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NUNATTA ENVIRONMENTAL SERVICES INC.

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PROTECTING OUR ARCTIC ENVIRONMENT

Revised Spill Contingency Plan

Hydrocarbon-Impacted Soil Landfarm Facility
1575 Federal Road.
City of Iqaluit, Nunavut

Water Licence Number – 1BR-NUN1217

Prepared for:

Nunavut Water Board
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NUNATTA ENVIRONMENTAL SERVICES INC.

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1.0 Landfarm Description

Nunatta Environmental Services Inc. (Nunatta) owns and operates a Hydrocarbon-Impacted Soil Landfarm Facility within the City of Iqaluit, Nunavut. This treatment facility is commonly referred to as the 'landfarm'. Nunatta's operations on the landfarm consist of; accepting soils impacted with petroleum products to the containment cells, fertilizers, aeration, and moisture control of this impacted soil, monitoring and pumping water when required. Soils accepted at the landfarm are contaminated with diesel, gasoline and various automotive and industrial oils.

The land farm is located in the industrial area of the city, adjacent to a legacy metal dump. Many rotting barrels of unknown products are still visible and found throughout the adjacent properties to the west of the landfarm's fences. Pictures taken by the original owner in 1998 show the landfarm site was used as a crushing ground for old waste barrels and storage of unclaimed or rejected materials.

The landfarm has four containment cells which are geosynthetic lined platforms surrounded by a retention wall of 1 meter or more. Cell floors and inside walls are lined with this geosynthetic impermeable liner that protects the surrounding environment. The cells have a combined containment area of in excess of 7500 square meters.

The soil is screened of debris, treated with fertilizer and placed in windrows. This allows for maximum aeration and reduces thaw times to let the micro organisms break down the hydrocarbons into less harmful component such as water, carbon dioxide and hydrogen sulfide. This process allows the contaminated soil to be remediated and restores it to a usable state.

Aeration takes place as often as the weather allows usually 3-4 times a year. Soils are put through a rotary screening plant and restacked into long windrows.

Monitoring programs like sampling of contaminated soil is done twice bi-annually. Water sampling from the monitoring wells can not be fulfilled due to the required volume of water. Low volumes are collected and are unacceptable to fulfill the requirements of the test.

All equipment is owned and operated by Nunatta, the staff are trained on this equipment and Labour is hired from local employment.

Maintenance and equipment repairs are performed in the onsite shop by Nunatta staff. There is no drain in the shop floor, which keeps all contaminates from exiting the building.

Equipment diesel fuel is stored onsite in approved tanks, pumps are approved fuel pumps and fire extinguishers and spill kits are in place at all times. All necessary equipment is kept on site and should a spill occur it can be cleaned up quickly.

2.0 Landfarm Location

Nunatta's Hydrocarbon-Impacted Soil Landfarm Facility is located at 1575 Federal Road, Industrial Park, within the City of Iqaluit, Nunavut (City of Iqaluit Lot 1, Block 229)

GPS coordinates **N 63°45'43.8"**

W 68°32'49.7"

Topographical map **# 025N15**

The NWB License number for the Hydrocarbon-Impacted Soil Landfarm Facility is

1BR-NUN1217

3.0 Landfarm Maps

Appendix I

Elevations and drainage.pdf

Appendix II

Site map.pdf

4.0 Spill Contingency Plan Outline

In accordance with part H, item1 of Nunavut Water Board licence **1BR-NUN1217**

Hazards associated with storage and handling of pollution related products has been considered in the development of this plan.

Product	TDG class	Stored on site approved containers	Machine capacity	Notes
Diesel fuel	3	2000L	100-300L	Loader or excavator
Gasoline	3	20L	10L	Pumps and generators
Hydraulic oil	3	200L	300L	Excavator or loader
Motor oil	3	500L	25L	Excavator or loader
Antifreeze	Nr	500 L	40L	Excavator or loader
Granular Fertilizer	Nr	120 X25Kg	N/A	N/A

5.0 Identified Hazards and Risk

Hazards index

Low Minimal impact and very little chance of occurrence.
Medium Greater impact and chance of occurence.
High Major impact and highly likely chance of occurrence.

5.1 Diesel Fuel

Diesel fuel is stored in approved 500 gallon above ground storage tank that is set on a cement pad protected from impacted by bollards. Fuel is pumped using an approved fuel delivery pump and electricity is cut when pumping is complete. A 40 pound fire extinguisher and spill kit is present at refuelling station at all times.
The equipment needed to excavate the occurrence is always on site and clean up would be immediate reducing impact to environment. Future plan is to move fuel storage to inside of cell #3 where if a spill was to occur it will be contained.

Odds of Occurrence: Medium
Severity of consequence: Low

5.2 Gasoline

Pumping of water requires use of a gas powered 2 inch water pump. This small motor uses very little fuel and fuel is bought only when needed and transported to site in 20 L containers.
Risk is over filling or tipping over of container especially during transport to work site.
The environmental impact from a spill like this would be localised and contamination of soil or ground water would be minimal.
Since a spill like this would only occur with staff present, immediate action can take place to recover and contain spilled product.

Odds of Occurrence: Low
Severity of consequence: Low

5.3 Hydraulic Oil

All the equipment used at the land farm uses hydraulic oil. The biggest users are the Excavator, the Loader and the Rotary screening plant.
The largest capacity is the excavator followed by the rotary screening plant. But since both of these pieces of equipment are used within the confines of the cells we will assume the loader as the highest risk piece of equipment.
The capacity on a Case 621-C loader is 153.5 L.
Since there would be an operator in the machine the whole time it is operational it is safe to assume not all the contents would be lost. And immediate action can be taken to recover and contain the spilled product.

Odds of Occurrence: Medium
Severity of consequence: Low

5.4 Motor Oil: New and Used

5.4 i) New motor oil is kept inside the buildings eliminating chance of rupture also there is no drain or holes in shop floor should a barrel leak the spill would be contained and clean up would be easy and immediate.

ii) Used motor oil or waste oil is stored in approved petroleum containers outside and is disposed of at local business which burn waste oil. The remaining sledge and heavy oils are packaged and shipped out to a certified disposal facility. All barrels of dirty oil are labelled and banded onto skids and placed inside the cell walls to await shipping times.

Odds of Occurrence: Medium
Severity of consequence: Low

5.5 Antifreeze

Very little antifreeze is kept on site and is purchased as required. Even with general maintenance only a couple gallons is purchased each year.
Old or spent antifreeze is placed in approved plastic barrels labelled and banded onto skids and placed inside the berm walls until it is time to be shipped out. Very little antifreeze is handled and staff is always present when it is, therefore immediate action can be taken to recover and contain the spilled product.

Since Antifreeze is a not listed as a dangerous goods product the impact would not be severe.

Odds of Occurrence: Medium
Severity of consequence: Low

5.6 Granular Fertilizer

Fertilizer is kept on hand for treatment of the impacted soil in the cells. It is a basic nitrogen, phosphorous, potash blend with no additives except sand as a carrier agent. The fertilizer on hand is a 19, 19, 19 which is total percentage or each of the three listed ingredients above N, P, K. At present we have 1 crate with 2 skids of 40 bags and 1 skid with approx 40 bags on hand.
With time fertilizer clumps and become hard reducing the likely hood of a spill.

Odds of Occurrence: Low
Severity of consequence: Low

6.0 Risk Prevention

- Fuels transported to landfarm by vehicles will be transported in approved container with a secured lid and in an upright position
- Loaders and excavators will be inspected dailey to locate and identify leaks and these will be address before work will resume.
- Close observation when refuelling equipment to ensure spills do not go unnoticed.
- Fertilizers will only be opened when needed and no part bags will be returned to the storage site.

7.0 Response Procedure

In the event of a spill the following measures will ensure minimum impact

7.1 Diesel Fuel

In the event of a diesel spill;

- Ponded fuel will be scooped up, the use of granular absorbents or absorbent pads will recover as much spilled product as possible. Pads will be placed in barrels for proper disposal.
- Granular absorbent material and contaminated soils will be excavated and put into Cell#1 where it will go through the normal remediation process
- Samples will be taken to verify the clean up has been done to required standards.

7.2 Gasoline

In the event of a gasoline spill;

- All spark or risk of ignition sources will be removed from area until deemed safe.
- Ponded fuel will be recovered by scooped up, the use of granular absorbents or absorbent pads will recover as much spilled product as possible. Pads will be placed in barrels for proper disposal.
- Granular absorbent material and contaminated soils excavated and put into cell #1 and treated in same manner as other soil brought into landfarm.
- Samples will be taken to verify the clean up has been done to required standards

7.3 Hydraulic Oil

In the event of a hydraulic oil spill;

- Ponded oil will be scooped up, the use of granular absorbents or absorbent pads will recover as much spilled product as possible. All pads and absorbent materials will be placed in barrels for proper disposal.
- Granular absorbent material and contaminated soils excavated will be blended in with existing soil in cell one and treated with fertilizer right away to speed up breakdown of hydrocarbons.
- Samples will be taken to verify the clean up has been done to required standards.

7.4 Motor Oil (New and Used)

7.4 i) New motor oil

In the event of a oil spill;

- Ponded oil will be scooped up, the use of granular absorbent or absorbent pads will recover as much spilled product as possible. All pads and absorbent materials will be placed in barrels for proper disposal.
- Granular absorbent material and contaminated soils excavated and put into cell #1 and fertilizers added
- Samples will be taken to verify the clean up has been done to required standards.
- Most often if this occurrence was to take place it would be with in the confines of the shop. Staff would be present and, and spill kits at the ready. Granular absorbent material would be used and the materials would be disposed in containment cell one.

7.4 ii) Used motor oil

Should a spill happen with used motor oil the loose product will be scooped up and then granular or peat absorbents will be applied to reduce travel into soil. Excavation equipment will be used to remove the stained area and this soil will blended in with existing soil in Cell #1
Testing will be done to ensure all contamination is recovered.
When confirmed clean soil will be used to fill the excavated area.

7.5 Antifreeze

Antifreeze is purchased in 4 jugs. Should a spill happen it will be absorbed with granular absorbent or rags. Cleaned up would be immediate. Stained ground will be excavated and placed in cell #1 with other soils for remediation.
Should the spill happen while machine is in operation (ruptured hose) the operator will be present and not all coolant will be lost. Operator will shut down machine and proceed with containment and cleanup immediately.

7.6 Granular Fertilizer

Should a fertilizer spill happen, the loose product will be shovelled up and used in soil treatment. If staining is noted this should also be dug up and put into the cell. The nitrogen will evaporate off with presence of moisture and it will run off in water, Phosphorus and potash will leach into the soil and lodge so recovery is easy with excavation as they will not migrate deep into soil.

8.0 Reportable Incidents Levels

The following chart outlines product quantities, when theses values are exceeded spill will be reported to Nunavut Spill Line.

Product	Dangerous goods class	Reportable Quantity	Classification
Diesel	3	60L	Flammable
Gasoline	3	60L	Flammable
Hydraulic Oil	3	50L	Flammable
Motor oil	3	60L	Flammable
Antifreeze	NR	60L	contaminant
Granular Fertilizer	NR	100Kg	contaminant

9.0 Spill Response Plan for Land, Water, snow or Ice

Spills on Land:

- Locate and terminate the source of the spilled product.
- Identify the product spilled
- Contact Ministry of Environment as soon as possible
- Determine direction of flow of spilled product.
- Determine if it will enter a water course and where to locate a berm (dam) to stop advance of product
- Use absorbent materials to collect loose product.
- Remove all contaminated soil and place in appropriate container (landfarm contament cell one or barrels)
- Place contaminated pads and absorbent material in appropriate containers for proper disposal.

Spills on Water:

- Locate and terminate the source
- Identify the product spilled
- Contact Ministry of Fisheries and Oceans and Ministry of Environment as soon as possible
- Use booms and absorbent pads to collect as much product as possible before it enters the water course.
- Install booms across water body to collect surface agents and contain spill.
- Continue to absorb any collected or pooled product with pads or booms.

Spills on Snow or Ice:

- Locate and terminate the source
- Identify the product spilled
- Contact the ministry of Environment as soon as possible

Snow:

- dig through layer of snow to determine size of contaminated area and distance flow has travelled.
- Collect loose product if any with absorbent material
- Scrape up contaminated snow and put in appropriate containers (landfarm contament cell one or barrels) for proper disposal.
- Access ground under snow to determine what next steps will be. Follow spill on land procedure.

Ice:

- Locate the leading edge of spilled product. Place absorbent pads or boom along edge to restrict spill advancing.
- Scoop up or scrap up spill product and place in appropriate containers for proper disposal.
- Remove contaminated booms and pads and place in appropriate containers for proper disposal.

10.0 Spill Response Training for employees And implementation

Nunatta is working on a new health and safety program. In an attempt to better inform our employees the training for the Spill Response will be included into this new program. Our plan is to promote worker safety through education and by doing so employees will be better informed enabling then to feel confident in handling contaminates safely. Spill response training will be incorporated into this program and all employees will be trained at least once a year.
Training will involve use of classroom and hands on. There will be a hand book placed in the employee area which is clearly marked "Spill Response Manual".
Training will include (but not limited to the following)

- Spill Response phone numbers
- Safety measures
- MSDS sheets
- How to identify product spilled
- Where clean up products are located (should more than spill kit be required)
- What is the correct clean up product to use
- How to use the clean up product
- How to dispose of the clean up products
- What and where to dispose of the spilled product.
- Location of spill kits and contents of kits
- Sign off sheet for spill kits.
- Spill kits location, contents in spill kit and how they are to be used, and who to contact should a spill happen.

Supervisors and Management will be responsible to check contents of spill kits and to verify the contents are in usable condition e.g.: contents have not frozen or absorbents gone hard with moisture uptake or contents missing.

11.0 Employee Spill Response Handbook

In the event there is a spill at the landfarm the following steps shall be taken;

1. *Identify source and contaminated area*

A spill is discovered, the affected area is designated and to minimize further contamination remaining product is contained.
Examples: A container is punctured, the contents have leaked onto a surface and spread to a 1m x 1m area. First step is to contian source may it be by plugging the puncture, catching contents or invert cotainer.

2. *Identify contaminate*

Products onsite are identified with all employees, only three types contaminates will be present fuel, oils or glycol. Spill kits will contain products to clean up petroleum products.
Example: A drum tipped over during transport to storage cells at the land farm. First step is, to contain remaining contents of drum and quarantine the contaminated area. Second step, identify the contents of the drum, by reading on the drum or use olfactory senses (colour, smell).

*****If you have concerns consult MSDS sheets at back of this manual*****

Contact Management

1st Response contact:	Jim Wilson 867-222-4111
2nd Response contact:	Mike Powell.....867-222-1815
3rd Response contact:	Pitseolak Shoo.....867-222-8720

If spill is large or off site
Contact
Ministry of Environment.....867-975-7909

If spill has chance of reaching water
Contact
Ministry of Fisheries and Oceans.....867-979-8021

4. *Safety*

Handling of all products safely is important. Be aware of hazards if you do not know what to do to refer to safety Data sheet (MSDS) found at end of this manual.

5. *Correct spill clean up material*

As a part of training the variation in absorbent material and effectiveness is explained.

6. *Fill out spill report (found on next page)*

Phone or Fax information to Spill Report Line.
Phone.....867-920-8130
Fax 867-873-6924

7. *Final*

- When spill has been contained, remove all pads, booms, and absorbent material from site using approved containers.
- Contaminated snow and soil shall to be removed and deposited into appropriate cells.
- Replace missing components used from Spill kits and sign sheet varifying inccident and product used.
- Contact spill line to inform them of progress or completion of clean up.

Spill Kit Locations and Contents

Spill Kit Locations and Contents

At the Landfarm there are 2 large spill kits located around the property.
Locations are as follows.

1. At front of building near heating oil tank.
2. Near the refueling station.
3. One kit is mobile and location will change as equipment is moved about landfarm.

Spill Kit Contents

2 bags of Clay absorbent
2 bags of Olkasorb (Cellulose)
2 bags of Cansorb (peat moss)
2 3 foot X2 inch boom
2 10 foot X 5 inch boom
100 15x19 inch pads
1 shovel
1 safety glasses
2 Tyvek suits
2 rubber gloves Heavy
2 nitrile gloves Light

List of contents and instructions
Garbage bags

Spill Report Form

Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

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: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR	REPORT NUMBER
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME	☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	____-____
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ 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	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	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 STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

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NUNATTA ENVIRONMENTAL SERVICES INC.

MSDS SHEETS

Battery Acid.pdf	5w-30 gas motor oil.pdf	Diesel Fuel P50.pdf	Dowfrost HD (glycol).pdf	gasoline.pdf
engine antifreeze.pdf	hydraulic oil.pdf	transmission fluid.pdf	15w-40 Diesel motor oil.pdf	