



Spill Contingency Plan for Chesterfield Inlet Landfarm

Version 1.1

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Stantec Project # 144901145

GN Project # 10-3018

Prepared for:

Government of Nunavut
Community and Government Services,
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01, October, 2013

File: 144901145

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Attn: Phyllis Beaulieu

Re: Proposed Landfarm Spill Contingency Plan

Dear Phyllis,

Please find enclosed the Spill Contingency Plan as required for the Water Licence Application submitted on behalf of the Government of Nunavut, Community and Government Services. This spill Contingency Plan is intended to be a stand-alone document and meets all requirements for a Spill Contingency plan for the proposed landfarm.

If you have any questions regarding this plan please don't hesitate to contact us

Sincerely,

Stantec Architecture Ltd.,

Arlen Foster, EIT

Civil / Environmental Engineering



Table of Contents

1	Introduction.....	4
1.1	Information of the Licensee	4
1.2	Information of 24 Hour Contact	4
1.3	Community Information	4
1.4	General Description of Property	5
1.5	Purpose and Scope	5
1.6	Additional Copies.....	5
1.7	Environmentally Sensitive Areas	5
1.8	Authority	5
2	Hazardous Materials.....	6
2.1	General	6
2.2	Spill Prevention Measures.....	6
3	Response Organization	7
3.1	Individual Response	7
3.2	Response Team Organization.....	7
4	Action Plan.....	8
4.1	General	8
4.2	Specific Spill Containment Methods.....	8
4.3	Managing Spill Related Wastes	10
4.4	Restoring Affected Areas.....	11
5	Spill Response Training.....	12
5.1	General	12
5.2	Spill Kits.....	12
5.3	Spill Report Form.....	12
6	Resource Inventory	13
6.1	MSDS Sheets	13
	Appendix A: Map	14
	Appendix B: Spill Report Form	15
	Appendix C: Reportable Spill List.....	16



1 Introduction

1.1 INFORMATION OF THE LICENSEE

Government of Nunavut
Community and Government Services
Box 490, Oomilik Building
Rankin Inlet NU,
X0C 0G0
(867) 645-8100

1.2 INFORMATION OF 24 HOUR CONTACT

Department of Community & Government Services
Petroleum Products Division
Regional Director CGS Kivalliq Region
(867) 645-8153
(867) 645-3625

1.2.1 Effective Dates & Revisions

Spill Contingency Plan Effective Date:

1. May 11, 2012

Spill Contingency Plan Revision Date:

1. August 20, 2012

1.3 COMMUNITY INFORMATION

The Hamlet of Chesterfield Inlet, or Igluligaarjuk, Nunavut with a population of 332 people is located at latitude 63 degrees 20 minute north and longitude 90 degrees 42 minutes west. It lies on the south shore of Chesterfield Inlet and on the west shore of Hudson Bay. In relation to other communities, Chesterfield Inlet is 101 Km northeast of Rankin Inlet.

Chesterfield Inlet's topography consists of sand to gravel landscape with low granite outcrops and inland lakes. It is located on a low and narrow coastal strip at elevation of 10 meters. Vegetation is typical arctic tundra and consists of mosses, lichens and grasses. The elevation at Chesterfield Inlet, at the airstrip is approximately 25m above sea level. Chesterfield's average annual precipitation consists of 14.6 cm of rainfall and 112 cm of snowfall. Mean high in July is 13.1 degrees with a mean low of 4.6 degrees. In January, mean high is -27.8 degrees and a mean low of -35.2 degrees.

The Chesterfield Inlet Fuel Facility is being upgraded. As part of the upgrade, approximately 150 cubic metres of hydrocarbon-contaminated soils must be removed from the site and remediated. Contaminated soils will be remediated in a lined engineered landfarm.

The landfarm will be located adjacent to the existing Solid Waste Site. It will be accessed from the same road. The Government of Nunavut in consultation with the Hamlet of Chesterfield Inlet selected the site.



1.4 GENERAL DESCRIPTION OF PROPERTY

The site for the landfarm is located in the area of:

(Lat/Long) 63° 20' 46" N, 90° 45' 10" W

(UTM) Easting 612,460m, Northing 7,026,122m

(Map sheet number 55O7) near the Hamlet of Chesterfield Inlet's Solid Waste Site.

See Appendix A for drawings and site maps.

1.5 PURPOSE AND SCOPE

The Government of Nunavut - CGS directs that all of its employees be prepared to provide prompt response to any accidental spill of any chemical substance as listed in Appendix C. This plan may be implemented to the extent necessary by the Regional Director, Community and Government Services, or any employee acting on his behalf in the performance of his regular duties.

This Spill Contingency Plan provides for the prompt and coordinated response of the GN-CGS to any spill located on landfarm property.

The purpose of this plan is to establish the steps necessary in the event of a spill to ensure that life is protected, injuries are minimized, resources are used effectively, environmental impact is kept to a minimum and essential reporting is completed. It is designed to cover spills that would be encountered in everyday situations. This plan may be implemented in whole or in part, depending on the particular circumstances of the situation.

The plan identifies key response personnel and their roles and responsibilities in the event of a spill, as well as the equipment and resources available for immediate response.

1.6 ADDITIONAL COPIES

Additional copies of this Plan can be attained at the GN-CGS Kivalliq Regional Headquarters, Ranking Inlet, NU.

1.7 ENVIRONMENTALLY SENSITIVE AREAS

The shorelines of the Chesterfield Inlet (Arctic Ocean) have been noted as environmentally sensitive areas. If a spill impacts, or may impact these areas, extra precautions and activities will be taken to minimize disruption to the aquatic life such as the use of biological remediation options.

1.8 AUTHORITY

This plan is issued by the GN-CGS under the authority of the Environmental Protection Act "Spill Contingency Planning and Reporting Regulations" hereinafter referred to as the Act.



2 Hazardous Materials

2.1 GENERAL

The GN Landfarm Facility shall accept only Type B Soil. Soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of fuel oil and/or diesel fuel and /or gasoline.

There are no sewage facilities. No fuel or lubricants are stored on site. Heavy equipment working on site will arrive with sufficient fuel and lubricants. The only potential for a spill will result from a leaking hydraulic hose, or from an overturned truck or excavator.

2.2 SPILL PREVENTION MEASURES

The containment area had been designed with a liner to prevent spills and seepage. A berm will be constructed around the landfarm to ensure that no contaminants can seep out or no surface water will drain into the landfarm.

Fuel will only be transferred on site if absolutely necessary, and conducted within the bermed area.

While transporting contaminated soil the trucks used will not be overfilled to prevent spillage. TDG forms will accompany every load.

Prior to the commencement of hauling all trucks will be cleaned to prevent cross contamination. When backing into the landfarm with a load care will be taken not to drive over already deposited containments to prevent contamination while leaving the landfarm.

The potential source of failure at the landfarm facility would be the berm/liner failing such that contaminated water was released; the surrounding area is the existing Solid Waste Site. Negative impacts could be found to the soil and vegetation as petroleum hydrocarbons are not immediately biodegradable.

Any person finding a discharge from or malfunction of the landfarm facility should immediately report the incident to the GN-CGS Regional Director. Action will be taken to minimize the distribution of any contamination and repair the liner/berm to eliminate any further release. All necessary personnel will be called out to rectify the problem and restore the affected areas.



3 Response Organization

3.1 INDIVIDUAL RESPONSE

The response of the first person on the scene shall be:

1. Be alert and consider your personal safety first.
2. Assess the hazard to persons in the vicinity of the spill and where possible take action to control danger to human life. If possible, identify the material or products involved in the spill.
3. If safe and practical try to take the appropriate action to stop the release of the material.
4. Contact the GN-CGS Regional Director (First Person of Contact):
Regional Director, CGS, Kivalliq Region:
(867) 645-8153
(867) 645-3625

The First Person of Contact's (GN-CGS Regional Director or his alternate), responsibility will be:

1. Proceed to the spill location;
2. Assess the situation and make arrangements for first aid and removal of injured personnel. Take the necessary action where possible to secure the site to protect human safety;
3. If possible and safe, take the appropriate action to stop release of the material.
4. Take all necessary action to contain or prevent the spread of the spilled material;
5. Gather information on the status of the situation;
6. As soon as practically possible, complete a spill report form (attached as Appendix "B"), and then contact the 24 hour Spill Report Line at (867) 920-8130.

3.2 RESPONSE TEAM ORGANIZATION

The GN-CGS Regional Director will be, or appoint the On-Site Coordinator. He will have complete authority over the clean-up personnel and the spill scene. His responsibilities will include:

1. Evaluate the initial situation and assess the magnitude of the problem.
2. Activate the level of response necessary to meet the situation.
3. Develop the overall plan of action for containment and clean-up of the specific incident.
4. Ensure that the assigned responsibilities are carried out and that co-ordination exists between team members.
5. Assess the requirements for men, equipment, materials and tools to contain the spill.
6. Directs the Spill Response Team in containment, recovery, clean up, and disposal operations.
7. Acts as the spokesman with the public, media, and government agencies.
8. Ensure that all spill response personnel receive adequate training in order to fulfill their responsibilities as part of the Spill Response Team.



4 Action Plan

4.1 GENERAL

1. Spill observer assesses & determines extent of spill
2. Reports spill to spill response coordinator
Regional Director CGS Kivalliq Region (867) 645-8153
3. Spill response coordinator activates emergency spill contingency plan
4. Activates spill response team & appropriate equipment and tools required.
Spill response team
Assistant Fire Marshal 867-645-8103
CGS Assistant Director 867-645-8100
CGS Facilities Manager 867-975-5367
CGS Petroleum Products Officer 867-645-8165
5. Notify GN, Local Agencies & 24-hour spill report line.
6. Complete Spill Report form & submit within 30 days of spill

4.2 SPECIFIC SPILL CONTAINMENT METHODS

4.2.1 Containment on Open Water

For spills in open water, containment procedures will vary depending on whether the material floats or sinks, and whether the water is flowing or standing.

For floating materials, a surface boom shall be deployed. In flowing water, the boom should be stretched across the flow, downstream from the spill. In standing water, the boom can contain the spill close to shore. Failing a boom, a dyke may be constructed, especially in shallow areas.

For floating spills, such as fuel, weirs can be used to contain the spills in streams and to prevent further migration downstream. Plywood or other materials found on site can be placed into and across the width of the stream, such that water can still flow under the weir. Spilled fuel will float on the surface of the water and be contained at the foot of the weir.

For sinking material, a dyke should be constructed if possible. This will contain the dispersion of the material in standing water. In small amounts of floating water, divert the flow around the material by diking and ditching if possible.

The On-Scene Coordinator will have to judge whether the impact of the spill will be most reduced by carrying out a containment procedure or by immediately attempting to remove any containers from the water. This will depend on the equipment available and how long it will take for additional equipment to arrive. Removed containers should be placed on an impermeable contained surface (example poly liner in a depression) to prevent further seepage.



4.2.2 Containment on Ice

Spills on ice will be affected by the strength of the ice and the floating or sinking characteristics of the materials. The safe bearing capacity of ice has to be carefully assessed. General rules about ice strength include:

1. White ice is only 1/2 as strong as Blue ice.
2. Reduce load by 1/2 if cracks are parallel to travel.
3. Reduce load by 3/4 if cracks are both parallel and normal to travel.
4. Use extreme care if weather is extremely cold after a warm period or warm after a cold period.
5. Control speed in shallow water to avoid wave build up.

If the spill does not penetrate the ice, and the ice is generally safe to work on, containment will take the same form as containment on land.

If the spill penetrates the ice, then the situation is similar to spills in open water. If the material floats then the ice will be broken to install a containment boom. The ice between the spill and the boom will be collected and disposed of with the spilled materials. In standing water under the ice, the primary effort should be to recover the material.

4.2.3 Containment on Snow

Snow is one of the best adsorbents, as spill materials will migrate into the snow until they become immobile. Snow should be used as much as possible when it is available. Snow provides protection against the spread of fire if the spill is burnable and is located where burning is practical. Snow also provides flotation of spilled materials after the snow melts during burning.

Contaminated, saturated snow facilitates removal of the contaminant to a recovery or disposal site. Recovery or disposal sites will be determined by the contaminant and the location of the spill. If the contaminate is acceptable within the limits of the Soil Remediation facility it will be taken there. Care should be exercised when using snow since increase migration of wastes could result.

Methods to prevent a spill on snow from spreading include:

1. Compact the snow around the outside perimeter of the spill area, this is easily done with a snowmobile.
2. Construct and compact snow dams.
3. Locate the low point of the spill area, then clear channels in the snow to allow material not absorbed to flow into the low area.
4. Once collected the spill material contained in the low area can either be shovelled in to containers or picked up using mobile heavy equipment and then transported to an approved disposal site.



4.2.4 Containment on Land

In all cases of liquid spills, the initial containment step is to prevent further dispersion. This is done with cut-off ditches and diking as needed around the spill utilizing mobile heavy equipment. If necessary, absorbents (example Zorbal, Hazorb Pillows, peat moss, sawdust) or gelling agents (example - Chemgel) should be spread to prevent further spread or seepage.

Dykes

Dykes can be created using soil to surround a spill on land. These dykes are constructed around the perimeter or down slope of the spill. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of liquid that may reach it. A plastic tarp can be placed on and at the base of the dyke such that the liquid can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating slowly a dyke may not be necessary and sorbents can be used to soak up liquids before they migrate away from the spill.

Trenches

Trenches can also be dug out to contain spills as long as the top layer of soil is thawed. Shovels, picks, axes or a loader can be used depending on the size of the trench and accessibility. It is recommended that the trench be dug to the bedrock or permafrost, which will then provide a containment layer for the spilled liquid. The liquid can then be recovered using a pump or sorbent materials.

4.2.5 Fire or Explosion

When fire is associated with a spill of hazardous material, extinguishing the fire is a necessary step. The fire may prevent efforts to stop or minimize the spillage. In all cases the first step is to clear people from the surrounding area.

Dykes are to be constructed down slope from liquid spills, to minimize spreading of fire and contain unburned fluid. Foam, CO₂ or water will then be used as appropriate for the fire. Particular care must be taken to prevent inhalation of vapours that are products of combustion.

When the fire is extinguished, proceed to stop further spillage, contain the spill, and initiate appropriate clean up measures.

4.3 MANAGING SPILL RELATED WASTES

Once a spill of reportable size has been contained, the GN-CGS will consult with the GN, Department of Environment and the Aboriginal Affairs and Northern Development Canada (AANDC) Inspector to determine the level of clean-up required. Generally, loose material should be scooped up (using equipment appropriate to the spill size) and transferred onto containers. Any soil beneath the spill, which may have been contaminated, should also be removed where possible, and disposed of with the recovered material. In most cases, clean-ups are initiated at the perimeter of the spill moving towards the centre. Absorbent pads and booms can be used to clean up and contain spills which then must be placed in plastic bags for appropriate disposal as per the regulatory agencies direction. Petroleum hydrocarbon contaminated soils can be placed in the landfarm facility for treatment.

Final disposal of the recovered material will be determined in consultation with the regulatory officials and the advice of the manufacturer.



Following clean-up, all equipment and tools are to be washed properly and decontaminated, or replaced if this is not possible. Water generating from washing procedures will be properly disposed of in accordance with the regulatory agencies directions.

4.4 RESTORING AFFECTED AREAS

As mentioned earlier, once a spill of reportable size has been contained, the GN-CGS will consult with the AANDC or lead agency inspector assigned to the file to determine the level of clean-up required. The Inspector may require a site specific study to ensure appropriate clean up levels are met. Criteria that may be considered include natural biodegradation, replacement of soil and revegetation.



5 Spill Response Training

5.1 GENERAL

All response members will be trained in the following:

1. Spill awareness & prevention
2. Methods of detection
3. Types of spills & seasonal conditions
4. Report procedures & Initial responses
5. Spill response kit
6. Clean-up & site remediation
7. Occupational health & safety, protective equipment & selection
8. Safe operation of Machinery & tools
9. Construction of a containment berm using soil or snow & plastic liner

5.2 SPILL KITS

There is to be a spill kit located in the response vehicle containing the following:

- 360 liter polyethylene over pack drum
- Oil sorbent booms
- Oil sorbent sheets
- Drain cover
- Caution tape
- Plugging compound
- Nitril gloves
- Safety goggles
- Tyvek coveralls
- Instruction Booklet
- Disposal Bags

5.3 SPILL REPORT FORM

See appendix B.



6 Resource Inventory

The following resources can be attained for immediate spill response through contacting each organization at the given numbers.

Table 6.1: Hamlet of Chesterfield Inlet Resources

Resource	Name	Contact
Excavation Equipment	Public Works Shop	(867) 898-9914

Table 6.2: 24-Hour Emergency Contact Information

Resource	Name	Contact
Spill Response Coordinator	Regional Director, GN-CGS	(867) 645-8153 (867) 645-3625
Fire & Rescue	Hamlet Fire Hall	(867) 898-4422
Spill Notifications	NWT/NU 24-Hour Spill Line	(867) 920-8130

Table 6.3: Community & Other Resources

Resource	Name	Contact
Notifications	GN-CGS PPD Regional Office	(867) 645-8100
	Manager of Field Operations - Aboriginal Affairs and Northern Development	Phone: (867) 975-4295 Fax: (867) 975-6445
	GN Department of Environment	(867) 898-9130
	Environment Canada	(867) 669-4725
	Department of Fisheries & Oceans	(867) 874-5500
	Kitikmeot Inuit Association	(867) 983-2458

6.1 MSDS SHEETS

No MSDS sheets are stored on site due to the contaminated soil being Type B.



SPILL CONTINGENCY PLAN
FOR CHESTERFIELD INLET LANDFARM
OCTOBER 1, 2013

Appendix A: Map

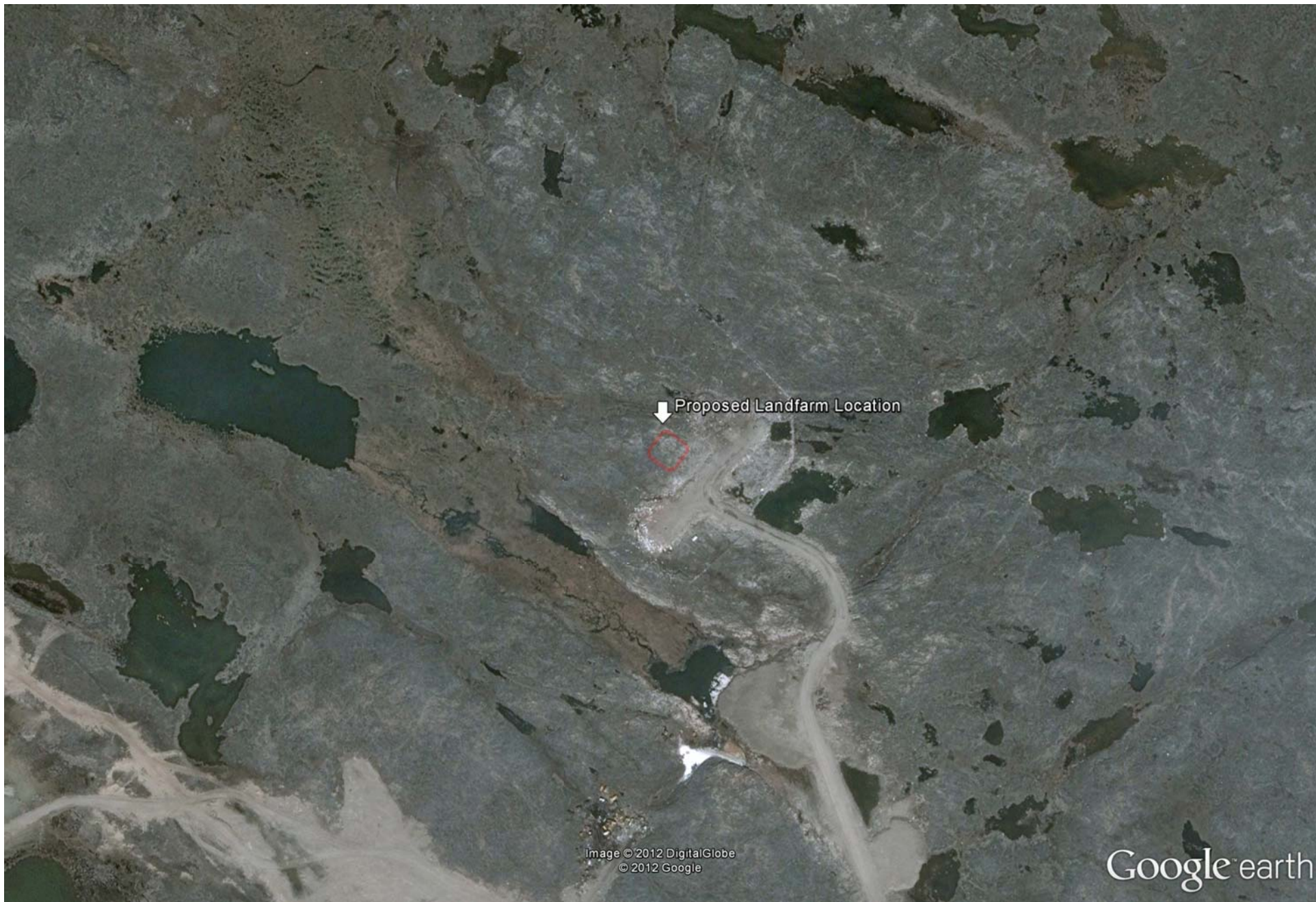


image © 2012 DigitalGlobe
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Google earth

Google Earth Pro

feet
meters





SPILL CONTINGENCY PLAN
FOR CHESTERFIELD INLET LANDFARM
OCTOBER 1, 2013

Appendix B: 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 ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____
	B OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME			
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			LONGITUDE		
	DEGREES	MINUTES	SECONDS	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	EMPLOYER	LOCATION CALLED	REPORT LINE NUMBER
		STATION OPERATOR		YELLOWKNIFE, NT	(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					



SPILL CONTINGENCY PLAN
FOR CHESTERFIELD INLET LANDFARM
OCTOBER 1, 2013

Appendix C: Reportable Spill List

Table of Immediately Reportable Spill Quantities

TDG Class	Substance for NWT 24-Hr Spill Line	Immediately Reportable Quantities
1 2.3 2.4 6.2 7 None	Explosives Compressed gas (toxic) Compressed gas (corrosive) Infectious substances Radioactive Unknown substance	Any amount
2.1 2.2	Compressed gas (flammable) Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 L
3.1 3.2 3.3	Flammable liquids	> 100 L
4.1 4.2 4.3	Flammable solids Spontaneously combustible solids Water reactant	> 25 L
5.1 9.1	Oxidizing substances Miscellaneous products or substances excluding PCB mixtures	> 50 L or 50 kg
5.2 9.2	Organic peroxides Environmentally hazardous	>1 L or 1 kg
6.1 8 9.3	Poisonous substances Corrosive substances Dangerous wastes	> 5 L or 5 kg
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, wastewater, 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 minutes or more