Effective January 1, 2004

P.O. Box 119
Gjoa Haven, NU X0E 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369
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NUNAVUT WATER BOARD
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WATER LICENCE APPLICATION FORM

Application for: (check one)

_X New ___ Amendment ___Renewal ___Assignment

LICENCE NO:
(for NWB use only)

1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE

Nunatta Environmental Services inc.
P.O. Box 267
Iqaluit, Nunavut.
X0A-0H0

Phone: (867) 979-1488
Fax: (867-979-8800
e-mail: a.carriere@sympatico.ca

2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)

Same as 1.

Phone: _____
Fax: _____
e-mail: _____

Nunavut Water Board
AUG 05 2004
Public Registry

3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)

LOT 1 , BLOCK 229 , City of Iqaluit

Latitude:_____ Longitude:_____ NTS Map No._____ Scale_____

4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

Landfarm

5. TYPE OF PRIMARY UNDERTAKING (A supplementary questionnaire must be submitted with the application for undertakings listed in **"bold"**)

X Industrial
___ **Mining and Milling**
___ **Municipal** (includes camps/lodges)
___ Power
___ Agricultural
___ **Conservation**
___ Recreational
___ **Miscellaneous** (includes exploration/drilling)
(describe):_____

See Schedule II of *Northwest Territories Waters Regulations* for Description of Undertakings

6. WATER USE

___ To obtain water
___ To modify the bed or bank of a watercourse
___ To alter the flow of , or store. water
___ To cross a watercourse
___ To divert a watercourse
___ Flood control
X Other (describe): **_Land farm humidification**

7. QUANTITY OF WATER INVOLVED (cubic metres per day including both quantity to be used and quality to be returned to source)

Run-off water collecting within the landfaming cells collected on a as required basis with a sump pump and the water is pumped in storage reservoirs.
Approximately 100 cubic meters of water per month on average during the spring/summer season.
The water is natural rain water accumulating in the berms.

8. WASTE (for each type of waste describe: composition, quantity (cubic metres per day), methods of treatment and disposal, etc.)

___ Sewage
___ Solid Waste
___ Hazardous
___ Bulky Items/Scrap Metal
___ Waste oil
___ Greywater
___ Sludges
X Other (describe):__**Hydrocarbon impacted soils**_____

9. PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)

Land Use Permit

DIAND ___ Yes ___ No If no, date expected _____

Regional Inuit Association ___ Yes ___ No If no, date expected _____

Commissioner X Yes ___ No If no, date expected _____

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

"Potential release of hydrocarbons exists, but mitigated by the presence of an impermeable liner on the facility. A Spill Contingency Plan" has been developed to address releases from the site. Additionally, a groundwater monitoring program has been developed for the site, which is provided in the attached "Monitoring Plan" ".

NIRB Screening ___ Yes ___ No If no, date expected _____

11. INUIT WATER RIGHTS

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement? **NO.**

11. (Continued)

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)

Nunatta Environmental Services inc. Owners and Managers of the landfarming facility
Box 267
Iqaluit, Nunavut.

13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)

14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN

Supplementary Questionnaire (where applicable: see section 5) ___ Yes ___ No If no, date expected __N/A____

Inuktitut/English Summary of Project ___ Yes ___ No If no, date expected _____

Application fee $30.00 (Payee Receiver General for Canada) X Yes ___ No If no, date expected _____

Water Use fee (see Section 9 of the *NWT Waters Regulations;* Payee Receiver General for Canada)
___ Yes ___ No If no, date expected _____

15. PROPOSED TIME SCHEDULE

X Annual (or) ___ Multi Year **Ongoing basis, seasonal type operation**

Start Date:_____ Completion Date: _____

Alain Carriere_ **Operations Manager__** Alain Carriere August 2-04
Name (Print) **Title (Print)** **Signature** **Date**

For Nunavut Water Board use only
APPLICATION FEE **Amount: $_____** **Pay ID No.:** _____

WATER USE DEPOSIT **Amount: $_____** **Pay ID No.:** _____

Nunatta Environmental Services Inc.

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Iqaluit, August 2, 2004

Mr. Jim Wall
Technical Advisor
Nunavut Water Board
P.O. Box 1271
Cambridge Bay NU X0B 0C0

Tel: 867-983-2214
Fax: 867-983-2216

Object: Water License Application for Nunatta Environmental Services Inc. landfarm located in Iqaluit

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Dear Mr. Wall,

You will find attached to this letter a copy of our Spill and General Contingency Plan as well as a copy of the Groundwater Monitoring and Post-Closure Plan as part of the requirements to obtain a water license for Nunatta's landfarming operations. Should you have any comments or modification requests related to the content of these plans, please let me know and we shall undertake the modifications. Our objective is to have these plans in good standings as soon as possible.

If you have any questions regarding the Spill / General Contingency Plan or the Groundwater Monitoring and Post-Closure Plan do not hesitate to contact me or Alain Carriere our operations Manager.

Sincerely,

Pitseolak Shoo

Pitseolak Shoo, President Nunatta Environmental Services Inc.

Cc Alain Carrière, Operations manager, Nunatta Environmental Services Inc.
Cc Scott Stewart, Indian and Northern Affairs Canada, Iqaluit

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GROUNDWATER MONITORING AND POST- CLOSURE PLAN

NUNATTA ENVIRONMENTAL SERVICES INC.

LANDFARMING OPERATIONS

August 1, 2004

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P.O. Box 267, Iqaluit (Nunavut) X0A 0H0, Telephone (867) 979-1488, Fax (867) 979-8800

GROUNDWATER MONITORING AND POST- CLOSURE PLAN

NUNATTA ENVIRONMENTAL SERVICES INC.

LANDFARMING OPERATIONS

Introduction

Nunatta Environmental Services Inc. hereby presents a groundwater monitoring and post closure plan related to its landfarming operations located within the North 40 industrial park, in Iqaluit, Nunavut. These plans can evolve as the landfarming operations may change with time. They can therefore be amended.

Landfarming operations

Nunatta Environmental Services Inc. (NES) owns and operates a petroleum impacted soil treatment facility in Iqaluit, Nunavut. This treatment facility is commonly referred to as a 'landfarm'. NES operations consist in accepting soils impacted with petroleum products at various concentrations at the landfarm's geosynthetic lined platforms and allow indigenous soil microorganisms to degrade petroleum products to broken down compounds such as water, carbon dioxide and hydrogen sulfide. Soils accepted at the landfarm are contaminated with Diesel, gasoline and various oils.

Landfarm treatment operations consist in removing rocks from the fuel impacted soil, mechanically aerate, fertilize and moisten contaminated soil until contaminants have been biologically degraded and have reached acceptable disposal criteria, as dictated by the Canadian Council of Ministers of the Environment (CCME) or other regulating agencies.

Currently, there are 3 treatment platforms at the landfarm, identified as cells 1, 2 and 3. Cell 1 is 60 meters by 25 meters wide, cell 2 is 50 meters by 25 meters and cell 3 is 90 meters by 30 meters wide. Each cell is 1.5 meters deep (below adjacent ground level). The 3 cells are lined by a geosynthetic material (20 mil High Density Poly Ethylene – HDPE material) covering and waterproofing the cell's bottoms. These liners were welded at the manufacturing plant and their purpose is to prevent petroleum products mixed in soils from seeping into the ground.

The 3 cell's perimeter is bermed with compacted granular material. The height of the fuel-impacted soil placed in the treatment cells will vary with volume to be treatment but could be as high as 3.5 meters above ground level.

The hazardous and potentially hazardous products present within the fenced landfarm includes the following:

- Diesel fuel and all lubricants normally associated with the operation of heavy equipment (motor oil, transmission, hydraulic, differential oil and all purpose grease.

- Batteries used in heavy equipment and other vehicles
- Antifreeze fluid and gasoline
- Diesel fuel present in contaminated soil accepted for treatment at the landfarm. These petroleum hydrocarbons cannot be spilled since they are mixed and absorbed to the soil medium. These contaminants are not physically removed from the soil. They are biologically broken down or converted to water, carbon dioxide, hydrogen sulfide and other gases.
- Rainwater collected from treatment cells will have been in contact with contaminated soil. This rainwater will contain varying low amounts of Diesel or gasoline depending on the contaminated soil concentrations. This rainwater will be recuperated and pumped into 3 10,000 liters holding tanks placed directly on top of the contaminated soil pile. This water will be re-used by being re-circulated into the contaminated soil to increase soil's water content on an as-required basis. Water present in the holding tanks will be reduced by 50% before the freezing period. Prior to releasing any water into the environment, it will have been treated by forcing it through an activated carbon water treatment facility.
- Fertilizers (20:20:20 all purpose granular fertilizer) will be used to amend the fuel-impacted soil. Fertilizer is kept in closed 45 gallon barrels on site and is spread on the contaminated soil with a conventional farming spreader. The fertilizing operation is done 2-4 times, seasonally.

Groundwater Monitoring Plan

Conscious that the landfarm may adversely impact the environment should unlikely cell leaks or spills occur, groundwater monitoring wells were installed along the landfarm's perimeter. The landfarm terrain and surrounding areas are relatively flat, indicating that the hydrogeological flows are most likely stagnant. The proximity of the North 40 ponds, Koojessee inlet and brooks, to the landfarm are environmentally sensitive water bodies and must be protected from potential contamination inputs.

Groundwater monitoring wells

Monitoring wells are used to detect the potential movement of contaminated groundwater originated from the landfarm towards sensitive area and to detect potential contamination entering the landfarm's property from neighboring terrains.

Considering that NES is handling substantial quantities of petroleum impacted soils and despite the fact that the treatment cells are lined with 20 mil High Density Poly Ethylene geomembrane, a potential of contamination entering subsoil and groundwater exists. To detect this potential contamination, NES has developed a groundwater monitoring system consisting in the installation of 6 groundwater wells located along the property's perimeter.

The groundwater wells consist of a 2"diameter PVC pipe having a 5' length placed vertically in the ground. The bottom 2' of the pipe is perforated allowing groundwater entering the pipe. A geotextile sleeve to prevent soil particles from entering and blocking the pipe protects this 2' perforated section. A four foot section is inserted into the ground whereas the remaining foot stays above ground inside a closed protective metal casing.

The depth to permafrost was determined to be approximately 8' deep at the end of July. The depth of the wells was therefore set to be 5'. The location of the 6 monitoring wells is shown on Figure 1. As indicated on the plan, Groundwater Well no. 1 (GW1) and GW6 detect contamination movement potentially originating from the western part of the property / adjacent lot. GW 1 and GW 2 samples groundwater from the North side, GW 3 and GW 4 from the eastern zone whereas GW 5 and GW 6 cover the southern section of the property / adjacent lot. With this layout any incoming or outgoing potential contamination will be detected.

Groundwater sampling program: components and frequency

The contaminated soils placed in the landfarm for treatment contain petroleum hydrocarbon products. Heavy metals may be present in low concentrations. Soils are tested prior to entering the landfarm and PCB contaminated soils are not accepted. Based on the contaminant content of entering soils, the following components are proposed to be analyzed as per the Canadian Council of Ministers of the Environment (CCME) criteria:

- Total Petroleum Hydrocarbons (TPH)
- Poly Aromatic Hydrocarbons (PAH)
- Heavy Metals (HM - Cd, Cr, Cu, Ni, Zn and Pb)

Considering that the ground is totally frozen 8 months per year and that the active zone gets to 5' only 2 months per year, it is proposed that groundwater monitoring wells be sampled on a yearly basis, anytime from mid July to the end of August. The following Table proposes a monitoring well sampling frequency / component for a 10 year period (2004 to 2014).

Groundwater well number	Chemicals analyzed and sampling year
GW1, GW3, GW5	TPH, PAH, HM – 2004, 2006, 2008, 2010, 2012, 2014
GW2, GW4, GW6	TPH, PAH, HM – 2005, 2007, 2009, 2011, 2013

In 2014, a groundwater monitoring component and frequency will be proposed based on historical values. The wells being sampled may vary depending on the permafrost status from year to year. Knowing that GW1 and GW6 cover the western and southern sections of the landfill, sampling 3 wells on a yearly basis will provide groundwater quality data from the 4 landfarm edges.

Reporting

Nunatta environmental Services will write a groundwater quality status report on a yearly basis, and will be available for review by competent governmental agencies 6 months after the sampling event. The report will include analytical results from the sampling campaign and recommendations depending on the findings.

Evolution of the groundwater monitoring plan

In the event that the landfarm was to increase or decrease in size over time, the groundwater monitoring plan would directly be affected. In such cases, the plan would be amended to reflect all changes and presented to NWB for approval.

Post Closure Plan

This post-closure plan determines what will happen from an environmental standpoint with the closed landfarm facility. As of 2004, Nunatta Environmental Services Inc. predicts that the contaminated soil market in Iqaluit will last for a 25-year period. During this time frame, the groundwater monitoring program will ensure that any potential contamination escaping the landfarm (or entering the property from the neighbors) is detected. In the event that the landfarm closes or stops operations by estimated 2030, the following procedures would be followed.

- Contaminated soils will be treated until they reach acceptable levels as dictated by the CCME criteria. The treated soils will be hauled out of the landfarm property (either at the local landfill or for commercial purposes, depending on the residual contamination level).

- In the event that the groundwater monitoring wells detect the presence of contaminants proven to originate from the landfarm in concentrations high enough to undertake remediation, they will be removed at Nunatta Environmental Services cost. The remediation procedure will be selected and undertaken by Nunatta.

- Stored fuel, petroleum products and other potentially hazardous chemical will be removed from the landfarm property and appropriately disposed of.

- Rainwater recuperation tanks will be emptied (by treating the water) and removed from the property.

- The groundwater monitoring wells will be maintained operational during the post closure period.

Post closure trust

Nunatta Environmental Services will start in 2005 a post closure trust. The funds set aside in the trust will be used to continue the groundwater monitoring plan and undertake remediation if and when required until the fund expires after the definitive landfarm closure (estimated at 25 years). The landfarm has a capacity of treating 2,000 tons per year and the Iqaluit market is anticipated to provide the same per year. The post closure trust will set aside $1.25 per metric ton being treated at the landfarm for the next 25 years. Based on these estimates, the post closure trust will have the capacity of growing up to $62,500. In the event that these figures would not be achieved, Nunatta Environmental Services will inject sufficient funds to ensure that the trust counts at least $50,000 at the final closure date. Nunatta will deposit a minimum of $1000 in the trust on a yearly basis, regardless of the tonnage. During this estimated 25 year period, Nunatta will have the obligation of making the proper investment (bank, stock market, etc.) for the trust to grow. The capital gain will be re injected in the trust every year until the final closure of the landfarm.

The trust will be totally managed by Nunatta Environmental Services Inc. and withdrawals will only be permitted by the Board of Nunatta Environmental Services inc. in consultation and approval of an appointed representative from Indian and Northern Affairs Canada. During the post closure period, the funds can only be spent on remediation, groundwater monitoring and maintenance related to the landfarm.

The post closure period will begin on the date the landfarm definitively closes and will last for a 10-year period. At the end of the post closure period, the unused funds will totally return to Nunatta Environmental Services Inc. or their designated heir(s).

Special cases

The following special cases will apply if appropriate:

- In the event that NES was to sell the landfarm (at any time) the trust will be transferred to the new owners along with all the responsibilities stated in this groundwater monitoring and post closure plan.

- In case of NES bankruptcy, the trust would be management by the NWB for a 10-year period following bankruptcy. The trust would solely be used for the landfarm's remediation, monitoring, maintenance and management purpose. After this period, the remaining funds would be managed by a syndic or by a managing agent.

- If competent governmental authorities and NES determine that the property is environmentally clean following closure of the landfarm (as a result of business end, bankruptcy or any other means), the trust would completely returned to NES or to the syndic or managing agent.

- In case of disputes on the management of the post closure trust (between NES, NWB and new owner if the case may be), an independent expert, chosen by all parties) would be hired and paid by the trust to settle issues. Nunavut laws and regulations will always apply first.

TABLE OF CONTENT

APPENDIX I - SPILL CONTINGENCY PLAN

Preamble

Nunatta Environmental Services Inc. (NES) owns and operates a petroleum impacted soil treatment facility in Iqaluit, Nunavut. This treatment facility is commonly referred to as a 'landfarm'. NES operations consist in accepting soils impacted with petroleum products at various concentrations at the landfarm's geosynthetic lined platforms and allow indigenous soil microorganisms to degrade petroleum products to broken down compounds such as water, carbon dioxide and hydrogen sulfide. Soils accepted at the landfarm are contaminated with Diesel, gasoline and various oils.

Landfarm treatment operations consist in removing rocks from the fuel impacted soil, mechanically aerate, fertilize and moisten contaminated soil until contaminants have been biologically degraded and have reached acceptable disposal criteria, as dictated by the Canadian Council of Ministers of the Environment (CCME) or other regulating agencies.

The effective starting date of this spill contingency is August 1, 2004 and shall remain valid until the end of NES landfarm operations. Amendments will be added to this plan as operations evolve and as suggested by regulating agencies. This spill contingency plan only applies to NES's landfarming operations, which will soon be licenced by the Nunavut Water Board.

The following formal distribution has been made for this plan:

- City of Iqaluit, Fire Chief – 1 copy, delivered to Mr. Corey Chegwin
- Nunavut Water Board – 2 copies, delivered to Mr. Jim Wall
- Nunatta Environmental Services Inc. – 3 copies: one on site, one at the main office and one backup copy.

Additional copies of the spill contingency plan may be obtained in writing to:

Nunatta Environmental Services Inc
Attention : Mr. Alain Carrière
P.O.Box 267
Iqaluit, NU X0A 0H0
Phone: (867) 979-1488
Fax: (867) 979-8800

1.0 Introduction

The map shown on figure 1 (attachment 3) shows the existing layout of NES's landfarm in Iqaluit, Nunavut.

1.1 Description of the landfarm

Currently, there are 3 treatment platforms at the landfarm, identified as cells 1, 2 and 3. Cell 1 is 60 meters by 25 meters wide, cell 2 is 50 meters by 25 meters and cell 3 is 90 meters by 30 meters. Each cell is 1.5 meters deep (below adjacent ground level). The 3 cells are lined by a geosynthetic material (20 mil High Density Poly Ethylene – HDPE material) covering the cell's bottoms. These liners were welded at the manufacturing plant and their purpose is to prevent petroleum products mixed in soils from seeping into the ground.

The 3 cell's perimeter is bermed with compacted granular material as illustrated on a schematic diagram reported on figure 2 (attachment 3). The height of the fuel-impacted soil placed in the treatment cells will vary with volume to be treated but could be as high as 3 meters above ground level.

1.2 Hazardous material on site

The hazardous and potentially hazardous material present within the fenced landfarm includes the following products.

- Diesel fuel and all lubricants normally associated with the operation of heavy equipment (motor oil, transmission, hydraulic and differential oil and all purpose grease.
- Batteries used in heavy equipment and other vehicles
- Antifreeze fluid and gasoline
- Diesel fuel present in contaminated soil accepted for treatment at the landfarm. These petroleum hydrocarbons cannot be spilled since they are mixed and absorbed to the soil medium. These contaminants are not physically removed from the soil. They are biologically broken down or converted to water, carbon dioxide, hydrogen sulfide and other gases.
- Rainwater collected from treatment cells will have been in contact with contaminated soil. This rainwater will contain varying low amounts of Diesel or gasoline depending on the contaminated soil concentrations. This rainwater will be recuperated and pumped into 3 10,000 liters holding tanks placed directly on top of the contaminated soil pile. This water will be re-used by being re-circulated into the contaminated soil to increase soil's water content on a as-required basis. Water levels in holding tanks will be lowered to half before freezing.
- Fertilizers (20:20:20 all purpose granular fertilizer) will be used to amend the fuel-impacted soil. Fertilizer is kept in closed 45 gallon barrels on site and is spread on the contaminated soil with a conventional farming spreader. The fertilizing operation is done 2-3 times, seasonally.

1.3 Heavy equipment used on site

Equipment using the hazardous and potentially hazardous material listed above includes but are not limited to the following list:

- Screener (Diesel driven)
- Loaders, bulldozers, excavators, backhoes, tandem trucks (Diesel driven)
- Conveyors and pumps (gasoline driven)

All fuels and lubricants required to operate equipment are not kept on site. Fuel and lubricants are delivered on site on a as required basis. Maintenance, unless minor and greasing operations, is not undertaken on site. In the event that such products are kept on site, the plan would be amended with appropriate changes and would be sent to the Nunavut Water Board fro approval.

1.4 Note

Note on the theoretical quantities of Diesel fuel mixed in the contaminated soil: at full capacity, the landfarm would contain 7,000 cubic meters of impacted soil. Assuming that the average Diesel concentration in the impacted soil was 3,500 ppm or 0.35% by weight, the total amount of Diesel present within the 3 lined treatment cell would be 25 cubic meters or 25,000 liters. Even at full capacity, the Diesel would not leach out as it is strongly absorbed onto the soil matrix. The geosynthetic lined are placed in the cells as a preventive way for fuel products to seep into the ground.

2.0 Response Organization

This section contains a list of the Spill Response Team explaining duties of key personnel responsible for responding to spills.

Mr. Alain Carrière: Operations manager of the landfarm. Looks into all aspects of landfarm operations. Mr. Carrière provides on the job training to employees and ensures that spill response programs are implemented and that all equipment and material required to address spills are present on site and at all times.

Mr. Dermott Walsh: Site foreman. Looks into the planning of spill responses. Provides 'tool box' training on safety and spill issues on a weekly basis. Mr. Walsh reports directly to Mr. Carrière.

Joanassie Illauq: Assistant to the foreman. Present on site on a full time basis. Mr. Illauq inspects the property on a daily basis (seasonally) and verifies for abnormal situations. In case of a spill, Mr. Illauq is likely to address the situation first and has reviewed this Spill Contingency Plan and knows procedures to follow in case of a spill. He makes suggestions (to be incorporated into the Plan for approval) as need may be.

Other NES staff: The seasonal workers handle contaminated soil for treatment (screener, heavy equipment, pump and water management). Mr. Walsh and or other NES staff are present at the landfarm and will address spills as they happen. Training is provided on a as required basis as new seasonal employees are hired. Some workers are inmates from the Baffin Correctional Center and will spend time at the landfarm on a rotational basis. These workers will also be provided formal health and safety and spill response training.

Dr. Simon Desjardins: Environmental and safety advisor. Provides suggestions on the content and implementation of the spill contingency and groundwater monitoring plan. Specific issues are addressed to him as the technical advisor to Nunatta Environmental Services Inc.

3.0 Initial Action

This section is included to educate company personnel about the proper procedures for reacting to a spill. The course of action of the first person at the spill scene will be the following:

- Be alert and consider your safety first. If possible, identify the product first.
- Assess the hazard to persons in the vicinity of the spill
- If possible, without further assistance, control danger to human life
- Assess whether the spill can be readily stopped or brought under control
- If safe to do so, and if possible, try to stop the flow of material
- Ask for assistance, if needed
- Gather information on the status of the situation
- Report the spill without delay to the Spill Response Team and ensure that government is notified at the same time by the NWT 24 hour Spill Report Line 867.920.8130, and
- Resume any effective action to contain, clean up, or stop the flow of the spilled product

The last step is further described in the 'Action Plan' section.

4.0 Reporting Procedure

This part of the plan describes the communication system put in place by Nunatta Environmental Services to ensure an expedient response to a spill. It includes the means of communication available to activate the Spill Response Team and the telephone numbers of company officials, consultants and other companies which may have to be contracted to supply the resources, expertise and advise needed to deal with the spill. A listing of governmental contacts who can provide technical assistance and information regarding environmental sensitivity, spill response procedures, clean up measures, and the like, are also included. Reference is made to the NWT and Nunavut 24 Hour Spill Report Line 867.920.8130, the telephone service used in the NWT and Nunavut to inform all governmental departments that a spill has occurred. The specific information requested when a spill is reported to government is outlined on the enclosed Spill Report Form.

All spills or potential spills of petroleum products or other hazardous materials will be reported to the 24- hour Spill Report Line to ensure that an investigation may be undertaken by the appropriate government authority.

Spill reporting procedure

1- The Spill Report form is filled out as completely as possible before making the report
2- The spill is immediately reported to the 24 hour spill line 867.920.8130
3- The spill report is, whenever possible, immediately sent by fax

Other organizations and individuals to be contacted in case of a spill:

Nunatta Environmental Services Inc. head office in Iqaluit : 867.979.1488. Contact name: Alain Carrière.

Simon Desjardins, environmental consultant in Montreal, Quebec . Tel : 514.457.3573

Department of Indian Affairs and Northern Development, Nunavut Regional office. Tel: 867.975-4500

Environment Canada, Nunavut regional office. Tel: 867.975-4645

Government of Nunavut in Iqaluit, Nunavut. Tel: 867.975.6000

City of Iqaluit, fire Chief. Tel: 867.979.5600

Other companies in Iqaluit are not needed in case of accidental spills as Nunatta Environmental Services specializes in emergency spill responses.

Government of NWT and Nunavut Phone: 867.920.8130

SPILL REPORT

(Oil, Gas or Other Material, i.e. Hazardous Chemicals, etc.)

A	Report date; Date and Time of Spill if Known
B	Location and Map Coordinates (if Known) and Direction if Moving
C	Party Responsible
D	Product Spilled and Estimated Quantities (Provide Metric Volumes and Weight if Possible
E	Cause of Spill
F	Is Spill Terminated or Continuing
G	Extent of Contaminated Area
H	Factors affecting Spill or Recovery - Temperature, Snow, Ice, Terrain, Buildings, etc
I	Containment - Naturally, Booms, Dykes or Other. No Containment
J	Action, if any. Taken or Proposed to Contain, Recover, Clean-up or Dispose
K	Do you Require Assistance. If so, what Form
L	Hazard to Persons or Property or Environment - Fire, Drinking Water, Threat to Fish or Wildlife
M	Comments and or other Recommendations
	Reported by; Position, Employer, Location; Telephone
	Reported to; Position, Employer, Location; Telephone

5.0 Action plan

The following typical potential spill could occur at NES's landfarm:

- Heavy equipment and other motor re-fueling
- Heavy equipment and other equipment breakage such as hydraulic hose failure or leaking parts
- Fertilizers as a result of drum tipping or mishandling
- Recuperated water: holding tank and pump failure or mishandling

5.1 Remediation

In case of a fuel spill during re fueling operations, staff described in Response Organization section will address the situation. Absorbing material (described in attachment 2) will always be present at the landfarm and will be readily used to prevent fuel and gasoline to seep deep into the ground. Once the spill is controlled (valves closed, fixed ripped fuel hose, etc), absorbent material is placed where the spill occurred, mixed thoroughly with the surface soils and recuperated with hand shovels or with a loader's bucket. The contaminated soil and absorbent material is immediately placed in one of the treatment cells as final disposal.

The same procedure is followed in the event that hydraulic fluid, lubricants and anti-freeze are spilled on the ground. The landfarm is specifically engineered to biologically treat such contaminants from soil.

Other possible spill potential includes holding water tank failure or mishandling. In such cases, the lined berm located around the treatment cells will prevent water mixed with small quantities of petroleum products from escaping controlled areas. In the unlikely event of berm failure, some lightly contaminated water could enter the environment. Considering that landfarm operations require that rain water be collected to be re circulated into contaminated soil, water volumes following a berm failure would be minimal. In such cases and if technically possible, the failed berm would readily get repaired using on site heavy equipment and escaped water into adjacent ditches would be readily pumped into another treatment cell.

Spilled fertilizers, as a result of mishandling, would be shoveled into barrels (fertilizers used for landfarming operations are always under a solid form). Spoiled soils by excess fertilizers would be excavated and placed into the landfarm where they would be mechanically incorporated into soils being treated.

Following the removal of spoiled soils resulting from a liquid or solid spill, the affected area(s) would be backfilled with clean soil. In all spill cases, a spill report will be prepared and sent to competent authorities.

6.0 Environmental mapping

Figure 3 (attachment 3) illustrates a large-scale map of the area where impacts could theoretically occur from spills. NES's landfarm is located within an industrial area (North 40 industrial park). The most sensitive areas are as follows:

To the North: Natural ponds and small lakes eventually leading to Koojeesse Inlet. The distance between the landfarm and the closest pond is approximately 50 meters.

To the East, West and South: Municipal ditches eventually leading to Koojeesse Inlet. The distance between these ditches and the landfarm property limit range from 5 to 100 meters.

The access to these ditches and ponds is rapid as the landfarm has roads contouring the property. For potential spills flowing outside of the fenced area, field staff would access the impacted area by walking. The spill response equipment depot (described in the 'Resource Inventory' section) is located within the landfarm area on a permanent basis. This equipment is protected from the rain and snow.

The main water supply for the City of Iqaluit is located 2 km from the landfarm. The fresh water lake used as water supply is 45 meters above the landfarm's level. A potential spill from the landfarm directly impacting the fresh water lake is therefore absolutely impossible.

7.0 Resource Inventory

This section describes and lists the manpower, specific types of equipment, machinery and tools available to respond to a possible spill. All the equipment, machinery and manpower needed to address a spill are available on site. It is not anticipated that resources and equipment from other sources be required.

7.1 Manpower

Field staff usually attends the landfarm during business hours from late June to early September. Up to 5 people work at the landfarm. Landfarming is only efficient during the warmer months (end of June to early September), Consequently, the landfarm closes in September and reopens in June. During the fall and spring, the landfarm is inspected on a weekly basis whereas inspections are done on a monthly basis during the winter months. There are no activities at the landfarm during the winter months. The individuals involved in the landfarm operation include Alain Carrière, a foreman and seasonal workers.

7.2 Machinery

The heavy equipment list needed to address a spill is listed below:

- Backhoe or hydraulic excavator or loader
- Service vehicle
- Manual tools such as shovels and wheel barrels

7.3 Equipment

Equipment needed to address a potential spill associated with NES's activities includes the following:

- Hydrophobic sorbent pads: these pads have dimensions varying from 17"x19", 12 oz sheet to 38"x 144' rolls can absorb 1.7 liters per sheet to 347 liters per roll. All hydrophobic pad dimensions are kept on site, as Nunatta Environmental Services Inc. is also a contractor addressing fuel spills in Iqaluit and in Nunavut. Pads are mainly used for surface spills on the ground.

- Hydrophobic sorbent booms: these booms have dimensions varying from 5"x10' to 8"x10' and can absorb from 144 to 216 liters per bale. These booms are mainly used to recuperate petroleum products floating on water bodies.

- All purpose granular oil sorbent : this granular absorbent will recover up to 8 times its own weight in fuel products. Granular sorbent is usually used on floors but can also be used for difficult access areas such as between rocks, on slopes, etc.

- Over pack drums: Once spoiled absorbent pads and booms are placed in a waterproof over pack drum as intermediate storage vessel. The content is either incinerated or shipped to a southern approved facility.

MSDS sheets for such products are found in attachment 2.