLEANING THE WORLD WITH ACTIVATED CARBON”



SAFETY DATA SHEET

Section 1 - Identity

Identity (As Used on Label and List): GC Activated Carbon (Including, but not limited to GC C-40, GC 4 x 8B, GC 4 x 8S, GC 6 x 12, GC 6 x 12S, GC 8 x 30, GC 8 x 30AW, GC 8 x 30S, GC 8 x 30SAW, GC 12 x 40, GC 12 x 40AW, GC 12x40SAW, GC 20 x 50, GC 20 x 50S, GC Powdered, GC WDC activated carbons)

Manufacturers Name: General Carbon Corporation
33 Paterson Street
Paterson, NJ 07501
Tel: (973)523-2223
www.generalcarbon.com
Date Prepared: February 16, 2017

Section 2 - Hazardous Identification

2.1 GHS-US Classification

Eye Irritation	2B H320
STOT	SE 3 H335

Hazards not otherwise classified: Combustible dust. May form combustible dust concentrations in air. All powdered activated carbons are classified as weakly explosive (Dust explosion class St1): Given the necessary conditions of a strong ignition source, right concentrations of airborne carbon dust, adequate oxygen levels, and confinement, the potential for a deflagration event exists. A combustible dust hazard assessment and employee training should be carried out. See sections 7 and 9 for further information on combustible dust precautions.

2.2 Label Elements



Hazard Pictograms

Signal word (GHS-US)

Hazard Statements

Precautionary statements (GHS-US)

: Warning
: H320- Causes eye irritation
: H335- May cause respiratory irritation
: P261- Avoid breathing dust
: P264- Wash thoroughly after handling
: P271- Use in well-ventilated area
: P280- Wear protective gloves/clothing/eye & face protect
: P304&340: IF INHALED: Remove person to fresh air

: P305&351&P338: If in eyes, Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing.
 : P312- Call Poison Control Center/Doctor if you feel sick
 : P403& P233- Store in well-ventilated place. Keep container tightly closed
 : P405- Store locked up
 : P501- Dispose of container to appropriate receptacle

2.3 Other Hazards

No additional information available

2.4 Unknown acute toxicity (GHS-US)

No data available

Section 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixture

Name	CAS #	%	GHS US classification
Carbon	7440-44-0	100	Not classified

Section 4 – First Aid Measures

4.1 Description of first aid measures

First aid after inhalation	Remove person to fresh air. If not breathing, administer CPR or artificial respiration. Get immediate medical attention.
First aid after skin contact	If skin reddening or irritation develops, seek medical attention
First aid after eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, get medical attention.
First aid after ingestion	If the material is swallowed, get immediate medical attention or advice. DO NOT induce vomiting unless directed to do so by medical personnel.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	May cause respiratory irritation
Symptoms/injuries after skin contact	May cause skin irritation
Symptoms/injuries after eye contact	Causes serious eye damage
Symptoms/injuries after ingestion	May be harmful if swallowed

4.3 Indication of any immediate medical attention and special treatment needed

No additional information available.

Section 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	If involved with fire, flood with plenty of water
Unsuitable extinguishing media	None

5.2 Special hazards arising from substance or mixture

Fire hazard	None known
Explosion hazard	None known
Reactivity	Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, etc. may result in fire.

5.3 Advice for firefighters

Protection during firefighting	Firefighters should wear full protective gear
--------------------------------	---

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

General measures

Avoid contact with the skin and eyes

6.1.1 For non-emergency personnel

No additional information available

6.1.2 For emergency responders

No additional information available

6.2 Environmental precautions

None

6.3 Methods and material for containment and cleaning up

For containment

If possible, stop flow of product

Methods for cleaning up

Shovel or sweep up and put in closed container for disposal

6.4 Reference to other sections

No additional information available

Section 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling

Avoid contact with eyes. Wet activated carbon removes oxygen from air causing severe hazard to workers inside carbon vessels or confined spaces

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Protect containers from physical damage. Store in dry, cool, well-ventilated area. Store away from strong oxidizers, strong acids, ignition sources, combustible materials, and heat. An adequate air gap between packages is recommended to reduce propagation in the case of fire .

Handling: A hazard assessment should be carried out. As with all finely divided materials, ground all transfer, blending, and dust collecting equipment to prevent static discharge. Remove all strong ignition sources from material handling, transfer, and processing areas where dust may be present or accumulate. Practice good housekeeping. Excessive accumulations of dust or dusty conditions can create the potential of secondary explosions. Inspection of hidden surfaces for dust accumulation should be made routinely. If possible, eliminate the pathways for dust to accumulate in hidden areas. Fine carbon dust may penetrate electrical equipment and cause electrical shorts. Where dusting is unavoidable, dust-proof boxes and regular electrical line maintenance are recommended. Refer to NFPA standards 654 for guidance.

Caution employees-no smoking in carbon storage and handling areas. Carbon is difficult to ignite, however, cutting and welding operations should be carried out using hot work permit systems where precautions are taken not to ignite carbon, which may smolder undetected.

7.3 Specific end use(s)

No additional information available

Section 8: Exposure controls/ personal protection

8.1 Control parameters

No additional information available

8.2 Exposure controls

Appropriate engineering controls	: Local exhaust and general ventilation must be adequate to meet exposure standards
Hand Protection	: None required under normal product handling conditions
Eye Protection	: safety glasses
Skin and body protection	: Wear suitable working clothes
Respiratory protection	: If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Particulate
Color	: Black
Odor	: No data available
Odor threshold	: No data available
Ph	: No data available
Relative evaporation rate	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor density @ 20 deg C	: No data available
Relative Density	: 28-33 lb/ cubic foot
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

Combustible dust- These products may contain combustible dusts. May form combustible dust concentrations in air. All powdered activated carbons are weakly explosive. No specific information on these carbons are available.

Typical combustible dust data for a variety of activated carbons:

K_{st} values reported between 43-113 (various sources).

Dust explosion class St1 (K_{st} values < 200 are Class St1-weakly explosive).

MEC (minimum explosible concentration) in air 50 and 60 g/m³ (two reports)

Volatile content (by weight): < 8% ASTM D3175-11 (Watercarb)

MIT (minimum ignition temperature) values reported between 400-680°C (752-1256°F) (four reports)

Maximum Absolute Explosion pressure values reported between 6.0-8.6 bar (four reports)

9.2 Other information

No additional information available

Section 10: Stability and reactivity

10.1 Reactivity

Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, etc. may result in fire

10.2 Chemical stability

Stable under normal conditions

10.3 Possibility of hazardous reactions

Will not occur

10.4 Conditions to avoid

None

10.5 Incompatible materials

Strong oxidizing and reducing agents such as ozone, liquid oxygen or chlorine.

10.6 Hazardous decomposition products

Carbon monoxide may be generated in the event of a fire.

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity : Not classified

Carbon (7440-44-0)

LD50 oral rat : >10000 mg/kg

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Causes eye irritation

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity : May cause respiratory irritation (single exposure)

Specific target organ toxicity : Not classified (repeated exposure)

Aspiration hazard : Not classified

Section 12: Ecological Information

12.1 Toxicity

No additional information available

12.2 Persistence and degradability

No additional information available

12.3 Bioaccumulative potential

No additional information available

12.4 Mobility in soil

No additional information available

12.5 Other adverse effects

No additional information available

Section 13: Disposal concerns

13.1 Waste treatment methods

Waste Disposal recommendations : Dispose of contents/container in accordance with local/ regional/ international regulations

Section 14: Transportation information

In accordance with DOT/ADR/RID/ADNR/IMDG/ICAO/IATA

14.1 UN Number

Not applicable. See Note 1 below.

14.2 UN proper shipping name

Not applicable

Note 1: Under the UN classification for activated carbon, all activated carbons have been identified as a class 4.2 product. However, This product has been tested according to the United Nations Transport of Dangerous Goods test protocol for a “self-heating substance” (United Nations Transportation of Dangerous Goods, Manual of Tests and Criteria, Part III, Section 33.3.1.6 - Test N.4 - Test Method for Self Heating Substances) and it has been specifically determined that this product does not meet the definition of a self heating substance (class 4.2) or any other hazard class, and therefore should not be listed as a hazardous material. This information is applicable only for the Activated Carbon Product identified in this document.

Section 15: Regulatory information

15.1 US Federal regulations

Carbon (7440-44-0)

Listed on the United States TSCA inventory

15.3 US State regulations

No additional information available

Section 16: Other information

Full text of H-phrases:

Eye Irrit. 2B

Serious eye damage/eye irritation Category 2B

STOT SE 3

Specific target organ toxicity (single exposure) Category 3

H335

May cause respiratory irritation

NFPA®



NFPA health hazard

: 1-Exposure could cause irritation but only minor residual injury even if no treatment is given

NFPA fire hazard

: 1- Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur (e.g. [mineral oil](#)). Includes some finely divided suspended solids that do not require heating before ignition can occur. Flash point at or above 93.3 °C (200 °F)

NFPA reactivity

: 0- Normally stable, even under fire exposure conditions, and are not reactive with water

The information contained herein is accurate to the best of our knowledge. General Carbon Corporation makes no warranty with respect hereto said information and disclaims all liability from reliance there in.

SAFETY DATA SHEET

KLARAID* CDP1311

1. Identification

Product identifier	KLARAID CDP1311
Other means of identification	None.
Version #	1.2
Prepared by	This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).
Revision date	May-13-2018
Supersedes date	Dec-17-2017
Recommended use	Coagulant Coagulant
Recommended restrictions	None known.

Company/undertaking identification

SUEZ Water Technologies & Solutions Canada
3239 Dundas Street West
Oakville, Ontario, L6M 4B2
T 905-465-3030

Emergency telephone
(800) 877-1940

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Serious eye damage/eye irritation	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

Label elements



Signal word	Warning
Hazard statement	May be corrosive to metals. Causes serious eye irritation. May cause respiratory irritation.
Precautionary statement	
Prevention	Keep only in original packaging. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear eye protection/face protection.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER/doctor if you feel unwell. If eye irritation persists: Get medical advice/attention. Absorb spillage to prevent material-damage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent (wt/wt)
Aluminium chlorhydroxide	12042-91-0	30 - 60
Epichlorohydrin-dimethylamine copolymer	25988-97-0	3 - 7

Composition comments Information for specific product ingredients as required by the WHMIS Regulations is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Wash off with soap and water.

Eye contact Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion Rinse mouth.

Most important symptoms/effects, acute and delayed Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Avoid breathing mist or vapor. Avoid contact with eyes. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	2 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	2 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Splash proof chemical goggles.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Suitable gloves can be recommended by the glove supplier. Glove selection must take into account any solvents and other hazards present.

Other

Wear suitable protective clothing.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Liquid

Color

Colorless to yellow

Odor

Mild

Odor threshold

Not available.

pH (concentrated product)

3.7

pH in aqueous solution	4.5 (5% SOL.)
Melting point/freezing point	23 °F (-5 °C)
Initial boiling point and boiling range	> 212 °F (> 100 °C)
Flash point	> 200 °F (> 93 °C) P-M(CC)
Evaporation rate	< 1 (Ether = 1)
Flammability (solid, gas)	Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.

Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)
Relative density	1.31
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	42 cps
Viscosity temperature	70 °F (21 °C)

Other information

Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pour point	28 °F (-2 °C)
Specific gravity	1.312
VOC	0 % (Calculated)

10. Stability and reactivity

Reactivity	May be corrosive to metals.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Metals.
Hazardous decomposition products	Hydrogen chloride. Oxides of carbon and nitrogen.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation.
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Information on toxicological effects**Acute toxicity** May cause respiratory irritation.

Product	Species	Test Results
KLARAID CDP1311 (CAS Mixture)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)
Components	Species	Test Results
Aluminium chlorhydroxide (CAS 12042-91-0)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Oral</i>		
LD50	Rat	> 2000 mg/kg
Epichlorohydrin-dimethylamine copolymer (CAS 25988-97-0)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.**Serious eye damage/eye irritation** Causes serious eye irritation.**Respiratory or skin sensitization****Canada - Alberta OELs: Irritant**

Aluminium chlorhydroxide (CAS 12042-91-0) Irritant

Respiratory sensitization This product is not expected to cause respiratory sensitization.**Skin sensitization** This product is not expected to cause skin sensitization.**Germ cell mutagenicity** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.**Carcinogenicity** Not classified.**ACGIH Carcinogens**

Aluminium chlorhydroxide (CAS 12042-91-0) A4 Not classifiable as a human carcinogen.

Canada - Manitoba OELs: carcinogenicity

Aluminium chlorhydroxide (CAS 12042-91-0) Not classifiable as a human carcinogen.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.**Specific target organ toxicity - single exposure** May cause respiratory irritation.**Specific target organ toxicity - repeated exposure** Not classified.**Aspiration hazard** Based on available data, the classification criteria are not met.**Chronic effects** Prolonged inhalation may be harmful.**12. Ecological information****Ecotoxicity**

Product	Species	Test Results
KLARAID CDP1311 (CAS Mixture)		
LC50	Fathead Minnow	8.3 mg/L, Static Renewal Bioassay, 96 hour

Product		Species	Test Results
Aquatic Crustacea	NOEL	Fathead Minnow	3.1 mg/L, Static Renewal Bioassay, 96 hour
	LC50	Daphnia magna	6.3 mg/L, Static Renewal Bioassay, 48 hour
	NOEL	Daphnia magna	3.1 mg/L, Static Renewal Bioassay, 48 hour
	LC50	Rainbow Trout	3.2 mg/L, Static Renewal Bioassay, 96 hour
	NOEL	Rainbow Trout	1.6 mg/L, Static Renewal Bioassay, 96 hour
Components		Species	Test Results
Epichlorohydrin-dimethylamine copolymer (CAS 25988-97-0)			
	EC50	Daphnia Magna	> 10 mg/l, 48 hour
	LC50	Zebra fish (Brachydanio rerio)	> 10 mg/l, 96 hour
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		
Persistence and degradability	No data is available on the degradability of this product.		
- COD (mgO2/g)	35 (calculated data)		
- BOD 5 (mgO2/g)	1 (calculated data)		
- BOD 28 (mgO2/g)	1 (calculated data)		
- Closed Bottle Test (% Degradation in 28 days)	6 (calculated data)		
- Zahn-Wellens Test (% Degradation in 28 days)	1 (calculated data)		
- TOC (mg C/g)	15 (calculated data)		
13. Disposal considerations			
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.		
Local disposal regulations	Dispose in accordance with all applicable regulations.		
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).		
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.		
14. Transport information			
TDG			
UN number	UN3264		
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINUM CHLORHYDROXIDE)		
Transport hazard class(es)			
Class	8		
Subsidiary risk	-		
Packing group	III		
Environmental hazards	Not available.		
The goods described above have been classified using a combination of testing, technical data, calculations and manufacturer knowledge in accordance with Part 2, Classification. TDG Classification is valid for road or rail transport only. For shipment by air or water, refer to IATA or IMDG regulations.			

DOT

Not regulated as a dangerous good.

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IMDG

UN number UN3264
UN proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINUM CHLORHYDROXIDE)
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards
Marine pollutant No.
EmS F-A, S-B
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number UN3264
UN proper shipping name Corrosive liquid, acidic, inorganic, n.o.s. (ALUMINUM CHLORHYDROXIDE)
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards No.
ERG Code 154
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA; IMDG; TDG



15. Regulatory information

Canadian regulations

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date Dec-12-2016

Revision date	May-13-2018
Version #	1.2
List of abbreviations	<p>CAS: Chemical Abstract Service Registration Number TSRN indicates a Trade Secret Registry Number is used in place of the CAS number. ACGIH: American Conference of Governmental Industrial Hygienists NOEL: No Observed Effect Level STEL: Short Term Exposure Limit LC50: Lethal Concentration, 50% LD50: Lethal Dose, 50% TWA: Time Weighted Average BOD: Biochemical Oxygen Demand COD: Chemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code TLV: Threshold Limit Value</p>
References:	No data available
Disclaimer	<p>The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.</p>
* Trademark of SUEZ. May be registered in one or more countries.	

FICHE SIGNALÉTIQUE

KLARAIID* CDP1311

1. Identification

Identificateur de produit	KLARAIID CDP1311
Autres moyens d'identification	Aucune.
Version n°	1.2
Préparée par	Cette fiche signalétique a été préparée par SUEZ Département de la réglementation (1-215-355-3300).
Date de la révision	Mai-13-2018
Date d'entrée en vigueur de la nouvelle version	Déc-17-2017
Usage recommandé	Agent de coagulation Agent de coagulation
Restrictions d'utilisation	Aucun(e) connu(e).

Identification de la société/entreprise

SUEZ Water Technologies & Solutions Canada
3239 Dundas Street West
Oakville, Ontario, L6M 4B2
T 905-465-3030

Numéro de téléphone en cas d'urgence

(800) 877-1940

2. Identification des dangers

Dangers physiques	Matières corrosives pour les métaux	Catégorie 1
Dangers pour la santé	Lésions oculaires graves/irritation oculaire	Catégorie 2
	Toxicité pour certains organes cibles - exposition unique	Irritation des voies respiratoires de catégorie 3

Éléments d'étiquetage



Mention d'avertissement	Avertissement
Mention de danger	Peut être corrosif pour les métaux. Provoque une sévère irritation des yeux. Peut irriter les voies respiratoires.
Conseil de prudence	Conservé uniquement dans l'emballage d'origine. Éviter de respirer les brouillards ou les vapeurs. Se laver soigneusement après manipulation. Utiliser seulement en plein air ou dans un endroit bien ventilé. Porter une protection oculaire/faciale.
Prévention	

Intervention	EN CAS D'INHALATION : Déplacer la personne à l'air frais et la maintenir dans une position confortable pour la respiration. EN CAS DE CONTACT AVEC LES YEUX: Rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer. Appelez un CENTRE ANTIPOISON/médecin si vous vous sentez mal. Si l'irritation des yeux persiste : Demander un avis médical/Consulter un médecin. Absorber toute substance répandue pour éviter qu'elle attaque les matériaux environnants.
Stockage	Entreposer dans un endroit bien ventilé. Garder le contenant fermé hermétiquement. Garder sous clef. Stocker dans des récipients résistants à la corrosion avec un revêtement intérieur résistant.
Élimination	Éliminer le contenu/récipient conformément à la réglementation locale/régionale/nationale/internationale.
Autres dangers	Aucun(e) connu(e).
Renseignements supplémentaires	Aucune.

3. Composition/information sur les ingrédients

Mélanges

Composants	No CAS	Pourcent (wt/wt)
Chlorhydroxide d'aluminium	12042-91-0	30 - 60
Copolymère d'épichlorohydrine et de diméthylamine	25988-97-0	3 - 7

Remarques sur la composition Les renseignements exigés par SIMDUT pour les ingrédients composant ce produit sont donnés ci-dessous. Consulter les autres sections de cette fiche pour l'évaluation des risques associés à ce produit.

4. Premiers soins

Inhalation	Transporter la victime à l'extérieur et la maintenir au repos dans une position où elle peut confortablement respirer. Appeler un CENTRE ANTIPOISON ou un médecin en cas de malaise.
Contact avec la peau	Laver avec de l'eau et du savon.
Contact avec les yeux	Continuer à rincer. Si l'irritation des yeux persiste : Demander un avis médical/Consulter un médecin.
Ingestion	Rincer la bouche.
Symptômes et effets les plus importants, qu'ils soient aigus ou retardés	Irritation oculaire grave. Les symptômes peuvent inclure un picotement, un larmolement, une rougeur, un gonflement et une vision trouble. Peut irriter les voies respiratoires.
Mention de la nécessité d'une prise en charge médicale immédiate ou d'un traitement spécial, si nécessaire	Donner des soins généraux et traiter en fonction des symptômes. Garder la victime en observation. Les symptômes peuvent être retardés.
Informations générales	En cas de malaise, demander un avis médical (montrer l'étiquette du produit lorsque possible). S'assurer que le personnel médical est averti du (des) produits(s) en cause et qu'il prend des mesures pour se protéger.

5. Mesures à prendre en cas d'incendie

Agents extincteurs appropriés	Brouillard d'eau. Mousse. Poudre chimique. Dioxyde de carbone (CO ₂).
Agents extincteurs inappropriés	Ne pas utiliser un jet d'eau comme agent extincteur, car cela propagera l'incendie.
Dangers spécifiques du produit dangereux	Des gaz dangereux pour la santé peuvent se former pendant un incendie.
Équipements de protection spéciaux et précautions spéciales pour les pompiers	Porter des vêtements de protection complets, y compris un casque, un appareil respiratoire autonome à pression positive ou à demande de pression, des vêtements de protection et un masque de protection.
Équipement/directives de lutte contre les incendies	En cas d'incendie et/ou d'explosion ne pas respirer les fumées. Utiliser des procédures standard en cas d'incendie et tenir compte des dangers des autres substances en cause. Éloigner les récipients du lieu de l'incendie si cela peut se faire sans risque. Refroidir les récipients/réservoirs par pulvérisation d'eau.
Méthodes particulières d'intervention	Utiliser des procédures standard en cas d'incendie et tenir compte des dangers des autres substances en cause.

6. Mesures à prendre en cas de déversement accidentel

Précautions individuelles, équipements de protection et mesures d'urgence

Tenir à l'écart le personnel non requis. Tenir les gens à l'écart de l'endroit du déversement/de la fuite et en amont du vent. Porter un équipement et des vêtements de protection appropriés durant le nettoyage. Éviter de respirer les brouillards ou les vapeurs. Ne pas toucher les récipients endommagés ou le produit déversé à moins de porter des vêtements de protection appropriés. S'assurer une ventilation adéquate. Prévenir les autorités locales si des fuites significatives ne peuvent pas être contenues. Pour la protection individuelle, voir la section 8 de la FDS.

Méthodes et matériaux pour le confinement et le nettoyage

Empêcher l'entrée dans les cours d'eau, les égouts, les sous-sols ou les zones confinées.

Déversements importants : Arrêter l'écoulement de la substance, si cela peut se faire sans risque. Endiguer le matériau déversé, lorsque cela est possible. Absorber toute substance répandue pour éviter qu'elle attaque les matériaux environnants. Utiliser un matériau non combustible comme la vermiculite, le sable ou la terre pour absorber le produit et le mettre dans un récipient pour élimination ultérieure. Après avoir récupéré le produit, rincer la zone à l'eau.

Déversements peu importants : Essuyer avec une matière absorbante (par ex., tissu, linge). Nettoyer la surface à fond pour éliminer la contamination résiduelle.

Ne jamais réintroduire le produit répandu dans son récipient d'origine en vue d'une réutilisation. Pour l'élimination des déchets, voir la section 13 de la FDS.

Précautions relatives à l'environnement

Éviter le rejet dans les égouts, les cours d'eau ou sur le sol.

7. Manutention et stockage

Précautions relatives à la sûreté en matière de manutention

Éviter de respirer les brouillards ou les vapeurs. Éviter tout contact avec les yeux. Éviter une exposition prolongée. Assurer une ventilation efficace. Porter un équipement de protection individuelle approprié. Observer de bonnes pratiques d'hygiène industrielle.

Conditions de sûreté en matière de stockage, y compris les incompatibilités

Garder sous clef. Stocker dans un endroit frais et sec, à l'écart de la lumière solaire directe. Stocker dans des récipients résistants à la corrosion avec un revêtement intérieur résistant. Conserver uniquement dans le récipient d'origine. Stocker à l'écart des matériaux incompatibles (Consulter la section 10 de la FDS).

8. Contrôle de l'exposition/protection individuelle

Limites d'exposition professionnelle

ÉTATS-UNIS. Valeurs limites d'exposition de l'ACGIH

Composants	Type	Valeur	Forme
Chlorhydroxide d'aluminium (CAS 12042-91-0)	TWA	1 mg/m3	Fraction respirable.

Canada. LEMT pour l'Alberta (Code de l'hygiène et de la sécurité au travail, Annexe 1, Tableau 2)

Composants	Type	Valeur
Chlorhydroxide d'aluminium (CAS 12042-91-0)	TWA	2 mg/m3

Canada. LEMT pour la Colombie-Britannique. (Valeurs limites d'exposition en milieu de travail pour les substances chimiques, Réglementation sur la santé et sécurité au travail 296/97, ainsi modifiée)

Composants	Type	Valeur	Forme
Chlorhydroxide d'aluminium (CAS 12042-91-0)	TWA	1 mg/m3	Respirable.

Canada. LEMT de Manitoba (Règlement 217/2006, Loi sur la sécurité et l'hygiène du travail)

Composants	Type	Valeur	Forme
Chlorhydroxide d'aluminium (CAS 12042-91-0)	TWA	1 mg/m3	Fraction respirable.

Canada. LEMT pour l'Ontario. (Contrôle de l'exposition à des agents biologiques et chimiques)

Composants	Type	Valeur	Forme
Chlorhydroxide d'aluminium (CAS 12042-91-0)	TWA	1 mg/m3	Fraction respirable.

Canada. LEMT du Québec, (Ministère du Travail. Règlement sur la qualité du milieu de travail)

Composants	Type	Valeur
Chlorhydroxide d'aluminium (CAS 12042-91-0)	TWA	2 mg/m3

Valeurs biologiques limites

Aucune limite d'exposition biologique observée pour les ingrédients.

Contrôles d'ingénierie appropriés	Il faut utiliser une bonne ventilation générale (habituellement dix changements d'air l'heure). Les débits de ventilation doivent être adaptés aux conditions. S'il y a lieu, utiliser des enceintes d'isolement, une ventilation locale ou d'autres mesures d'ingénierie pour maintenir les concentrations atmosphériques sous les limites d'exposition recommandées. Si des limites d'exposition n'ont pas été établies, maintenir les concentrations atmosphériques à un niveau acceptable. Assurer l'accès à une douche oculaire.
Mesures de protection individuelle, telles que les équipements de protection individuelle	
Protection du visage/des yeux	Lunettes résistantes aux éclaboussures de produits chimiques.
Protection de la peau	
Protection des mains	Porte des vêtements appropriés résistants aux produits chimiques Le choix d'un gant approprié ne dépend pas seulement de son matériau, mais aussi d'autres caractéristiques de qualité et elles diffèrent d'un fournisseur à l'autre. Le fournisseur de gants peut recommander des gants appropriés. La sélection des gants doit être effectuée en tenant compte de tout solvant et autres dangers présents.
Autre	Porter un vêtement de protection approprié.
Protection respiratoire	Si les contrôles d'ingénierie ne maintiennent pas les concentrations atmosphériques sous les limites d'exposition recommandées (lorsqu'il y a lieu) ou à un taux acceptable (dans les pays où des limites d'exposition n'ont pas été établies), un respirateur homologué doit être porté
Dangers thermiques	Porter des vêtements de protection thermique appropriés, au besoin.
Considérations d'hygiène générale	Toujours adopter de bonnes pratiques d'hygiène personnelle, comme se laver après avoir manipulé la substance et avant de manger, de boire ou de fumer. Laver régulièrement les vêtements de travail et l'équipement de protection pour éliminer les contaminants

9. Propriétés physiques et chimiques

Apparence	Liquide
Couleur	Incolore à jaune
Odeur	Douce
Seuil olfactif	Non disponible.
pH (produit concentré)	3.7
pH dans une solution aqueuse	4.5 (5% SOL)
Point de fusion et point de congélation	23 °F (-5 °C)
Point initial d'ébullition et domaine d'ébullition	> 212 °F (> 100 °C)
Point d'éclair	> 200 °F (> 93 °C) P-M(CC)
Taux d'évaporation	< 1 (Éther = 1)
Inflammabilité (solides et gaz)	Sans objet.
Limites supérieures et inférieures d'inflammabilité ou d'explosibilité	
Limites d'inflammabilité - inférieure (%)	Non disponible.
Limites d'inflammabilité - supérieure (%)	Non disponible.
Limite d'explosibilité - inférieure (%)	Non disponible.
Limite d'explosibilité - supérieure (%)	Non disponible.
Tension de vapeur	18 mm Hg
Tension de vapeur température	70 °F (21 °C)
Densité de vapeur	< 1 (Air = 1)
Densité relative	1.31
Densité relative température	70 °F (21 °C)
Solubilité	
Solubilité (eau)	100 %

Coefficient de partage n-octanol/eau	Non disponible.
Température d'auto-inflammation	Non disponible.
Température de décomposition	Non disponible.
Viscosité	42 cPs
Viscosité température	70 °F (21 °C)
Autres informations	
Propriétés explosives	Non explosif.
Propriétés comburantes	Non oxydant.
Point d'écoulement	28 °F (-2 °C)
Densité	1.312
COV	0 % (calculé)

10. Stabilité et réactivité

Réactivité	Peut être corrosif pour les métaux.
Stabilité chimique	La substance est stable dans des conditions normales.
Risque de réactions dangereuses	Une polymérisation dangereuse ne se produit pas.
Conditions à éviter	Éviter les températures supérieures au point d'éclair. Contact avec des matériaux incompatibles.
Matériaux incompatibles	Agents comburants forts. Métaux.
Produits de décomposition dangereux	Chlorure d'hydrogène. Oxydes of carbon and nitrogen.

11. Données toxicologiques

Renseignements sur les voies d'exposition probables

Inhalation	Peut provoquer une irritation du système respiratoire. Toute inhalation prolongée peut être nocive.
Contact avec la peau	On ne s'attend à aucun effet néfaste en cas de contact avec la peau.
Contact avec les yeux	Provoque une sévère irritation des yeux.
Ingestion	Faible danger présumé en cas d'ingestion.

Les symptômes correspondant aux caractéristiques physiques, chimiques et toxicologiques Irritation oculaire grave. Les symptômes peuvent inclure un picotement, un larmolement, une rougeur, un gonflement et une vision trouble. Peut irriter les voies respiratoires.

Renseignements sur les effets toxicologiques

Toxicité aiguë Peut irriter les voies respiratoires.

Produit	Espèces	Résultats d'épreuves
KLARAID CDP1311 (CAS Mélange)		
Aiguë		
<i>Cutané</i>		
DL50	Lapin	> 5000 mg/kg, (Calculé selon la formule d'additivité GHS)
<i>Orale</i>		
DL50	Rat	> 5000 mg/kg, (Calculé selon la formule d'additivité GHS)
Composants	Espèces	Résultats d'épreuves
Chlorhydroxide d'aluminium (CAS 12042-91-0)		
Aiguë		
<i>Cutané</i>		
DL50	Lapin	> 2000 mg/kg
<i>Orale</i>		
DL50	Rat	> 2000 mg/kg

Composants	Espèces	Résultats d'épreuves
Copolymère d'épichlorhydrine et de diméthylamine (CAS 25988-97-0)		
Aiguë		
Cutané		
DL50	Lapin	> 2000 mg/kg
* Les estimations pour le produit peuvent être basées sur d'autres données de composants non montrées.		
Corrosion cutanée/irritation cutanée	Un contact prolongé avec la peau peut causer une irritation temporaire.	
Lésions oculaires graves/irritation oculaire	Provoque une sévère irritation des yeux.	
Sensibilisation respiratoire ou cutanée		
Canada - LEMT pour l'Alberta : Irritant		
Chlorhydroxide d'aluminium (CAS 12042-91-0)	Irritant	
Sensibilisation respiratoire	Ce produit a ne devrait pas provoquer une sensibilisation respiratoire.	
Sensibilisation cutanée	On ne s'attend pas à ce que ce produit provoque une sensibilisation cutanée.	
Mutagénicité sur les cellules germinales	Il n'existe pas de données qui indiquent que ce produit, ou tout composant présent à des taux de plus de 0,1 %, soit mutagène ou génotoxique.	
Cancérogénicité	Non classé.	
Carcinogènes selon l'ACGIH		
Chlorhydroxide d'aluminium (CAS 12042-91-0)	A4 Ne peut pas être classé quant à sa cancérogénicité pour l'homme.	
Canada - LEMT pour le Manitoba : cancérogénicité		
Chlorhydroxide d'aluminium (CAS 12042-91-0)	Ne peut pas être classé quant à sa cancérogénicité pour l'homme.	
Toxicité pour la reproduction	On ne s'attend pas à ce que ce produit présente des effets sur la reproduction ou le développement.	
Toxicité pour certains organes cibles - exposition unique	Peut irriter les voies respiratoires.	
Toxicité pour certains organes cibles - expositions répétées	Non classé.	
Danger par aspiration	Compte tenu des données disponibles, les critères de classification ne sont pas remplis.	
Effets chroniques	Toute inhalation prolongée peut être nocive.	

12. Données écologiques

Écotoxicité

Produit		Espèces	Résultats d'épreuves
KLARAIID CDP1311 (CAS Mélange)			
	CL50	Tête-de-boule	8.3 mg/L, Essai statique avec renouvellement, 96 heure
	NOEL	Tête-de-boule	3.1 mg/L, Essai statique avec renouvellement, 96 heure
Aquatique			
Crustacés	CL50	Daphnia magna	6.3 mg/L, Essai statique avec renouvellement, 48 heure
	NOEL	Daphnia magna	3.1 mg/L, Essai statique avec renouvellement, 48 heure
Poisson	CL50	Truite arc-en-ciel	3.2 mg/L, Essai statique avec renouvellement, 96 heure
	NOEL	Truite arc-en-ciel	1.6 mg/L, Essai statique avec renouvellement, 96 heure
Composants		Espèces	Résultats d'épreuves
Copolymère d'épichlorhydrine et de diméthylamine (CAS 25988-97-0)			
	CE50	Daphnia magna	> 10 mg/l, 48 heure
	CL50	Zebra fish (Brachydanio rerio)	> 10 mg/l, 96 heure

Potentiel de bioaccumulation Aucune donnée disponible.

Mobilité dans le sol	Aucune donnée disponible.
Autres effets nocifs	On ne s'attend pas à ce que ce composant ait des effets néfastes sur l'environnement (par ex., appauvrissement de la couche d'ozone, potentiel de formation photochimique d'ozone, perturbation endocrinienne, potentiel de réchauffement de la planète).
Persistance et dégradation	Aucune donnée n'est disponible sur la dégradabilité du produit.
- DCO (mgO ₂ /g)	35 (données calculées)
- DBO (mgO ₂ /g)	1 (données calculées)
- DBO 28 (mgO ₂ /g)	1 (données calculées)
- Essai en fiole fermée (% de dégradation en 28 jours)	6 (Résultats calculés)
- Essai par la méthode de Zahn-Wellens (% de dégradation en 28 jours)	1 (Résultats calculés)
- TOC (mg C/g)	15 (données calculées)

13. Données sur l'élimination

Instructions pour l'élimination	Recueillir et réutiliser ou éliminer dans des récipients scellés dans un site d'élimination des déchets autorisé. Éliminer le contenu/récipient conformément à la réglementation locale/régionale/nationale/internationale.
Règlements locaux d'élimination	Détruire conformément à toutes les réglementations applicables.
Déchets des résidus / produits non utilisés	Éliminer conformément à la réglementation locale. Les récipients ou pochettes vides peuvent conserver certains résidus de produit. Éliminer ce produit et son récipient d'une manière sûre (voir : instructions d'élimination).
Emballages contaminés	Comme les récipients vides peuvent contenir un résidu du produit, suivre les avertissements de l'étiquette, même une fois le récipient vide. Les contenants vides doivent être acheminés vers une installation certifiée de traitement des déchets en vue de leur élimination ou recyclage.

14. Informations relatives au transport

TMD

Numéro ONU	UN3264
Désignation officielle de transport de l'ONU	LIQUIDE INORGANIQUE CORROSIF, ACIDE, N.S.A. (ALUMINUM CHLORHYDROXIDE)
Classe de danger relative au transport	
Classe	8
Danger subsidiaire	-
Groupe d'emballage	III
Dangers environnementaux	Non disponible.

Les produits décrits ci-dessus ont été classées en utilisant une combinaison de tests, les données techniques, les calculs et fabricant connaissances conformément à la partie 2, Classification. La classification TDG est valide uniquement pour le transport routier ou ferroviaire. Pour les envois par air ou par eau, se référer aux réglementations de l'IATA ou de l'IMDG.

DOT

N'entre pas dans la réglementation des marchandises dangereuses.

Certains conteneurs peuvent être exemptés de marchandises dangereuses / Règlement de transport de matières dangereuses, se il vous plaît vérifier BOL pour la classification exacte de conteneurs.

IMDG

Numéro ONU	UN3264
Désignation officielle de transport de l'ONU	LIQUIDE INORGANIQUE CORROSIF, ACIDE, N.S.A. (ALUMINUM CHLORHYDROXIDE)
Classe de danger relative au transport	
Classe	8
Danger subsidiaire	-
Groupe d'emballage	III
Dangers environnementaux	
Polluant marin	Non.
EmS	F-A, S-B
Précautions spéciales pour l'utilisateur	Lire les instructions de sécurité, la FDS et les procédures d'urgence avant de manipuler.

IATA

Numéro ONU	UN3264
Désignation officielle de transport de l'ONU	Liquide inorganique corrosif, acide, n.s.a. (ALUMINUM CHLORHYDROXIDE)
Classe de danger relative au transport	
Classe	8
Danger subsidiaire	-
Groupe d'emballage	III
Dangers environnementaux	Non.
Code ERG	154
Précautions spéciales pour l'utilisateur	Lire les instructions de sécurité, la FDS et les procédures d'urgence avant de manipuler.

IATA; IMDG; TMD



15. Informations sur la réglementation

Réglementation canadienne

Loi réglementant certaines drogues et autres substances

Non réglementé.

Liste des marchandises d'exportation contrôlée (LCPE 1999, Annexe 3)

Non inscrit.

Gaz à effet de serre

Non inscrit.

Règlements sur les précurseurs

Non réglementé.

Inventaires

Pays ou région	Nom de l'inventaire	En stock (Oui/Non)*
Canada	Liste intérieure des substances (LIS)	Oui
Canada	Liste extérieure des substances (LES)	Non
États-Unis et Porto Rico	Inventaire du TSCA (Toxic Substances Controls Act - Loi réglementant les substances toxiques)	Oui

*La réponse « Oui » indique que tous les composants du produit sont conformes aux exigences d'entreposage du pays ayant compétence
Un « Non » indique qu'un ou plusieurs composant(s) du produit n'est/ne sont pas inscrit(s) ou exempt(s) d'une inscription sur l'inventaire administré par le(s) pays ayant compétence.

16. Autres informations

Date de publication	Déc-12-2016
Date de la révision	Mai-13-2018
Version n°	1.2

Liste des abréviations

CAS: Le numéro de registre par le Chemical Abstracts Service (CAS) de l'American Chemical Society
TSRN ou LCRD: Un numéro d'enregistrement en conformité à la Loi sur le contrôle des renseignements relatifs aux matières dangereuses (LCRMD)
ACGIH: l'American Conference of Governmental Industrial Hygienists , États-Unis
NOEL: Aucun effet observé
STEL: Limite d'exposition à court terme
CL50: concentration létale, 50%
DL50: dose létale, 50%
TWA: Moyenne pondérée dans le temps
BOD: Demande biologique en oxygène
COD: Demande chimique en oxygène
TOC: Carbone organiques total
IATA: Association du transport aérien international
IMDG: Code maritime international des marchandises dangereuses
TLV: VLE, ou en anglais TLV signifiant Threshold Limit Value sont des lignes directrices qui ont été mises au point par l'ACGIH (American Conference of Governmental Industrial Hygienists).

Références:

Données non disponibles

Avis de non-responsabilité

À notre connaissance, les renseignements et recommandations de cette fiche de données de sécurité étaient précis à la date de publication. Les renseignements donnés sont conçus uniquement comme un guide pour la manipulation, l'utilisation, le traitement, l'entreposage, le transport, l'élimination et le rejet sécuritaires du produit et ne doivent pas être considérés comme une garantie ou une norme de qualité. Les renseignements sont liés uniquement au produit particulier indiqué et peuvent ne pas être valides pour un tel produit utilisé en association avec toute autre substance ou dans tout autre procédé, sauf si indiqué dans le texte.

* Marque de commerce du SUEZ Company. Peut être enregistrée une ou deux dans les pays.

SAFETY DATA SHEET

1. Identification

Product identifier	ORGANOCLAY™ SS-199		
Other means of identification			
CAS number	68953-58-2		
Recommended use	Not available.		
Recommended restrictions	None known.		
Manufacturer/Importer/Supplier/Distributor information			
Manufacturer			
Company name	CETCO, a Minerals Technologies Company		
Address	2870 Forbs Avenue Hoffman Estates, IL 60192 United States		
Telephone	General Information	800.527.9948	
Website	http://www.cetco.com		
E-mail	safetydata@mineralstech.com		
Emergency phone number	1.866.519.4752 (US, CA, 1 760.476.3962 MX)		
Americas	1.866.519.4752 (US, Canada, Mexico) 1 760 476 3962		

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Carcinogenicity	Category 1A
	Specific target organ toxicity, repeated exposure	Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger	
Hazard statement	May cause cancer. Causes damage to organs through prolonged or repeated exposure.	
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.	
Response	If exposed or concerned: Get medical advice/attention.	
Storage	Store locked up.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	
Hazard(s) not otherwise classified (HNOC)	None known.	
Supplemental information	100% of the mixture consists of component(s) of unknown acute oral toxicity. 100% of the mixture consists of component(s) of unknown acute dermal toxicity. 100% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 100% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.	

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite		68953-58-2	100

Constituents

Chemical name	Common name and synonyms	CAS number	%
QUARTZ (SiO ₂)		14808-60-7	<= 6
CRISTOBALITE		14464-46-1	<= 2

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

Composition comments Occupational Exposure Limits for constituents are listed in Section 8.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible).

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Keep out of the reach of children. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Constituents	Type	Value	Form
CRISTOBALITE (CAS 14464-46-1)	PEL	0.05 mg/m3	Respirable dust.
QUARTZ (SIO2) (CAS 14808-60-7)	PEL	0.05 mg/m3	Respirable dust.

US. OSHA Table Z-3 (29 CFR 1910.1000) Additional components

Constituents	Type	Value	Form
INERT OR NUISANCE DUSTS	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
		50 mppcf	Total dust.
		15 mppcf	Respirable fraction.

Constituents	Type	Value	Form
CRISTOBALITE (CAS 14464-46-1)	TWA	0.05 mg/m3	Respirable.
		1.2 mppcf	Respirable.
QUARTZ (SIO2) (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable.
		2.4 mppcf	Respirable.

US. ACGIH Threshold Limit Values

Constituents	Type	Value	Form
CRISTOBALITE (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
QUARTZ (SIO2) (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Constituents	Type	Value	Form
CRISTOBALITE (CAS 14464-46-1)	TWA	0.05 mg/m3	Respirable dust.
QUARTZ (SIO2) (CAS 14808-60-7)	TWA	0.05 mg/m3	Respirable dust.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection If contact is likely, safety glasses with side shields are recommended.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Use of an impervious apron is recommended.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance Micropowder.

Physical state Solid.

Form Solid.

Color	Grey to white.
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Flammability	>= 950 °F (>= 510 °C)
Oxidizing properties	Not oxidizing.
VOC	CARB

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.
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Information on toxicological effects

Acute toxicity Not known.

Toxicological data

Constituents	Species	Test Results
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CRISTOBALITE (CAS 14464-46-1)

Acute

Oral

LD50	Rat	> 22500 mg/kg
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Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

CRISTOBALITE (CAS 14464-46-1) 1 Carcinogenic to humans.

QUARTZ (SiO₂) (CAS 14808-60-7) 1 Carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

CRISTOBALITE (CAS 14464-46-1) Cancer

QUARTZ (SiO₂) (CAS 14808-60-7) Cancer

US. National Toxicology Program (NTP) Report on Carcinogens

CRISTOBALITE (CAS 14464-46-1) Known To Be Human Carcinogen.
Reasonably Anticipated to be a Human Carcinogen.

QUARTZ (SiO₂) (CAS 14808-60-7) Known To Be Human Carcinogen.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard Not an aspiration hazard.

Chronic effects Causes damage to organs through prolonged or repeated exposure.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

CRISTOBALITE (CAS 14464-46-1)	Cancer
QUARTZ (SiO ₂) (CAS 14808-60-7)	Cancer
CRISTOBALITE (CAS 14464-46-1)	lung effects
QUARTZ (SiO ₂) (CAS 14808-60-7)	lung effects
CRISTOBALITE (CAS 14464-46-1)	immune system effects
QUARTZ (SiO ₂) (CAS 14808-60-7)	immune system effects
CRISTOBALITE (CAS 14464-46-1)	kidney effects
QUARTZ (SiO ₂) (CAS 14808-60-7)	kidney effects

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No (Exempt)

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations

California Proposition 65



WARNING: This product can expose you to QUARTZ (SiO₂), which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

QUARTZ (SiO₂) (CAS 14808-60-7) Listed: October 1, 1988

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

CRISTOBALITE (CAS 14464-46-1)

QUARTZ (SiO₂) (CAS 14808-60-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	08-March-2019
Revision date	12-July-2019
Version #	14
HMIS® ratings	Health: 3* Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 2 Flammability: 0 Instability: 0
Disclaimer	<p>The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The manufacturer expressly does not make any representations, warranties, or guarantees as to its accuracy, reliability or completeness nor assumes any liability, for its use. It is the user's responsibility to verify the suitability and completeness of such information for each particular use.</p> <p>The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. CETCO, a Minerals Technologies Company cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.</p>
Revision information	Product and Company Identification: Alternate Trade Names

SAFETY DATA SHEET

PETRO-CANADA ANTIFREEZE



000003000606

Version 2.0

Revision Date 2016/03/07

Print Date 2016/03/07

SECTION 1. IDENTIFICATION

Product name : PETRO-CANADA ANTIFREEZE

Synonyms : Universal Antifreeze, Radiator Antifreeze, Diesel Antifreeze, Petro-Canada Antifreeze-Coolant, Petro-Canada Heavy Duty Antifreeze-Coolant, Pre-Mix Antifreeze, Petro-Canada Premium Radiator Antifreeze, Diesel Engine Coolant, Pre-Mixed Radiator Antifreeze/Coolant Petro-Canada.

Product code : RADDRX, RAD, RADC4U

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Used as an engine antifreeze coolant.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	green
Odour	No data available
Hazard Summary	Toxic if swallowed. May cause teratogenicity/embryotoxicity

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Inhalation : May cause respiratory tract irritation.

Eyes : May cause eye irritation.

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Ingestion : Toxic if swallowed.
Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

Aggravated Medical Condition : None known.

Other hazards

None known.

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration
ethanediol	107-21-1	60 - 100 %

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash contaminated clothing before reuse.
Seek medical advice.

In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.

If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.

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Never give anything by mouth to an unconscious person.
Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Carbon dioxide (CO₂)
Dry chemical
Foam

Unsuitable extinguishing media : No information available.

Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Carbon oxides (CO, CO₂), smoke and irritating vapours as products of incomplete combustion.

Special protective equipment for firefighters : Wear self-contained breathing apparatus and full protective wear.
Wear a positive-pressure supplied-air respirator with full face-piece.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Smoking, eating and drinking should be prohibited in the application area.
Do not ingest.
Avoid contact with skin, eyes and clothing.
Use only with adequate ventilation.

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In case of insufficient ventilation, wear suitable respiratory equipment.
Ensure all equipment is electrically grounded before beginning transfer operations.
Keep away from heat and sources of ignition.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ethanediol	107-21-1	Ceiling	100 mg/m ³	CA AB OEL
		TWA (particulate)	10 mg/m ³	CA BC OEL
		STEL (particulate)	20 mg/m ³	CA BC OEL
		Ceiling (aerosol)	100 mg/m ³	CA BC OEL
		Ceiling (Vapour)	50 ppm	CA BC OEL
		Ceiling (Vapour and mist)	50 ppm 127 mg/m ³	CA QC OEL
		Ceiling (Aerosol only)	100 mg/m ³	ACGIH

Engineering measures : Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

Personal protective equipment

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection
Material : nitrile rubber. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any

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material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear liquid.
Colour	: green
Odour	: No data available
Odour Threshold	: No data available
pH	: No data available
Melting point/range	: -13 °C (9 °F)
Boiling point/boiling range	: 197 °C (387 °F)
Flash point	: 111 °C (232 °F) Method: closed cup
Fire Point	: No data available
Auto-Ignition Temperature	: 398 °C (748 °F)
Evaporation rate	: < 0.01
Flammability	: May be combustible at high temperature.
Upper explosion limit	: 21.6 - 22.0 %(V)
Lower explosion limit	: 3.2 %(V)

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Vapour pressure	: 0.09 mmHg (20 °C / 68 °F)
Relative vapour density	: estimated 2.14 Air = 1
Relative density	: 1.12 - 1.15 (20 °C / 68 °F) Water = 1
Solubility(ies)	
Water solubility	: No data available
Partition coefficient: n-octanol/water	: log Pow: -1.36 (20 °C)
Viscosity	
Viscosity, kinematic	: estimated 18.86 mm ² /s (20 °C / 68 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: Heat, flames and sparks. Avoid temperatures above 111°C.
Incompatible materials	: Reactive with oxidising agents, acids and alkalis.
Hazardous decomposition products	: May release CO _x , smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	: Remarks: No data available
Acute inhalation toxicity	: Remarks: No data available
Acute dermal toxicity	: Remarks: No data available

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Components:

ethanediol:

Acute oral toxicity : LD50 (Rat): 4,700 mg/kg,
LD50 (Mouse): 5,500 mg/kg,
Acute inhalation toxicity : LC50 (Rat): 2.725 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Acute dermal toxicity : LD50 (Rabbit): 9,530 mg/kg,

Skin corrosion/irritation

Components:

ethanediol:

Result: Mild skin irritation

Serious eye damage/eye irritation

Components:

ethanediol:

Result: Mild eye irritation

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish :
Remarks: No data available

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Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

Components:

ethanediol :

Partition coefficient: n-octanol/water : log Pow: -1.36

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

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IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

TDG

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : D1B: Toxic Material Causing Immediate and Serious Toxic Effects
D2A: Very Toxic Material Causing Other Toxic Effects

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL : On the inventory, or in compliance with the inventory
TSCA : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2016/03/07

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

DIESEL FUEL

000003000395



Version 2.0

Revision Date 2016/08/23

Print Date 2016/08/23

SECTION 1. IDENTIFICATION

Product name : DIESEL FUEL

Synonyms : Seasonal Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, D50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Diesel Low Cloud (LC), Marine Gas Oil, Marine Gas Oil Dyed.

Product code : 102762, 102763, 102755, 102302, 102744, 101801, 100678, 100677, 101802, 100107, 100668, 100658, 100911, 100663, 100652, 100460, 100065, 101796, 101793, 101795, 101792, 101794, 101791, 100768, 100643, 100642, 100103, 101798, 101800, 101797, 101788, 101789, 101787, 102531, 100734, 100733, 100640, 100997, 100995, 100732, 100731, 100994

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining diesels, marine diesels, MDO and naval distillates may have a higher flash point requirement.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	Mild petroleum oil like.
Hazard Summary	Combustible liquid. May cause cancer. Irritating to eyes and skin.

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Potential Health Effects

Primary Routes of Entry	: Eye contact Ingestion Inhalation Skin contact Skin Absorption
Target Organs	: Skin Eyes Respiratory Tract
Inhalation	: May cause respiratory tract irritation. Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	: Causes skin irritation.
Eyes	: Causes eye irritation.
Ingestion	: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Aggravated Medical Condition	: None known.

Other hazards

None known.

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

Confirmed animal carcinogen with unknown relevance to humans

Fuel Oil No. 1

8008-20-6

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
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kerosine (petroleum), hydrodesulfurized	64742-81-0	70 - 100 %
kerosine (petroleum)	8008-20-6	
fuels, diesel	68334-30-5	
fuel oil no. 2	68476-30-2	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 25 %
Soybean oil, Methyl ester	67784-80-9	0 - 5 %
Rape oil, Methyl ester	73891-99-3	
Fatty acids, tallow, Methyl esters	61788-61-2	

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Water fog.
Foam
- Unsuitable extinguishing media : Do NOT use water jet.
- Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), sulphur compounds (H₂S), smoke and irritating

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vapours as products of incomplete combustion.

- | | | |
|---|---|---|
| Further information | : | Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Special protective equipment for firefighters | : | Wear self-contained breathing apparatus for firefighting if necessary. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions. |
| Environmental precautions | : | If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : | Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities. |

SECTION 7. HANDLING AND STORAGE

- | | | |
|-----------------------------|---|--|
| Advice on safe handling | : | For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use. |
| Conditions for safe storage | : | Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight. |

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

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Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kerosine (petroleum), hydrodesulfurized	64742-81-0	TWA	200 mg/m ³ (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m ³ (As total hydrocarbon vapour)	ACGIH
kerosine (petroleum)	8008-20-6	TWA	200 mg/m ³ (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m ³ (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH

Engineering measures : Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

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Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Bright oily liquid.
Colour	: Clear to yellow (This product may be dyed red for taxation purposes)
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 150 - 371 °C (302 - 700 °F)
Flash point	: > 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	: 225 °C (437 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.
Upper explosion limit	: 6 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.8 - 0.88

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Solubility(ies)

Water solubility : insoluble

Partition coefficient: n-octanol/water : No data available

Viscosity

Viscosity, kinematic : 1.3 - 4.1 cSt (40 °C / 104 °F)

Explosive properties

: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Runoff to sewer may create fire or explosion hazard.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions : Hazardous polymerisation does not occur. Stable under normal conditions.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : Reactive with oxidising agents and acids.

Hazardous decomposition products : May release COx, NOx, SOx, H2S, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact

Ingestion

Inhalation

Skin contact

Skin Absorption

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

kerosine (petroleum), hydrodesulfurized:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 hrs
Test atmosphere: dust/mist

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Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

kerosine (petroleum):

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

fuels, diesel:

Acute oral toxicity : LD50 (Rat): 7,500 mg/kg,

Acute dermal toxicity : LD50 (Mouse): 24,500 mg/kg,

fuel oil no. 2:

Acute oral toxicity : LD50 (Rat): 12,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): 4.1 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish :
Remarks: No data available

Toxicity to daphnia and other :
aquatic invertebrates Remarks: No data available

Toxicity to algae :
Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

Contaminated packaging : Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

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IATA-DGR

UN/ID No. : UN 1202
Proper shipping name : Diesel fuel
Class : 3
Packing group : III
Labels : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft) : 366

IMDG-Code

UN number : UN 1202
Proper shipping name : DIESEL FUEL

Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

TDG

UN number : UN 1202
Proper shipping name : DIESEL FUEL

Class : 3
Packing group : III
Labels : 3
ERG Code : 128
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : B3: Combustible Liquid
D2A: Very Toxic Material Causing Other Toxic Effects
D2B: Toxic Material Causing Other Toxic Effects

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL : On the inventory, or in compliance with the inventory
TSCA : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS : On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

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For Copy of SDS : Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2016/08/23

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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DURON^{TM/MC} UHP 5W-30

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SECTION 1. IDENTIFICATION

Product name : DURON^{TM/MC} UHP 5W-30

Synonyms : RDL-3669

Product code : DUHP53DCT, DUHP53, DUHP53J20, DUHP53C20, DUHP53BOX, DUHP53BLK, DUHP53P5R, DUHP53DRR, DUHP53ICT, DUHP53IBC, DUHP53DRM, DUHP53P20, DUHP53C16, DUHP53C12

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Petro-Canada Lubricants Inc.: +1 905-403-5770;
CHEMTREC Transport Emergency: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : A synthetic, SAE 5W-30 Heavy Duty Diesel Engine Oil designed to meet both API CJ-4 and ACEA E6 standards. It is suitable for most 4-stroke engines operating on diesel, gasoline or natural gas fuel in mobile equipment. The low sulphated ash, phosphorus and sulphur design helps to protect emission control equipment such as particulate filters and catalytic converters and SCRs.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	brown
Odour	Mild petroleum oil like.

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

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Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	30 - 50 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	10 - 20 %
Mineral oil		5 - 10 %
distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	5 - 10 %
Phenol, dodecyl-, branched	121158-58-5	0.1 - 1 %

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.

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|---|---|
| In case of eye contact | : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention. |
| If swallowed | : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice. |
| Most important symptoms and effects, both acute and delayed | : First aider needs to protect himself. |

SECTION 5. FIREFIGHTING MEASURES

- | | |
|---------------------------------------|---|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Unsuitable extinguishing media | : No information available. |
| Specific hazards during fire-fighting | : Cool closed containers exposed to fire with water spray. |
| Hazardous combustion products | : Carbon oxides (CO, CO ₂), aldehydes, smoke and irritating vapours as products of incomplete combustion. |
| Further information | : Prevent fire extinguishing water from contaminating surface water or the ground water system. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions. |
| Environmental precautions | : If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities. |

SECTION 7. HANDLING AND STORAGE

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- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH

- Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
Respirator selection must be based on known or anticipated

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exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type	: organic vapour filter
Hand protection Material	: neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash hands and face before breaks and immediately after handling the product. Wash contaminated clothing before re-use. Ensure that eyewash station and safety shower are proximal to the work-station location.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: viscous liquid
Colour	: brown
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -42 °C (-44 °F)
Boiling point/boiling range	: No data available
Flash point	: 231 °C (448 °F) Method: Cleveland open cup
Fire Point	: 261 °C (502 °F)
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available

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Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.8532 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 67.3 cSt (40 °C / 104 °F) 11.4 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids, alkalis, halogens and halogenated compounds.
Hazardous decomposition products	: May release Cox, methacrylate monomers, aldehydes, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

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Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

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STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish :
Remarks: No data available

Toxicity to daphnia and other :
aquatic invertebrates Remarks: No data available

Toxicity to algae :
Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

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DURON^{TM/MC} UHP 5W-30

000003002355



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IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

TDG

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

ELINCS

At least one component is not listed in EINECS but all such components are listed in ELINCS.

IECSC

One or more components has been notified but may not be listed in the inventory.

SECTION 16. OTHER INFORMATION

For Copy of SDS

: Internet: lubricants.petro-canada.com/sds
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

Revision Date

: 2017/02/21

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific

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material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

GASOLINE, UNLEADED



000003000644

Version 1.0

Revision Date 2015/05/14

Print Date 2015/05/14

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : GASOLINE, UNLEADED

Synonyms : Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, TQRUL, transitional quality regular unleaded, BOB, Blendstock for Oxygenate Blending, Conventional Gasoline, RUL, MUL, SUL, PUL.

Product code : 100126, 101823, 100507, 101811, 101814, 100141, 101813, 101810, 101812, 100063, 101822, 100138, 101821, 100064, 101820, 101819, 100506, 101818, 101816, 101817, 100488

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Unleaded gasoline is used in spark ignition engines including motor vehicles, inboard and outboard boat engines, small engines such as chain saws and lawn mowers, and recreational vehicles.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	Gasoline

GHS Classification

Flammable liquids : Category 1

Skin irritation : Category 2

Germ cell mutagenicity : Category 1B

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Carcinogenicity	: Category 1A
Reproductive toxicity	: Category 2
Specific target organ toxicity - single exposure	: Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure	: Category 1
Aspiration hazard	: Category 1

GHS Label element

Hazard pictograms	:	  
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Signal word	: Danger
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Hazard statements	: H224 Extremely flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H336 May cause drowsiness or dizziness. H340 May cause genetic defects. H350 May cause cancer. H361 Suspected of damaging fertility or the unborn child. H372 Causes damage to organs through prolonged or repeated exposure.
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Precautionary statements	: Prevention: P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233 Keep container tightly closed. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/ eye protection/ face protection. P281 Use personal protective equipment as required. Response: P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a
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POISON CENTER or doctor/ physician if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry	: Eye contact Ingestion Inhalation Skin contact
Target Organs	: Blood Immune system
Inhalation	: Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	: May irritate skin.
Eyes	: May irritate eyes.
Ingestion	: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Chronic Exposure	: Chronic exposure to benzene may result in increased risk of leukemia and other blood disorders.
Aggravated Medical Condition	: None known.

Carcinogenicity:

IARC

Group 1: Carcinogenic to humans

Benzene

71-43-2

ACGIH

Confirmed human carcinogen

Benzene

71-43-2

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	Confirmed animal carcinogen with unknown relevance to humans	
	Ethanol	64-17-5
	Gasoline, natural	8006-61-9
OSHA	OSHA specifically regulated carcinogen	
	Benzene	71-43-2
NTP	Known to be human carcinogen	
	Benzene	71-43-2

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
gasoline, natural	8006-61-9	95 - 100 %
toluene	108-88-3	1 - 40 %
benzene	71-43-2	0.5 - 1.5 %
ethanol	64-17-5	0.1 - 0.3 %

SECTION 4. FIRST AID MEASURES

If inhaled	: Artificial respiration and/or oxygen may be necessary. Move to fresh air. Seek medical advice.
In case of skin contact	: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	: Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.

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Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Water fog.
Foam

Unsuitable extinguishing media : Do NOT use water jet.

Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and

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equipment. These alone may be insufficient to remove static electricity.

Avoid contact with skin, eyes and clothing.

Do not ingest.

Keep away from heat and sources of ignition.

Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
		TWA	300 ppm 900 mg/m ³	OSHA P0
		STEL	500 ppm 1,500 mg/m ³	OSHA P0
		TWA	500 ppm 2,000 mg/m ³	OSHA Z-1
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m ³	NIOSH REL
		ST	150 ppm 560 mg/m ³	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm	OSHA Z-2
		TWA	100 ppm 375 mg/m ³	OSHA P0
		STEL	150 ppm 560 mg/m ³	OSHA P0
benzene	71-43-2	TWA	0.5 ppm	ACGIH
		STEL	2.5 ppm	ACGIH
		TWA	0.1 ppm	NIOSH REL
		ST	1 ppm	NIOSH REL
		TWA	10 ppm	OSHA Z-2
		CEIL	25 ppm	OSHA Z-2
		Peak	50 ppm	OSHA Z-2
		PEL	1 ppm	OSHA CARC
		STEL	5 ppm	OSHA CARC
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m ³	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m ³	OSHA Z-1

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		TWA	1,000 ppm 1,900 mg/m ³	OSHA P0
		STEL	1,000 ppm	ACGIH

Biological occupational exposure limits

Component	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of workweek	0.02 mg/l	ACGIH BEI
Toluene		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI

Engineering measures

- : Use only in well-ventilated areas. Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection

- : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type

- : A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Material

- : polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

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Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear liquid.
Colour	: Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	: Gasoline
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 25 - 225 °C (77 - 437 °F)
Flash point	: -50 - -38 °C (-58 - -36 °F) Method: Tagliabue.
Auto-Ignition Temperature	: 257 °C (495 °F)
Evaporation rate	: No data available
Flammability	: Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
Upper explosion limit	: 7.6 %(V)
Lower explosion limit	: 1.3 %(V)
Vapour pressure	: < 802.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 3
Relative density	: 0.685 - 0.8
Solubility(ies)	

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Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: Extremes of temperature and direct sunlight.
Incompatible materials	: Reactive with oxidising agents, acids and interhalogens.
Hazardous decomposition products	: May release COx, NOx, phenols, polycyclic aromatic hydrocarbons, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	Eye contact Ingestion Inhalation Skin contact
--	--

Acute toxicity

Product:

Acute oral toxicity	Remarks: No data available
Acute inhalation toxicity	Remarks: No data available
Acute dermal toxicity	Remarks: No data available

Components:

toluene:

Acute oral toxicity	LD50 (Rat): 5,580 mg/kg
Acute inhalation toxicity	LC50 (Rat): 7585 ppm Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	LD50 (Rabbit): 12,125 mg/kg

benzene:

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Acute oral toxicity	LD50 (Rat): 2,990 mg/kg
Acute inhalation toxicity	LC50 (Rat): 13700 ppm Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	LD50 (Rabbit): > 8,240 mg/kg

ethanol:

Acute oral toxicity	LD50 (Rat): 7,060 mg/kg
Acute inhalation toxicity	LC50 (Rat): > 32380 ppm Exposure time: 4 h Test atmosphere: vapour

Skin corrosion/irritation

Product:

Remarks: No data available

Components:

toluene:

Result: Moderate skin irritant

benzene:

Result: Moderate skin irritant

ethanol:

Result: Skin irritation

Serious eye damage/eye irritation

Product:

Remarks: No data available

Components:

toluene:

Result: Mild eye irritation

benzene:

Result: Moderate eye irritation

ethanol:

Result: Eye irritation

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

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Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

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Contaminated packaging : Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No. : 1203
Proper shipping name : Gasoline
Class : 3
Packing group : II
Labels : 3
Packing instruction (cargo aircraft) : 364

IMDG-Code

UN number : 1203
Proper shipping name : GASOLINE
Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

UN/ID/NA number : 1203
Proper shipping name : Gasoline
Class : 3
Packing group : II
Labels : 3
ERG Code : 128
Marine pollutant : no

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory

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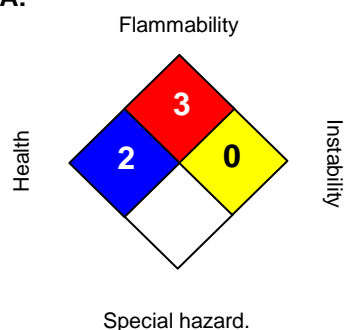
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SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

For Copy of (M)SDS

: Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200)



SECTION 1: Identification

Product Identifier **Megaflow® AW HVI Hydraulic Oil 22 - 100**

Other means of identification Phillips 66 Megaflow® AW HVI Hydraulic Oil 22
Phillips 66 Megaflow® AW HVI Hydraulic Oil 32
Phillips 66 Megaflow® AW HVI Hydraulic Oil 46
Phillips 66 Megaflow® AW HVI Hydraulic Oil 68
Phillips 66 Megaflow® AW HVI Hydraulic Oil 100

SDS Number **LBPH814633**

Relevant identified uses Hydraulic Fluid

Uses advised against All others

24 Hour Emergency Phone Number CHEMTREC 1-800-424-9300
CHEMTREC Mexico 01-800-681-9531

Manufacturer/Supplier

Phillips 66 Lubricants
P.O. Box 4428
Houston, TX 77210

SDS Information

Phone: 800-762-0942
Email: SDS@P66.com
URL: www.Phillips66.com

Customer Service

U.S.: 800-368-7128 or International: 1-832-765-2500

Technical Information

1-877-445-9198

SECTION 2: Hazard identification

Classified Hazards

Hazards Not Otherwise Classified (HNOC)

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200. PHNOC: None known

HHNOC: None known

Label Elements

No classified hazards

SECTION 3: Composition/information on ingredients

Chemical Name	CASRN	Concentration ¹
Distillates, petroleum, hydrotreated heavy paraffinic	64742-54-7	>70
Distillates, petroleum, hydrotreated light paraffinic	64742-55-8	<30

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4: First aid measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be

evaluated immediately by a physician. (see Note to Physician)

Inhalation: First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

Ingestion: First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Most important symptoms and effects, both acute and delayed: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea. Prolonged or repeated contact may dry skin and cause irritation.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities. When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to the hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

SECTION 5: Firefighting measures

NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Specific hazards arising from the chemical

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

Special protective actions for firefighters: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop and contain spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods and material for containment and cleaning up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

SECTION 7: Handling and storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Spills will produce very slippery surfaces. High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Keep container(s) tightly closed and properly labeled. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

SECTION 8: Exposure controls/personal protection

Chemical Name	ACGIH	OSHA	Phillips 66
Distillates, petroleum, hydrotreated heavy paraffinic	---	---	TWA: 5 mg/m ³ STEL: 10 mg/m ³ as Oil Mist, if Generated
Distillates, petroleum, hydrotreated light paraffinic	---	---	TWA: 5 mg/m ³ STEL: 10 mg/m ³ as Oil Mist, if Generated

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin/Hand Protection: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in

atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

SECTION 9: Physical and chemical properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance: Amber, Transparent

Physical Form: Liquid

Odor: Petroleum

Odor Threshold: No data

pH: Not applicable

Vapor Density (air=1): >1

Upper Explosive Limits (vol % in air): No data

Lower Explosive Limits (vol % in air): No data

Evaporation Rate (nBuAc=1): No data

Particle Size: Not applicable

Percent Volatile: Negligible

Flammability (solid, gas): Not applicable

Solubility in Water: Negligible

Flash Point: > 284 °F / > 140 °C

Test Method: Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010

Initial Boiling Point/Range: No data

Vapor Pressure: <1 mm Hg

Partition Coefficient (n-octanol/water) (Kow): No data

Melting/Freezing Point: < -31 °F / < -35 °C

Auto-ignition Temperature: No data

Decomposition Temperature: No data

Specific Gravity (water=1): 0.86-0.88 @ 60°F (15.6°C)

Bulk Density: 7.14 - 7.32 lbs/gal

Viscosity: 4 - 14 cSt @ 100°C; 22 - 108 cSt @ 40°C

Pour Point: < -31 °F / < -35 °C

SECTION 10: Stability and reactivity

Reactivity: Not chemically reactive.

Chemical stability: Stable under normal ambient and anticipated conditions of use.

Possibility of hazardous reactions: Hazardous reactions not anticipated.

Conditions to avoid: Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

Incompatible materials: Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous decomposition products: Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

Information on Toxicological Effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful		>5 mg/L (mist, estimated)
Dermal	Unlikely to be harmful		> 2 g/kg (estimated)
Oral	Unlikely to be harmful		> 5 g/kg (estimated)

Aspiration Hazard: Not expected to be an aspiration hazard.

Skin Corrosion/Irritation: Not expected to be irritating. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Not expected to be irritating.

Skin Sensitization: No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

Respiratory Sensitization: No information available.

Specific Target Organ Toxicity (Single Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Repeated Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Carcinogenicity: No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

Germ Cell Mutagenicity: No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification).

Reproductive Toxicity: No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

Information on Toxicological Effects of Components

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

SECTION 12: Ecological information

GHS Classification:

No classified hazards

Toxicity: All acute aquatic toxicity studies on samples of lubricant base oils show acute toxicity values greater than 100 mg/L for invertebrates, algae and fish. These tests were carried out on water accommodated fractions and the results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Persistence and Degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon components of this material are greater than 5.3, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

Mobility in Soil: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of the hydrocarbon constituents in soil and sediment.

Other adverse effects: None anticipated.

SECTION 13: Disposal considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations. This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the SDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste. This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle used oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

SECTION 14: Transport information

U.S. Department of Transportation (DOT)

UN Number: Not regulated

UN proper shipping name: None

Transport hazard class(es): None

Packing Group: None

Environmental Hazards: This product does not meet the DOT/UN/IMDG/IMO criteria of a marine pollutant

Special precautions for user: If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health Hazard:	No
Chronic Health Hazard:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

International Hazard Classification

Canada:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.

International Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.

All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

SECTION 16: Other information

Issue Date:	Previous Issue Date:	SDS Number	Status:
22-Jun-2016	20-May-2016	LBPH814633	FINAL

Revised Sections or Basis for Revision:

New SDS

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information

System (Canada)

Disclaimer of Expressed and implied Warranties:

The information presented in this Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

APPENDIX B

Immediately Reportable Spill Quantities

Immediately Reportable Spill Quantities

TDG Class	Substance for NWT 24 Hour Spill Line	Immediately Reportable Quantities
1	Explosives	Any amount
2.3	Compressed gas (toxic)	
2.4	Compressed gas (corrosive)	
6.2	Infectious substances	
7	Radioactive	
None	Unknown substance	
2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 L
2.2	Compressed gas (non-corrosive, non- flammable)	
3.1	Flammable liquids	> 100 L
3.2		
3.3		
4.1	Flammable solids	> 25 kg
4.2	Spontaneously combustible solids	
4.3	Water reactant	
5.1	Oxidizing substance	> 50 L or 50 kg
9.1	Miscellaneous products or substances excluding PCB mixtures	
5.2	Organic peroxides	> 1 L or 1 kg
9.2	Environmentally hazardous	
6.1	Poisonous substances	> 5 L or 5 kg
8	Corrosive substances	
9.3	Dangerous wastes	
9.1	PCB mixtures of 5 or more ppm	> 0.5 L or 0.5 kg
None	Other contaminants (e.g., crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)	> 100 L or 100 kg
None	Sour natural gas (i.e., contains H ₂ S), sweet natural gas	Uncontrolled release or sustained flow of 10 min or more
Note: In addition, all releases of harmful substances, regardless of quantity, are to be reported to the NWT spill line if the release is near or into a water body, is near or into a designated sensitive environment or sensitive wildlife habitat, poses imminent threat to human health or safety, poses imminent threat to a listed species at risk or its critical habitat, or is uncontrollable. Source: AANDC, <i>Guidelines for Spill Contingency Planning</i> .		

APPENDIX C

Spill Report Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS



Canada



NT-NU 24-HOUR SPILL REPORT LINE

Tel: (867) 920-8130 • Fax: (867) 873-6924 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

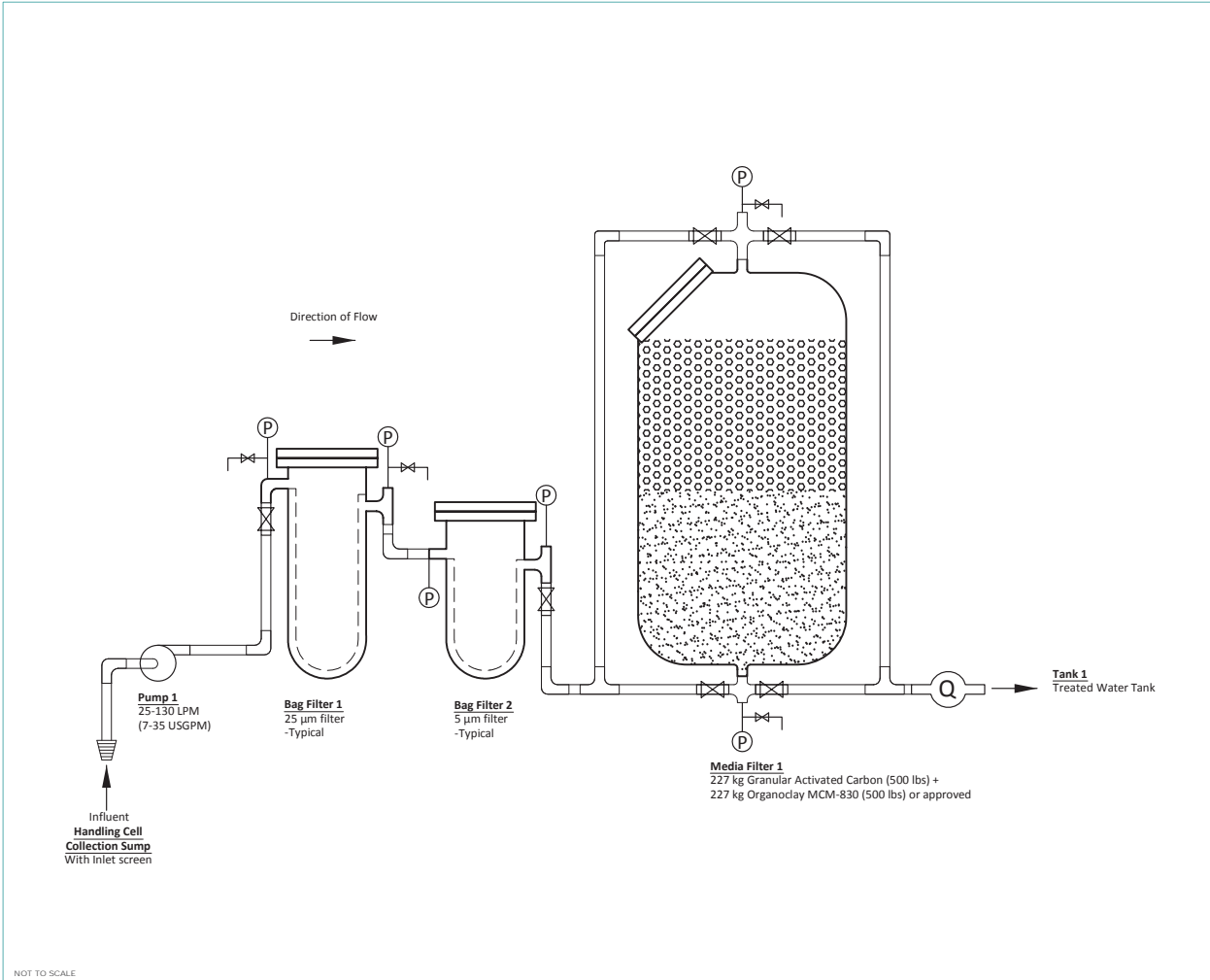
A	Report Date:	MM	DD	YY	Report Time:	<input type="checkbox"/> Original Spill Report OR <input type="checkbox"/> Update # _____ to the Original Spill Report	Report Number:
	Occurrence Date:	MM	DD	YY	Occurrence Time:		
C	Land Use Permit Number (if applicable):				Water Licence Number (if applicable):		
D	Geographic Place Name or Distance and Direction from the Named Location:					Region: <input type="checkbox"/> NT <input type="checkbox"/> Nunavut <input type="checkbox"/> Adjacent Jurisdiction or Ocean	
E	Latitude: _____ Degrees _____ Minutes _____ Seconds				Longitude: _____ Degrees _____ Minutes _____ Seconds		
F	Responsible Party or Vessel Name:				Responsible Party Address or Office Location:		
G	Any Contractor Involved:				Contractor Address or Office Location:		
H	Product Spilled: <input type="checkbox"/> Potential Spill		Quantity in Litres, Kilograms or Cubic Metres:		U.N. Number:		
I	Spill Source:		Spill Cause:		Area of Contamination in Square Metres:		
J	Factors Affecting Spill or Recovery:		Describe Any Assistance Required:		Hazards to Persons, Property or Environment:		
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:						
L	Reported to Spill Line by:		Position:	Employer:	Location Calling From:	Telephone:	
M	Any Alternate Contact:		Position:	Employer:	Alternate Contact Location:	Alternate Telephone:	

REPORT LINE USE ONLY

N	Received at Spill Line by:		Position:	Employer:	Location Called:	Report Line Number:	
Lead Agency: <input type="checkbox"/> EC <input type="checkbox"/> CCG/TCMSS <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> AANDC <input type="checkbox"/> NEB <input type="checkbox"/> Other: _____					Significance: <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Unknown		File Status: <input type="checkbox"/> Open <input type="checkbox"/> Closed
Agency:		Contact Name:		Contact Time:		Remarks:	
Lead Agency:							
First Support Agency:							
Second Support Agency:							
Third Support Agency:							

APPENDIX F

Water Treatment Plant Schematic



KBL ENVIRONMENTAL LTD.
Yellowknife Soils and Water
Treatment Facility

FIGURE
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cti ate a on an anoc a

LEGE

	VALVE
	SAMPLING PORT
	MANUAL PRESSURE GAUGE
	FLOW DIRECTION
	TOTALIZING FLOW METER
	GRANULAR ACTIVATED CARBON
	ORGANOCLAY MCM-830

NOTES:
Figure to be interpreted in conjunction with "Application for Type B
Water License from NWLW" prepared for KBL Environmental Ltd. All
figures are to be interpreted in conjunction with this document.

REVISION 1 NOTES:
1. Project title revised.
2. No other changes.



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CHECKED BY: THG
STATUS: ISSUED (REV. 1)
DATE: June 2014