Hope Bay Project
Spill Contingency Plan

January 2014

Quick References

Site Emergency Phone Numbers

Contact	Day / Night
General Main Line and Emergency (Nuna Office)	1-780-702-6879
Environmental Site Office	1-867-988-0569
Surface Manager	1-867-988-0562 (off site: 1-604-947-9707 (Office); 1-604209-1726 (Cell))
Nuna Project Manager (also fills in for Surface Manager)	1-780-702-6879
Chief Operations Officer (COO) – Grant Goddard	1-416-628-0216 (Office) 1-519-984-4021 (Cell)
Director, External and Community Affairs, Cambridge Bay – Alex Buchan	(867) 983-2385 (Office) (867) 444-0702 (Cell)
Environmental Manager	1-250-538-2306 (Katsky Venter Cell) 1-778-210-1676 (Lea-Marie Bowes-Lyon Cell)
President – Gord Morrison	1-416-628-0216 (Office) 705-497-4077 (Cell)
Chief Executive Officer (CEO) – Catharine Farrow	1-416-628-0216 (Office) 705-669-7900 (Cell)

Site Radio Channels

Channel 1	Doris Emergency
Channel 2	General
Channel 3	Aviation
Channel 4	Roads

Key Government Contacts

Organization		Location	Telephone	Fax
NT-NU Spill Centre	24 hour Spill Report Line	Yellowknife	867-920-8130	867-873-6924
Canadian Coast Guard – Central and Arctic Region (Any discharge to the marine environment during fuel transfer between vessel and OHF)	24 hour Spill Report Line	Yellowknife	800-265-0237	
GN Department of Environment	Director Environmental Protection Division	Iqaluit	867-975-7729	
Nunavut Water Board	Executive Director	Gjoa Haven	867-360-6338	867-360-6369
Kitikmeot Inuit Association (KIA)	Sr. Lands Officer	Kugluktuk	867-982-3310	867-982-3311
AANDC (Aboriginal Affairs and Northern Development Canada - formerly INAC)	Field Operations Manager	Iqaluit	867-975-4295	867-979-6445
AANDC (Aboriginal Affairs and Northern Development Canada - formerly INAC)	Inspector	Iqaluit	867-975-4548	867-979-6445
Environment Canada	Manager of Enforcement	Yellowknife	867-669-4730	867-669-3663
DFO (Fisheries & Oceans Canada)	Habitat Team Leader	Ottawa	705-522-9909	

Other Resources Available

Organization	Contact	Location	Telephone
Mackenzie Delta Spill Response Corporation	Tim Taylor	Inuvik	403-370-7887
Riverspill	Ian Lambton	Burnaby	604-434-0994

Reportable Spills (Spill Reporting Regulations Schedule B)

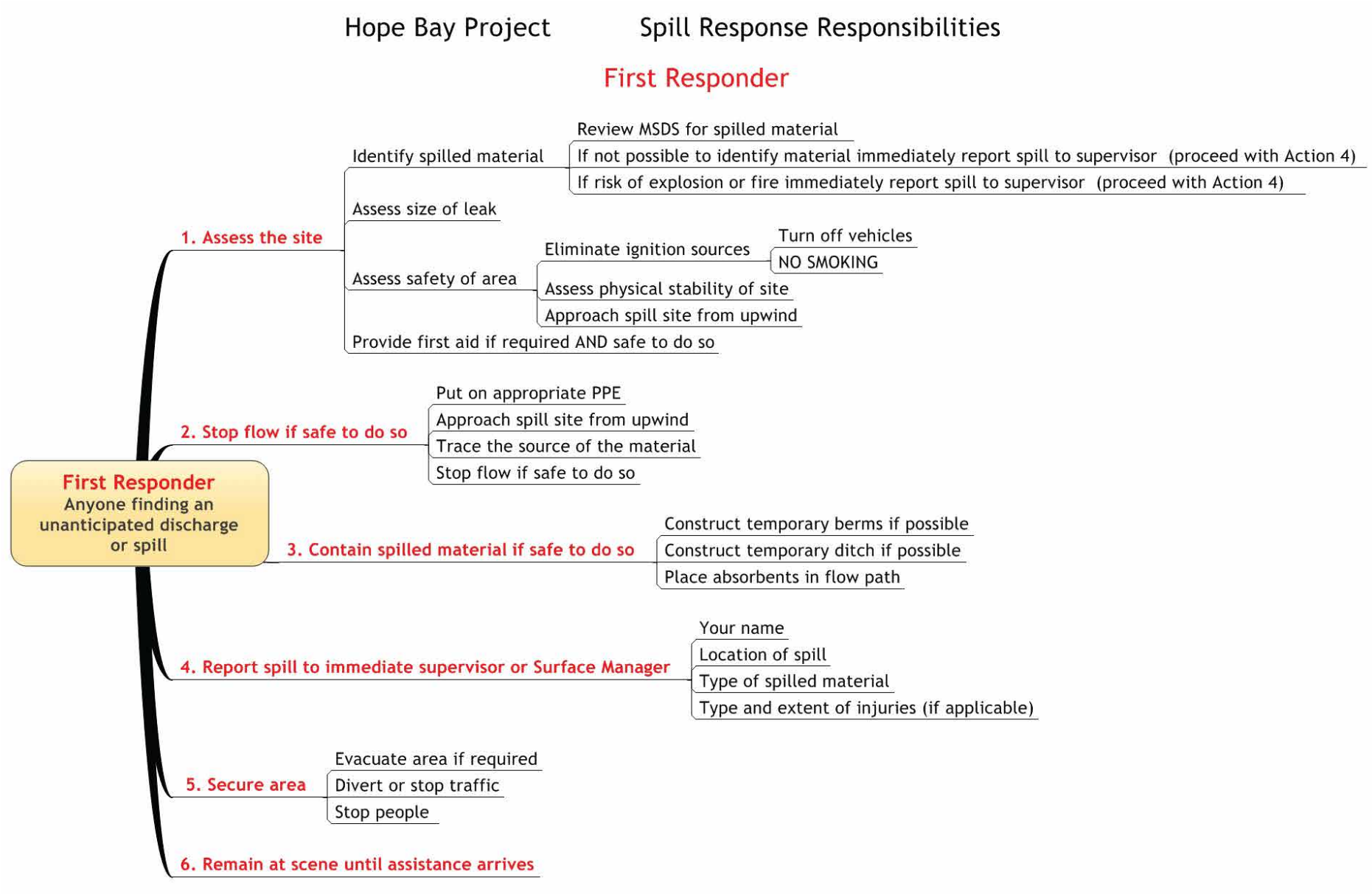
Description of Contaminant	Amount Spilled
Explosives	Any amount
Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 litres.
Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 litres.
Compressed gas (toxic)	Any amount
Compressed gas (corrosive)	Any amount
Flammable liquid	100 litres
Flammable solid	25 kilograms
Spontaneously combustible solids	25 kilograms
Water reactant solids	25 kilograms
Oxidizing substances	50 litres or 50 kg
Organic peroxides	1 litre or 1 kilogram
Poisonous substances	5 litres or 5 kilograms
Infectious substances	Any amount
Radioactive	Any amount
Corrosive substances	5 litres or 5 kilograms
Miscellaneous products or substances excluding PCB mixtures	50 litres or 50 kilograms
Environmentally hazardous	1 litre or 1 kilogram
Dangerous wastes	5 litres or 5 kilograms
PCB mixtures of 5 or more parts per million	0.5 litres or 0.5 kilograms
Other Contaminants	100 litres or 100 kilograms

In the event that a particular material spill meets or exceeds the amount specified in the above table the Environmental Manager will immediately report the spill by telephone to the NT-NU 24 Hour Spill Report Line, Yellowknife, Tel: 867-920-8130 (Fax: 867-873-6924) using the NT-NU Spill Report form. A sample NT-NU Spill Report form is provided as Appendix B.

Any spill or discharge that occurs to the marine environment must immediately be reported to the regional Canadian Coast Guard station at Tel: 800-265-0237.

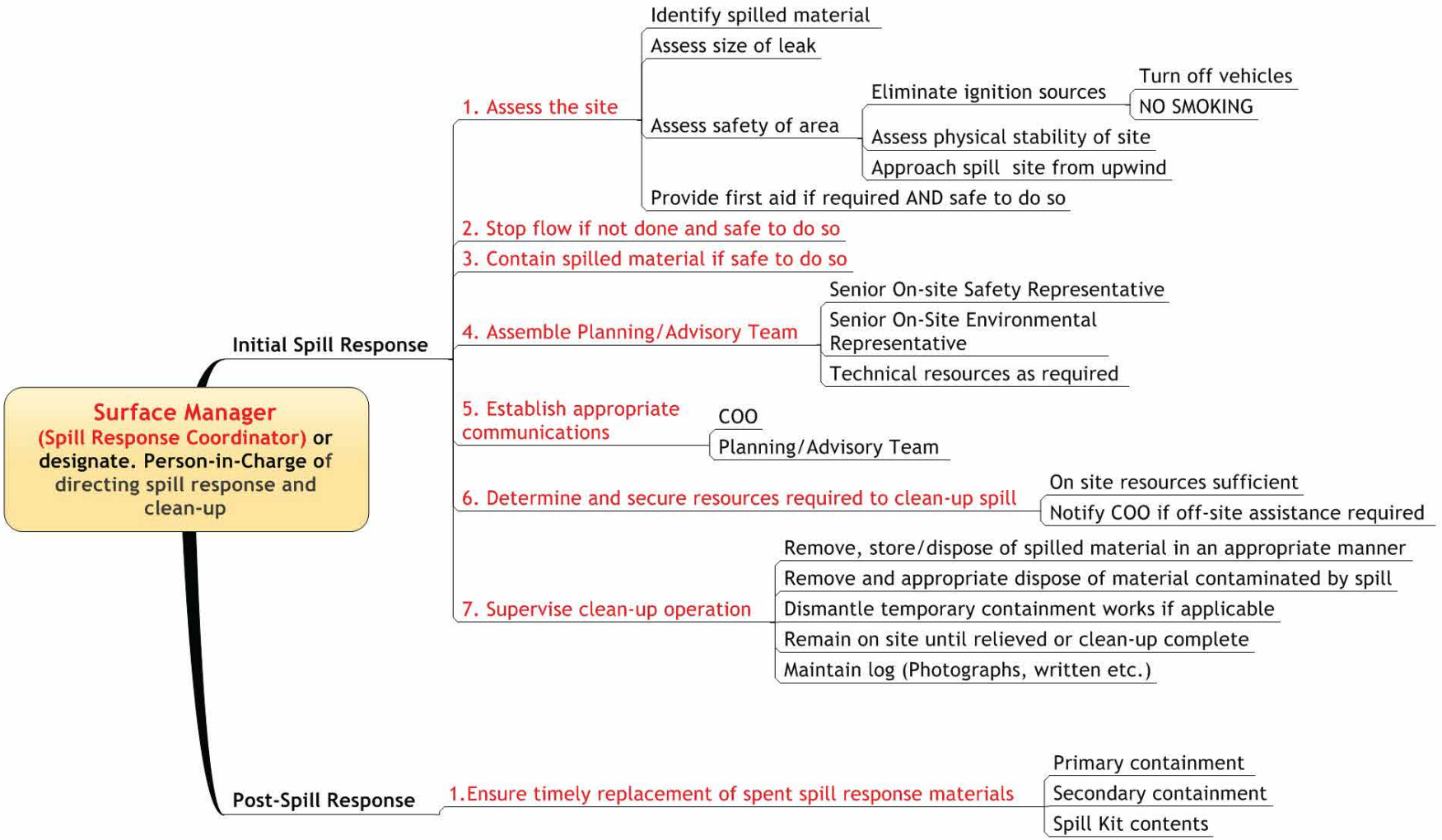
Environment Canada recommends that all releases of harmful substances, regardless of quantities, be immediately reportable where the release:

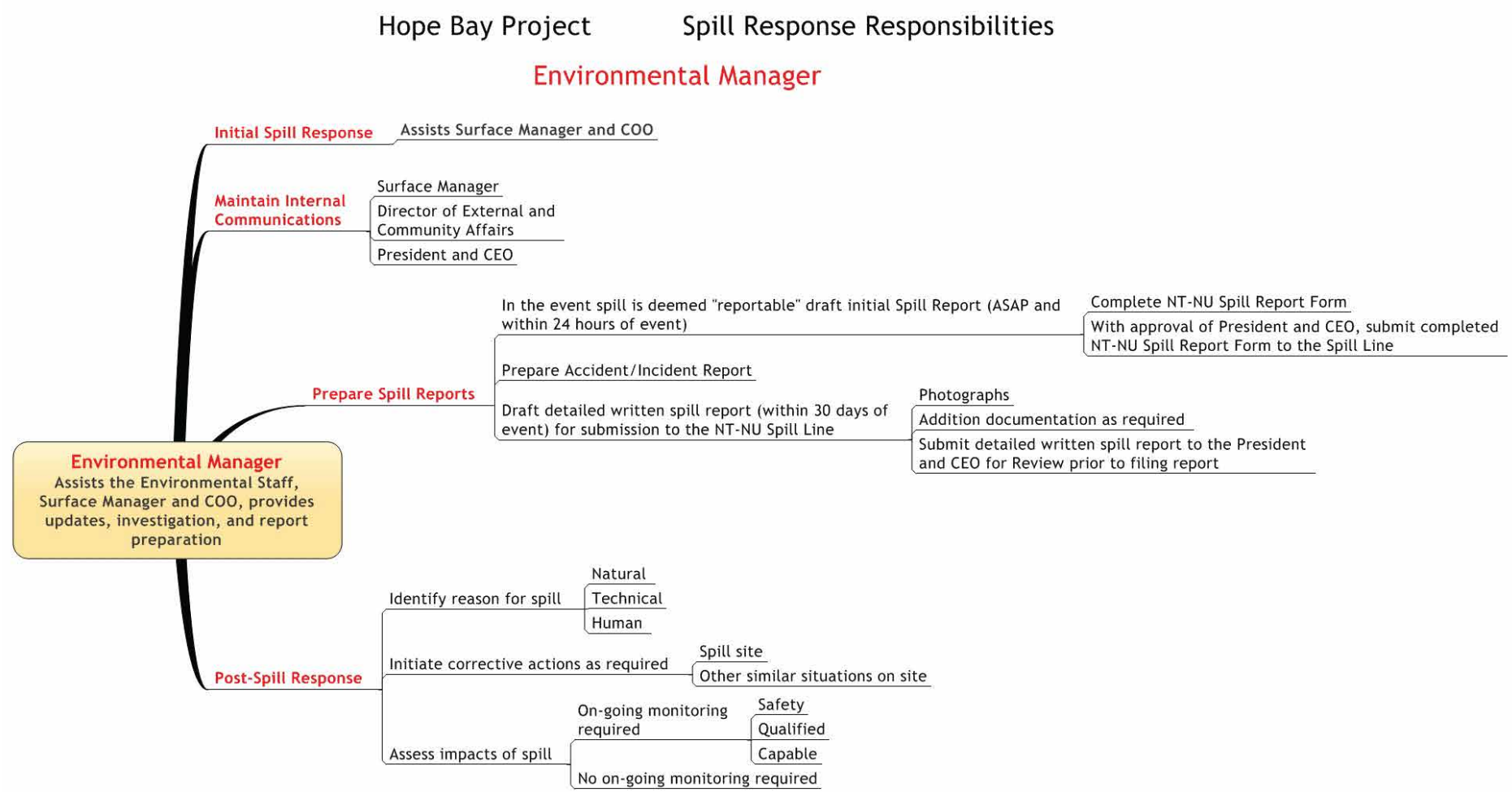
1. is near or into a water body;
2. is near or into a designated sensitive environment or sensitive wildlife habitat;
3. poses an imminent threat to human health or safety; or
4. poses an imminent threat to a listed species at risk or its critical habitat.

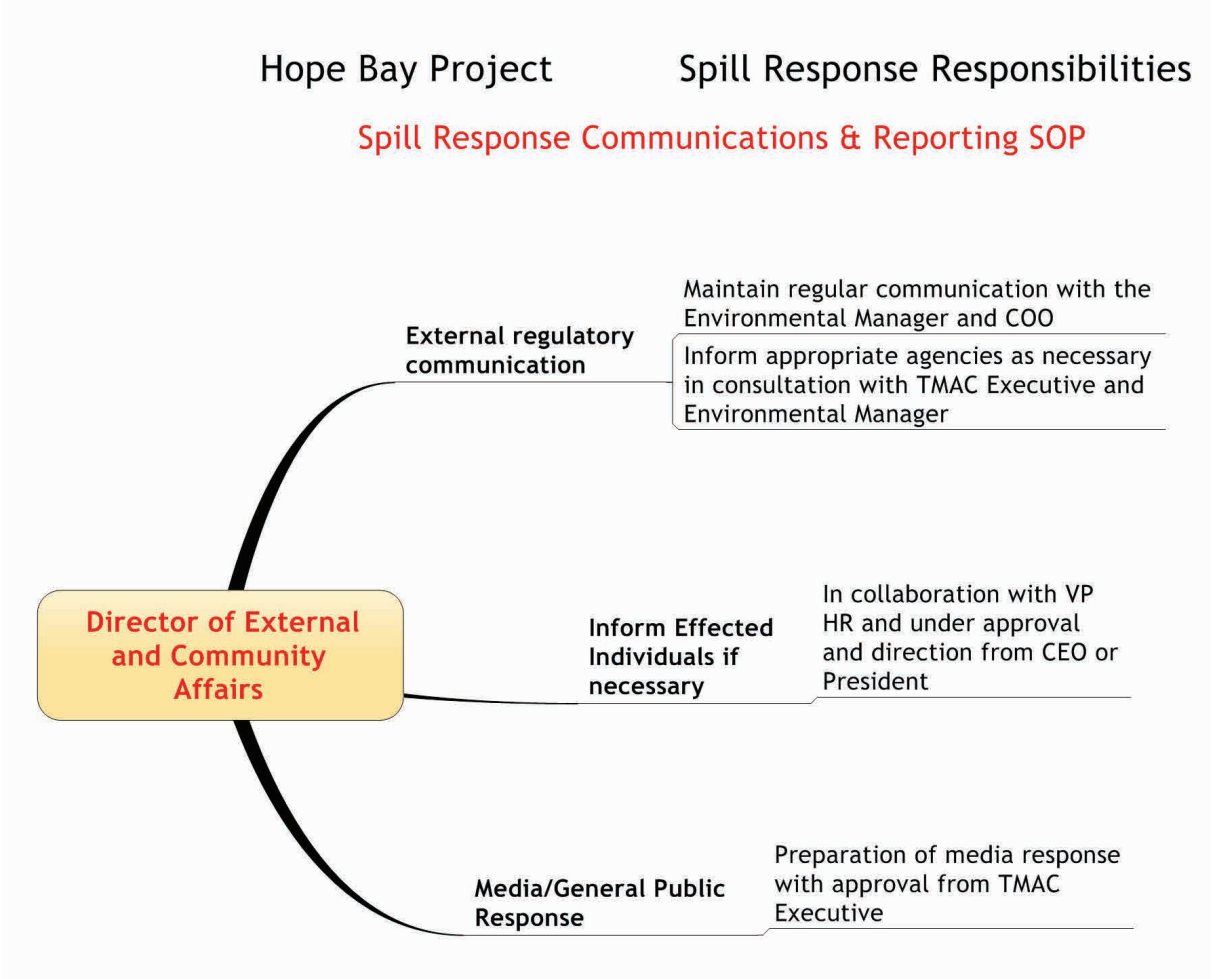

Hope Bay Project
Spill Response Responsibilities
First Responder
First Responder
Anyone finding an unanticipated discharge or spill
1. Assess the site
Identify spilled material
Review MSDS for spilled material
If not possible to identify material immediately report spill to supervisor (proceed with Action 4)
If risk of explosion or fire immediately report spill to supervisor (proceed with Action 4)
Assess size of leak
Assess safety of area
Eliminate ignition sources
Turn off vehicles
NO SMOKING
Assess physical stability of site
Approach spill site from upwind
Provide first aid if required AND safe to do so
2. Stop flow if safe to do so
Put on appropriate PPE
Approach spill site from upwind
Trace the source of the material
Stop flow if safe to do so
3. Contain spilled material if safe to do so
Construct temporary berms if possible
Construct temporary ditch if possible
Place absorbents in flow path
4. Report spill to immediate supervisor or Surface Manager
Your name
Location of spill
Type of spilled material
Type and extent of injuries (if applicable)
5. Secure area
Evacuate area if required
Divert or stop traffic
Stop people
6. Remain at scene until assistance arrives

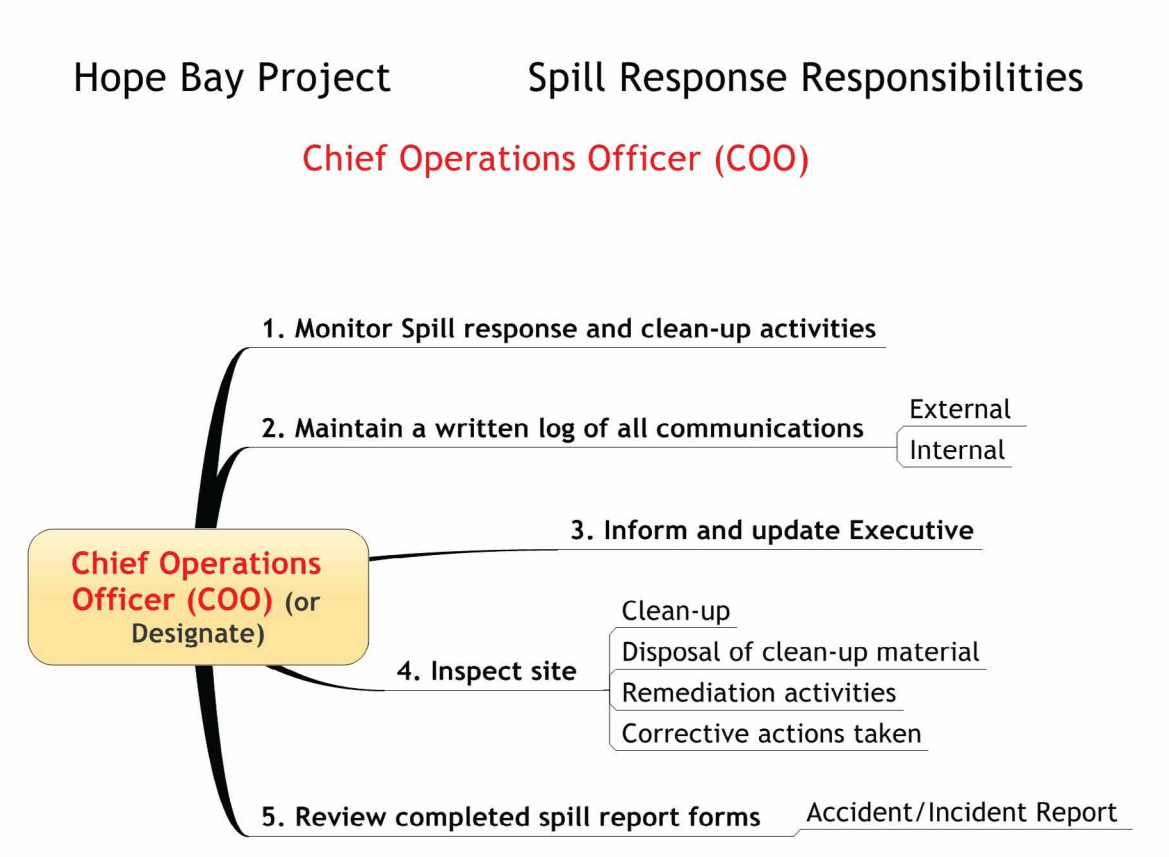
Hope Bay Project Spill Response Responsibilities

Surface Manager *(Spill Response Coordinator)*

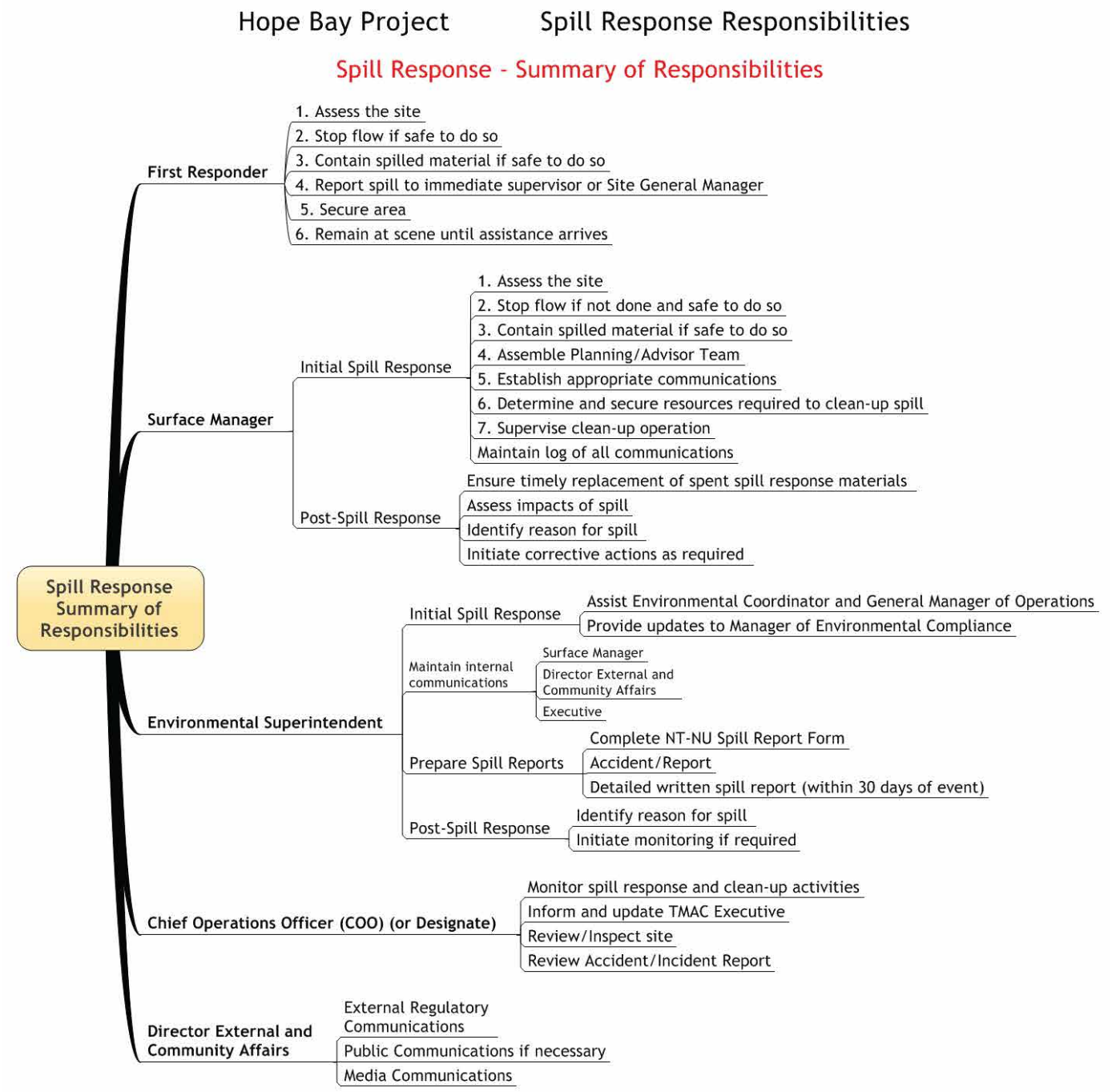



Hope Bay Project Spill Response Responsibilities
Environmental Manager
Initial Spill Response
Assists Surface Manager and COO
Maintain Internal Communications
Surface Manager
Director of External and Community Affairs
President and CEO
Prepare Spill Reports
In the event spill is deemed "reportable" draft initial Spill Report (ASAP and within 24 hours of event)
Complete NT-NU Spill Report Form
With approval of President and CEO, submit completed NT-NU Spill Report Form to the Spill Line
Prepare Accident/Incident Report
Draft detailed written spill report (within 30 days of event) for submission to the NT-NU Spill Line
Photographs
Addition documentation as required
Submit detailed written spill report to the President and CEO for Review prior to filing report
Environmental Manager
Assists the Environmental Staff, Surface Manager and COO, provides updates, investigation, and report preparation
Post-Spill Response
Identify reason for spill
Natural
Technical
Human
Initiate corrective actions as required
Spill site
Other similar situations on site
Assess impacts of spill
On-going monitoring required
Safety
Qualified
Capable
No on-going monitoring required

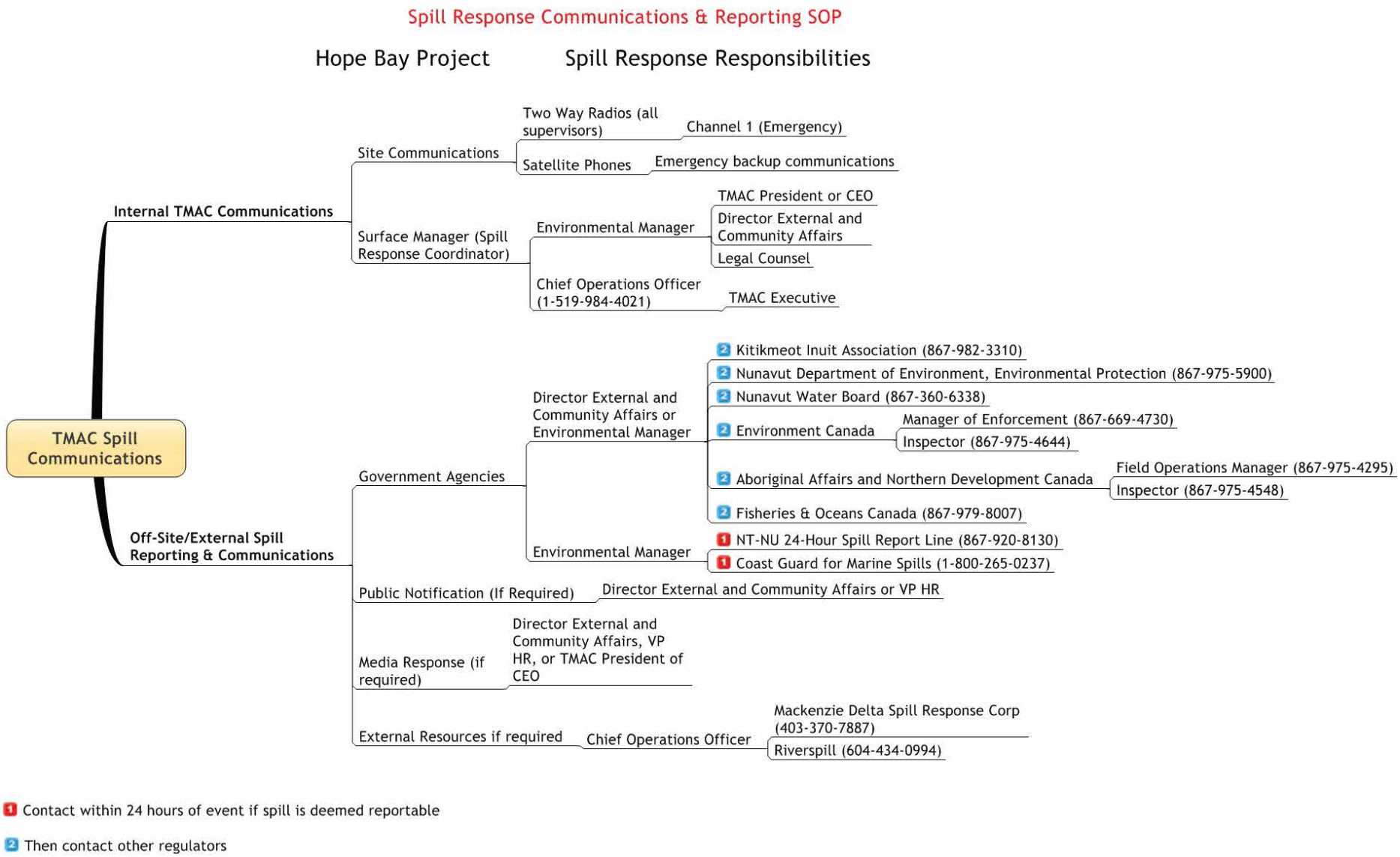

Hope Bay Project
Spill Response Responsibilities
Spill Response Communications & Reporting SOP
Director of External and Community Affairs
External regulatory communication
Maintain regular communication with the Environmental Manager and COO
Inform appropriate agencies as necessary in consultation with TMAC Executive and Environmental Manager
Inform Effected Individuals if necessary
In collaboration with VP HR and under approval and direction from CEO or President
Media/General Public Response
Preparation of media response with approval from TMAC Executive


Hope Bay Project
Spill Response Responsibilities
Chief Operations Officer (COO)
Chief Operations Officer (COO) (or Designate)
1. Monitor Spill response and clean-up activities
2. Maintain a written log of all communications
External
Internal
3. Inform and update Executive
4. Inspect site
Clean-up
Disposal of clean-up material
Remediation activities
Corrective actions taken
5. Review completed spill report forms
Accident/Incident Report

Spill Response - Summary of Responsibilities



Spill Response - Communications Summary



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1 Introduction

1.1 Spill Contingency Plan Objectives

This Hope Bay Spill Contingency Plan (Plan) is intended to provide all Hope Bay operating staff with a summary of spill response procedures for all areas of the Hope Bay Belt under lease by TMAC Resources Inc. (TMAC). This document is a portion of the Hope Bay Emergency Response Plan, which covers other non-spill related emergencies.

This plan fulfills the requirements for a Spill Contingency Plan under the Project Certificate (N0. 003) issued by the Nunavut Impact Review Board and the three water licences issued by the Nunavut Water Board (2AM-DOH1323, 2BE-HOP1222, and 2BB-BOS1217). This plan has been revised to reflect the change in project ownership to TMAC, while remaining in a Care and Maintenance phase. This plan will be revised as required, and prior to returning to the Operations phase. Due to the limited number of personnel on site during care and maintenance, it should be recognized that designates may be identified to preform that roles identified in this plan, and that occasionally, more than one role may be held by one person.

In general, the principles of this Plan are to ensure that:

- Human life is protected and the potential for injury is minimized to the extent possible;
- All adverse environmental impacts are kept to a minimum;
- Resources are used effectively and efficiently; and
- All required corporate and regulatory reporting is completed on time and in the prescribed manner.

The focus of this Plan is to provide:

- A framework to be followed to ensure that accountability for the performance of the spill response activities are defined;
- A clear set of procedures for every employee should he/she identify an unanticipated discharge or spill (i.e. First Responder procedures);
- A clear chain of command, contacts and reporting procedures to be followed for all responses to spills;
- A defined list of responsibilities to be followed in conducting spill clean-up activities and ensure that the list is communicated to site staff;
- Information on available resources and potential operational hazards/risks that may be encountered during spill response activities;
- Reporting and record keeping requirements for spills and spill response activities to facilitate tracking of response progress, incident investigation and mitigation planning after an event;
- A defined method to review all spill events and implement initiatives to reduce repeat occurrences; and
- A plan to ensure the regular review and update of the Hope Bay Project Spill Contingency Plan and to complete regular inspections of all spill kits (location and inventory) and to inventory all on-site hazardous materials.

Prompt, effective and organized responses to an unanticipated discharge or spill will enhance the health and safety of all employees, serve to minimize, to the extent possible, the potential adverse environmental impacts resulting from such an event and ensure effective communication with the appropriate regulatory agencies and the general public.

1.2 Project Location

The Hope Bay Project is currently in Care and Maintenance. It is located on Inuit Owned Land in the West Kitikmeot region of Nunavut approximately 125 km southwest from Cambridge Bay and 75 km northeast from Umingmaktok (Figure 1). The various elements of the Hope Bay Project are centred at approximately N 68° 09' and W 106° 40' and extend from the head of Roberts Bay (an extension of Melville Sound) at the north end of the project to south of the Boston site located approximately 80 km to the south.

The Hope Bay mineral exploration rights property comprises an area of 1078 km^2 and forms a contiguous block that is approximately 80 km long by up to 20 km wide and consists primarily of the Roberts Bay area.

The Bulk Fuel Storage Facility at Patch Lake was fully dismantled in 2012 and the area is in the process of being reclaimed. There are no hydrocarbons or chemicals stored at the Patch Lake Facility, nor are there plans to store any there. As reclamation work progresses there, fuel or lubes needed will be brought in for immediate equipment use, and a spill kit will be available on site to support operating machinery.

Old Windy Camp is in the process of being decommissioned. The Windy Camp Bulk Fuel Storage Facility was fully dismantled in 2012. There are no hydrocarbons or chemicals stored at Old Windy Camp, nor are there plans to store any. There is a self-contained washcar that may be located in the area for use during reclamation activities. This washcar will be fueled and waste removed as required. Fuel and wastes will be removed prior to any extended periods when it will not be in use or regularly inspected. Any hydrocarbons or chemicals needed for decommissioning the camp structures will be brought to Windy and consumed on an as-needed basis, and during these times a spill kit will be available in proximity to working equipment.

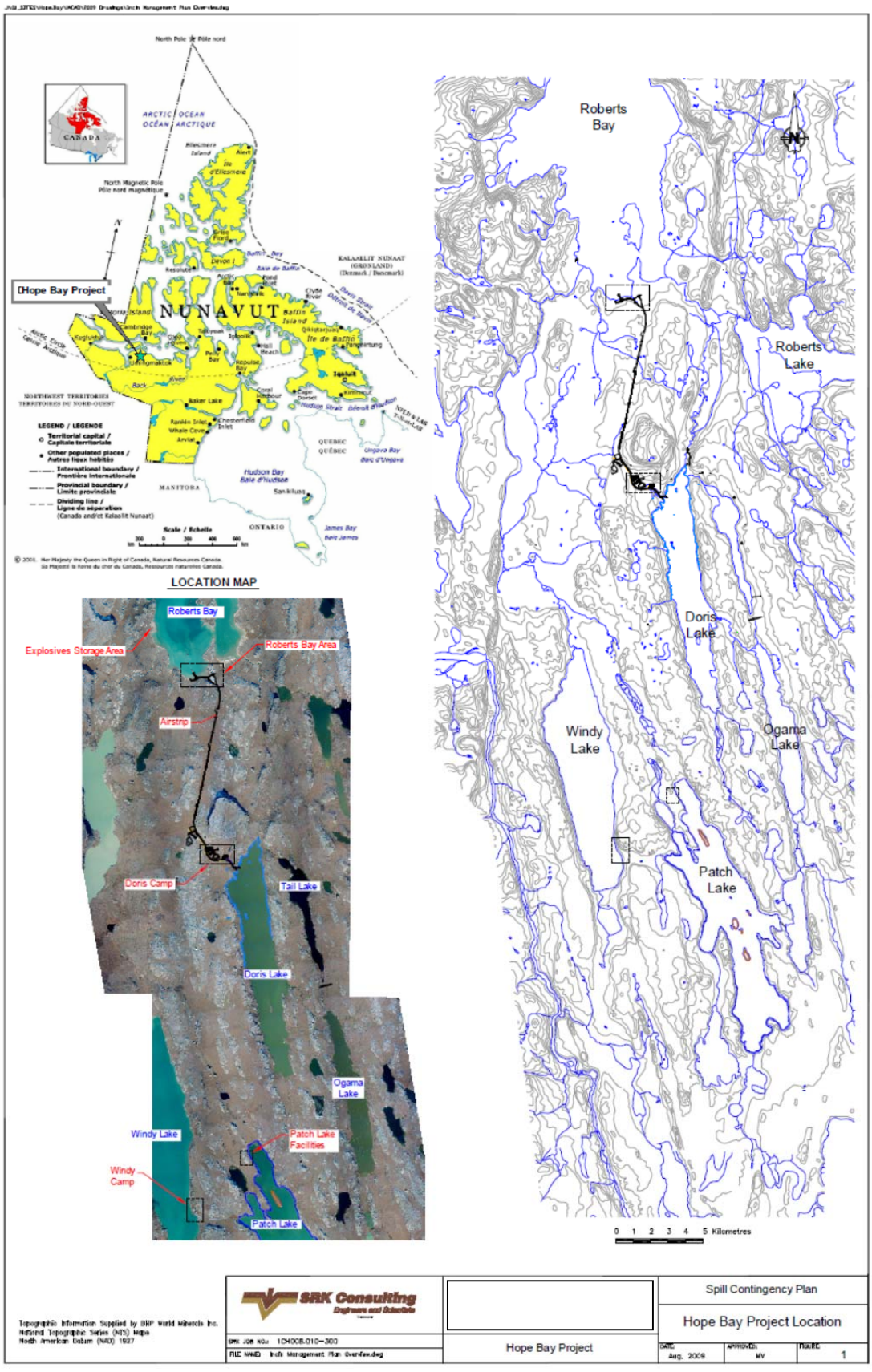


Figure 1: Hope Bay Project Site Location

Figure 2: Roberts Bay Laydown

Note: Red circles are fuel or chemical storage locations.

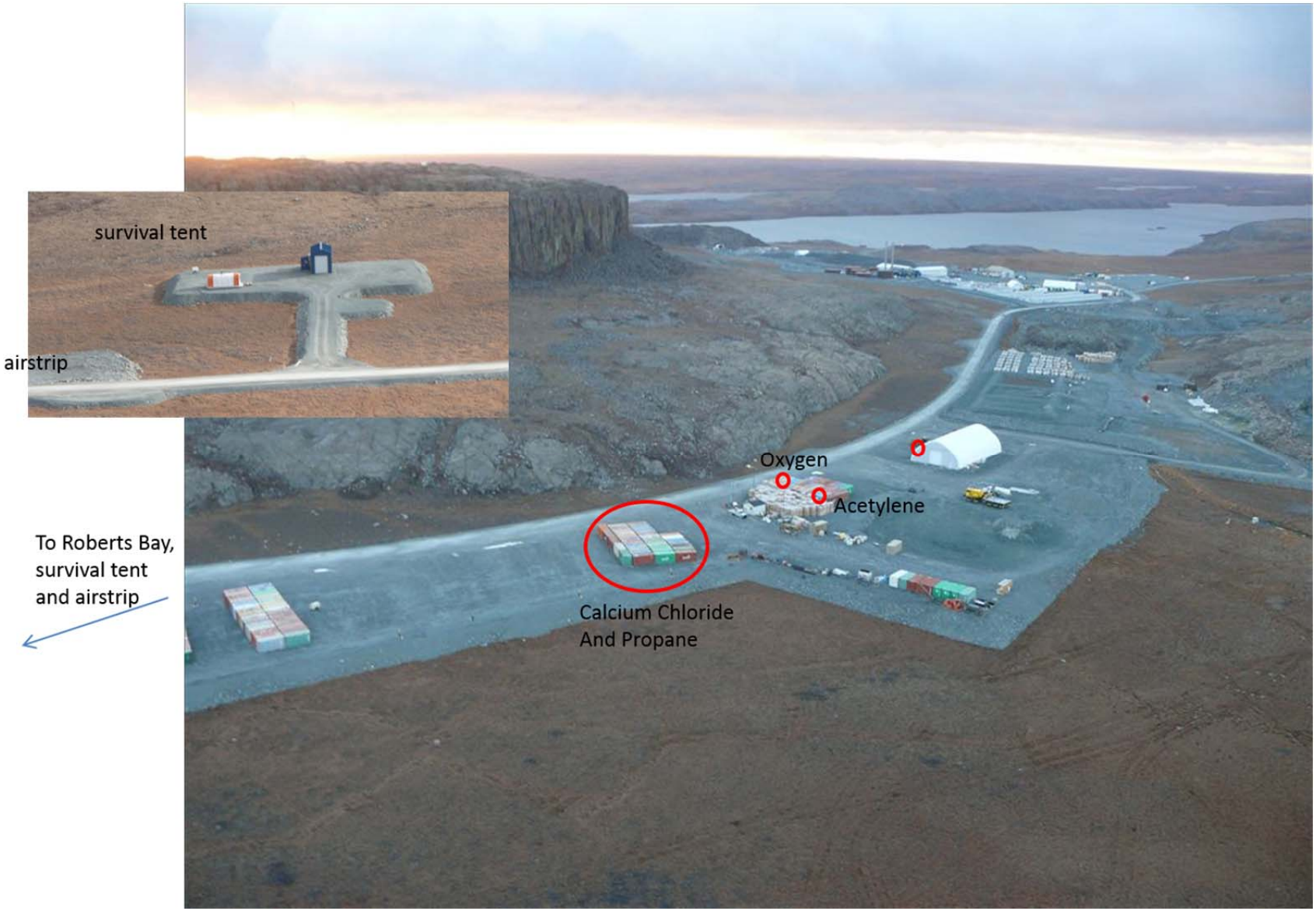
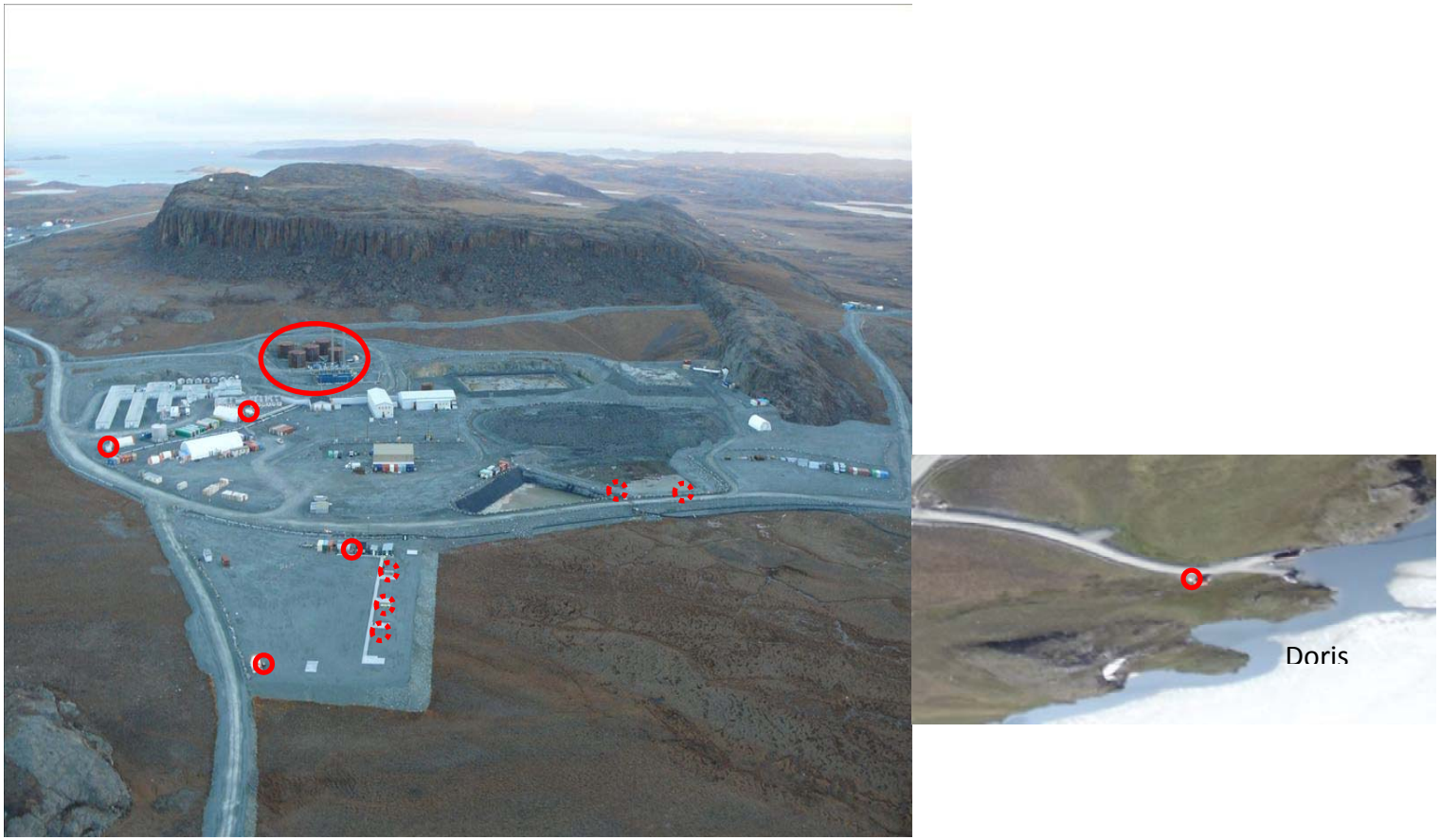


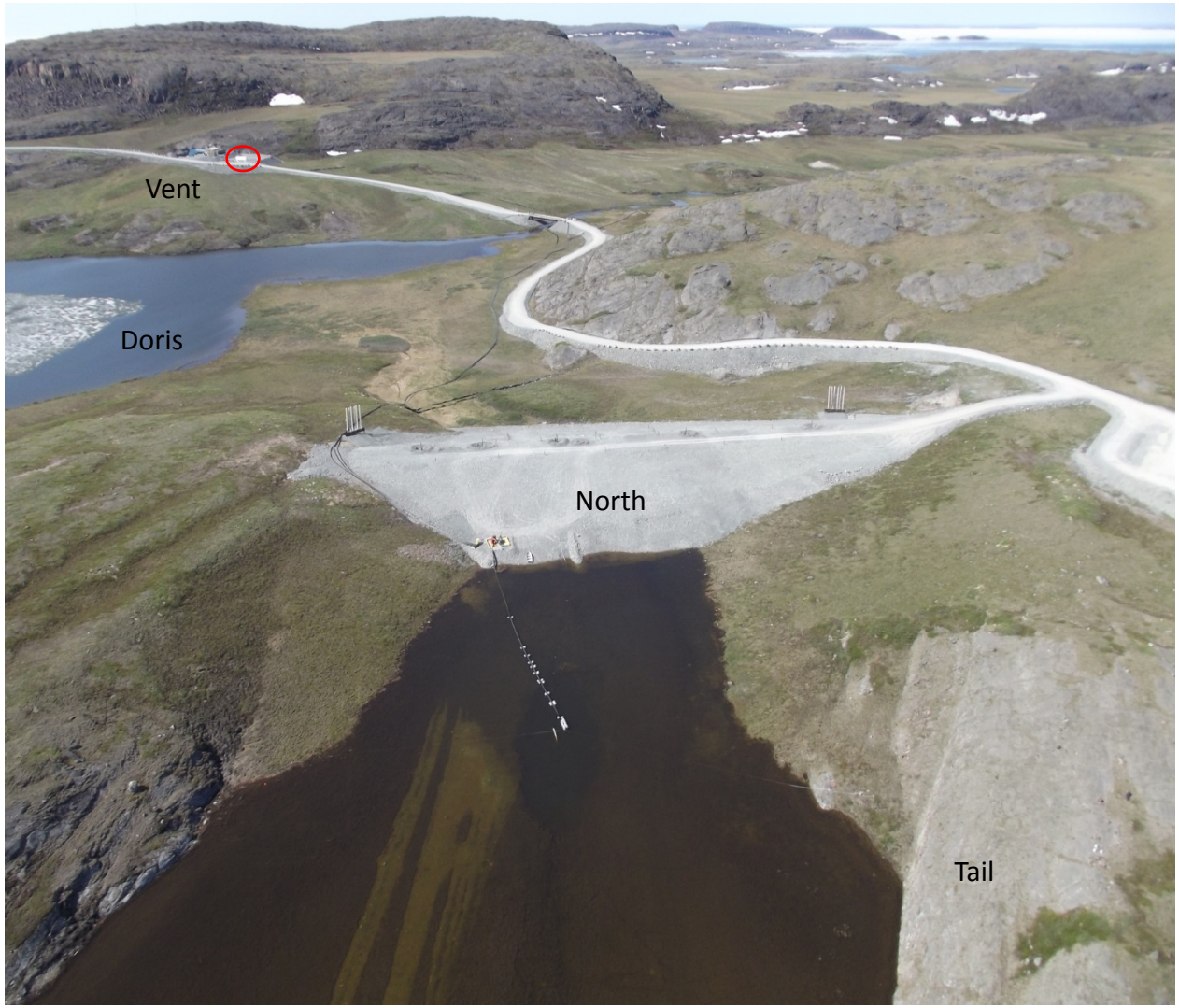
Figure 3: Lower Reagent Pad, Batch Plant Pad, and Survival Tent (Former Explosives Washbay Pad) Layout

Note: Red circles are fuel or chemical storage locations.



Note: Red circles are fuel or chemical storage locations. Dashed line circles are seasonal drum storage

Figure 4: Doris Camp Site Layout

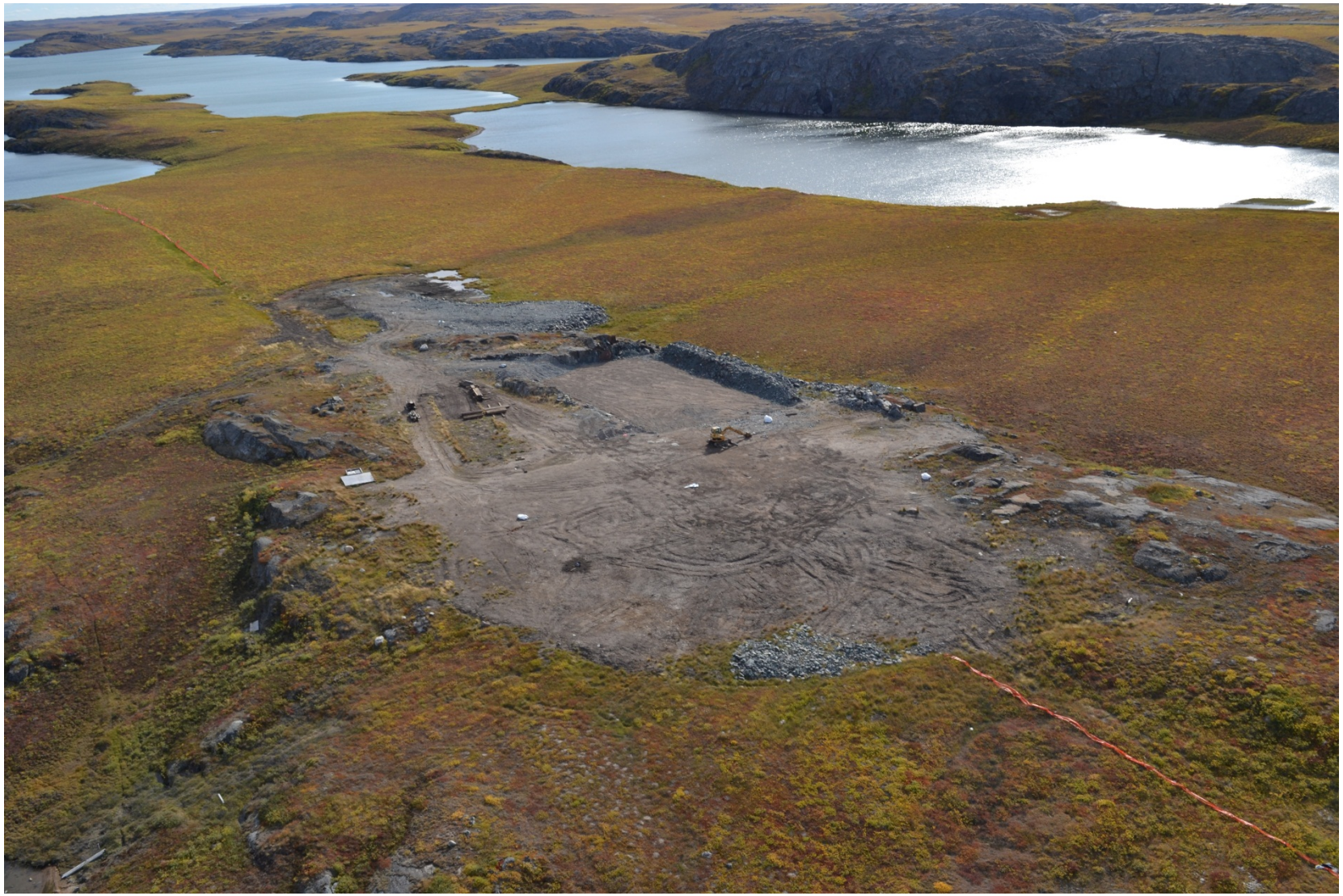


Note: Red circle is this Doris Vent Raise tank, which is empty.

Figure 5: Vent Raise and North Dam

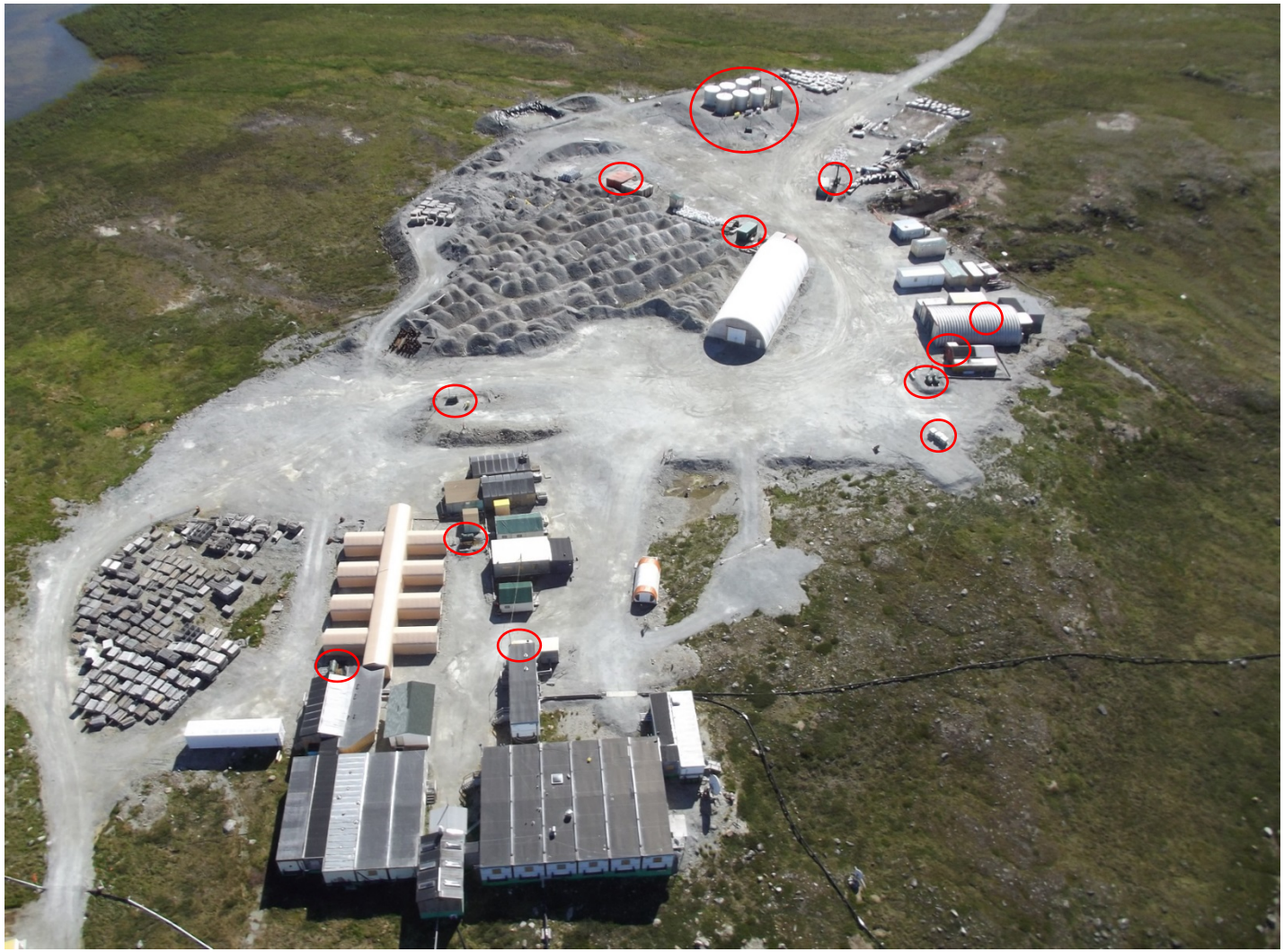
Note: there are no chemicals remaining at Windy Camp. Small amounts of fuel may be brought to the area to support active reclamation projects, and will be removed at the end of the season. Spill kits will be transported with the fuel.

Figure 6: Windy Camp Site Layout



Note: No chemicals are stored at Patch.

Figure 7: Patch Laydown



Note: Red circles are fuel or chemical storage locations

Figure 8: Boston Camp Site Layout

1.3 Hope Bay Project Operator

The Hope Bay Project is owned and operated by:

Project Operator: TMAC Resources Inc.

372 Bay Street, Suite 901
Toronto, ON
M5H 2W9

Hope Bay Project Contacts:

Corporate:

Catharine Farrow
Chief Executive Officer

Tel. 416-628-0216

Gordon Morrison
President

Tel. 416-628-0216

Grant Goddard
Chief Operations Officer

Tel: 416-628-0216

Hope Bay Site:

Environmental Managers

Tel. 1-867-988-0569
Off site: 1-250-538-2306 (Katsky Venter Cell)
1-778-210-1676 (Lea-Marie Bowes-Lyon Cell)

Surface Manager

Kelly Schwenning
Tel. 1-867-988-0562
(off site: 1-604-947-9707 (Office); 1-604209-1726 (Cell))

1.4 Spill Response Resource Inventory

This following section provides a description of the resources available on the Hope Bay Project site for responding to spills.

1.4.1 On - Site Resources

Spill Response Kits (Spill Kits) are in place at the following locations in the Hope Bay Project area:

- Roberts Bay marine spill response sea-cans;
- Roberts Bay 5M litre tank;
- Roberts Bay fuel farm;
- Roberts Bay incinerator;
- Roberts Bay Kingland Ford shop;
- Roberts Bay generator;
- Doris airstrip north apron;
- Doris airstrip south apron;
- Doris power generating facility;
- Doris freshwater intake;
- Doris helicopter pad;
- Doris fuel farm;
- Doris ice airstrip (when in use);
- Doris Warehouse;
- Doris Underground Shop
- Doris oil-water separators;
- Fuel transfer vehicles;
- Boston incinerator;
- Boston maintenance shop;
- Boston winter airstrip (when in use);
- Boston power generating facility;
- Boston freshwater intake (when in use);
- Boston fuel farm;
- Boston oil-water separator;
- Boston helicopter pad;
- All refuelling stations (regardless of location).

Each of these spill kits is clearly labelled and contains, but may not necessarily be limited to:

- 1 roll absorbent (optional);
- 2 plug and dyke kits;
- 1 – 3 m x 4 m tarpaulin;
- 2 pairs of disposable coveralls;
- 4 mini booms (optional);
- 100 spill pads;
- 1 bag of corncob and/or peat moss absorbent;
- 1 bag of gravel type fire retardant granular for aviation stations (helipad and airstrip);
- 2 pair of neoprene gloves [i.e. POL (petroleum/oil/lubricants) resistant];

- 2 sets of splash proof POL resistant goggles;
- 1 collapsible shovel;
- 10 disposable waste bags and ties (contact waste management for drums to contain clean-up materials); and
- A copy of the Spill Kit First Responder Insert (see Quick Reference Section).

The Hope Bay Project also maintains separate, marine focused spill response equipment within 7 moveable containers (sea cans) which are designed to be located in close proximity to the jetty and to be used in the case of a spill during fuel tanker transfer activities. The Hope Bay Oil Pollution Prevention Plan/Oil Pollution Emergency Plan (OPPP) addresses these activities specifically and is updated in years in which fuel offloading activities take place. The OPPP document is reviewed and approved by Transport Canada.

The marine spill response equipment is composed of, but may not necessarily be limited to, the following:

- 450 feet of 24" solid floatation boom;
- 70 lb, 43 lb, 25 lb, and 17 lb Danforth anchors;
- 8 lb Grapnel Anchors;
- 36” sea anchors;
- Anchor pins;
- Anchor Buoys;
- Anchor lines;
- 150 feet Towline;
- Boom towing bridles;
- 1250 feet of skirted booms (preassembled with tow lines, bridles and floats);
- 200 feet of inflatable Shore Saver booms (with inflation kit);
- 1TDS-118 Drum Skimmer;
- 1 P10E Power Pack;
- 2 Pump;
- 175 L Drum Response Kits c/w lids;
- Disposable coveralls (i.e.Tyvek suits);
- POL (petroleum/oil/lubricants) resistant gloves;
- POL resistant goggles;
- Toolbox c/w assorted tools;
- 45 Gallon containers c/w lids;
- Pails and Rubbermaid tubs;
- 300 foot Nylon rope (3/8);
- Bags of Oclansorb^{TM} Peat Moss or crushed corn cobs;
- Bundles of oil sorbent pads;
- Bundles of universal sorbent pads;
- Oil Sorbent booms;
- Universal sorbent booms;
- Bag of Sorbent scraps (spaghetti);
- Containment tanks and berms;

- Plug and dyke kit;
- HAZMAT Disposal Bags and Garbage bags;
- Portable fuel bladders
- Ice scrapers;
- An 18 foot landing craft boat (with boat safety kit); and
- An 18 foot Zodiac (with boat safety kit and repair kit).

All fuel transfer vehicles on site are also equipped with a “trucker” spill kit designed to absorb up to approximately 10 gallons of oil, coolants, solvents or water as well as other hazardous fluids.

In addition, the Hope Bay Project site maintains an on-site inventory of roll, pad and mat absorbents, plug and dyke kits, mini booms, absorbent socks, peat moss, crushed corn cobs, coconut mats, hand tools, and various pieces of heavy equipment including vacuum trucks.

The Hope Bay Project has access to assistance from the Mackenzie Delta Spill Response Corporation, which focuses on the protection of the Arctic Marine environment. The Mackenzie Delta Spill Response Corporation, on the payment of a fee, can provide additional equipment in the event of a significant marine spill including but not limited to a boat, trailer, motor, booms, generators, hoses, first aid equipment, a variety of tools, and personal protective equipment. For a complete list of available equipment see Schedule II of the Oil Pollution Prevention Plan/Oil Pollution Emergency Plan (OPPP). The OPPP also contains contacts for emergency waste management support for soiled materials in the event of a large scale spill and clean-up.

1.4.2 Spill Kit Inspections

Spill Kits will be inspected at least twice per calendar year or after use to ensure that each kit is appropriately located, sound and contains the requisite material in a usable condition. The responsibility for conducting such inspections will be vested in the Environmental Manager. The results of each inspection will be provided to the Surface Manager.

Marine spill supplies will be inspected prior to each year’s fuel offloading events and as per the OPPP.

1.4.3 Off-Site Resources

The Hope Bay Project is a remote location that is only accessible by plane for the majority of the year, with a short open-water ship access season. As the most effective mitigation of a spill condition is rapid and effective mobilization, the Hope Bay Project Spill Contingency Plan does not rely on off-site resources to successfully respond to anticipated upset conditions. The Plan has been developed such that the resources required to respond to spills have been positioned on site. It is anticipated that the Hope Bay Project will have sufficient resources and trained personnel to respond to all types/sizes of spills that could potentially occur on site.

Notwithstanding this, off-site resources are available in the unlikely event that they are required, particularly for a marine response, through the Mackenzie Delta Spill Response Corporation. Details of these resources are located in the OPPP, which is found under a separate cover.

2 Applicable Legislation, Licensing and Guidelines

Part I of Water Licence 2AM-DOH1323 and Part H of Water Licences 2BE-HOP1222 and 2BB-BOS1217 issued to TMAC by the Nunavut Water Board (NWB) specify that the operator shall prepare and provide a Spill Contingency Plan in “accordance with the Spill Contingency Planning and Reporting Regulations developed under Section 34 the Environmental Protection Act (Nunavut). In Water Licence 2BE-HOP1222, “Spill Contingency Plan” is defined as “a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during operations conducted under the licence”. A single Hope Bay Project Spill Contingency Plan has been developed to address the requirements of Water Licences 2AM-DOH1323, 2BE-HOP1222 and 2BB-BOS1217, and Project Certificate Number 003 to provide a consistent spill response framework for the Hope Bay Project that is available to all site personnel so they can effectively and efficiently respond to a spill of petroleum products and/or hazardous materials regardless of where on the Hope Bay Project site they are encountered.

In addition, the Plan was prepared to meet the specifications provided in the Guidelines for Spill Contingency Planning, prepared by Water Resource Division, Indian and Northern Affairs Canada (April 2007). There are no qualifying substances in qualifying quantities requiring an emergency response plan under the E2 regulations.

3 Project Description

3.1 Project Setting

The Hope Bay Project and all components of the supporting infrastructure, with the exception of the jetty, have been constructed on Inuit owned land. The jetty, which extends into Roberts Bay, is located on foreshore Crown Land.

Climate

The Hope Bay Belt has a low arctic eco-climate with a mean annual temperature of -12°C, with winter (October to May) and summer (June to September) mean daily temperature ranges of -50°C to +11°C and -14°C to +30°C, respectively. The mean annual precipitation ranges from 90 mm to 210 mm. Annual lake evaporation (typically occurring between June and September) is estimated to be 220 mm. The average monthly air temperature is typically above 0°C between June and September with the peak in July, and below freezing between October and May with the coldest temperatures usually occurring in February. The mean annual precipitation adjusted for under-catch is approximately 200 mm with 40% occurring as rain between May and October and 60% as snow through the remainder of the year.

Surficial Geology and Permafrost Conditions

The Project area is coastal lowland with numerous fresh water lakes and ponds separated by glacial landforms and parallel running geological intrusions of diabase dykes and sills. The drainage basins are generally long and narrow and predominantly oriented along the north-south axis.

The local topography ranges from sea level at Roberts Bay to 158 m at the summit of Doris mesa, 3 km inland.

Bedrock ridges, oriented north-south parallel with the dominant strike of bedrock units, show the erosive effects of the northward flowing Pleistocene (Keewatin Lobe) continental glacier ice over 10,000 years ago. The surficial active layer over continuous permafrost is approximately 2 m thick. Drill core results indicate soils below the active layer contain interstitial and segregated ground ice. Most of the soils are of marine origin and include clay, silt and some sand. Surface materials include frost-churned mineral and organic soils mantled by a thin cover of tundra vegetation. Patterned ground masks the underlying soils. Small, frost-heaved clay-silt polygons are common. Linear frost cracks occur in raised marine spit deposits. Ice wedge polygons are common. The entire area lies below the post-glacial marine limit of 200 meters above sea level (masl). Pleistocene deposits, including till, are buried beneath Holocene marine sediments deposited during the post-glacial marine emergence. Some glacial deposits show evidence of alterations by marine wave action.

Continuous permafrost extends to -560 m. Ground temperature measurements in the Project area indicate an active zone thickness ranging between 1.5 to 2.6 m and the depth of zero annual amplitude varying between 11 and 17 m. The geothermal gradient measured at the Boston Camp is approximately 18°C km-1, which also indicates a depth of continuous permafrost of approximately –560 m.

Groundwater movement will only occur in the shallow active layer (to a depth of between 1.5 to 2.6 m) during its seasonal thaw period. The permafrost underlying the area is generally impervious to groundwater movements.

Aquatic Ecosystems

The Project area drains to the north into the Arctic Ocean at Roberts Bay. Peak flows typically occur in June during snowmelt. A second smaller peak may occur from rainfall in late August or early September. The streams in the study area are usually frozen with negligible flow from November until May.

The lakes in the area are soft water lakes with near neutral pH and low to moderate acid sensitivity. Total phosphorous levels are low, indicating oligotrophic to mesotrophic conditions. Chloride, sodium, and potassium concentrations are elevated compared to typical lakes in the Slave Structural Province. Some metal levels (*i.e.*, total aluminum, iron, copper, cadmium, chromium, lead and manganese) in certain lakes exceed Canadian Water Quality Guidelines (CWQG) on a seasonal basis. Metal concentrations are generally representative of lakes in undisturbed northern regions. In summer, the lakes are generally well mixed. Wind likely plays an important role in maintaining well-mixed conditions. In shallow lakes, wind appears to cause complete lake turnover. Winter data generally indicates a shallow upper layer of water at or near 0°C, with constant temperatures, not exceeding 2 to 3°C, throughout the remaining water column. The lakes are typically well aerated during the summer; depressed dissolved oxygen (DO) concentrations are recorded near-bottom in winter.

Marine habitat characterization along the shoreline of Roberts Bay was mapped based on aerial observations. The southern shoreline around the mouth of Glenn and Little Roberts outflows is classified as good to excellent habitat for anadromous fish, such as Arctic char.

The Roberts Bay baseline data indicates a stratified and well aerated water column in shallow water during summer, temperatures near 9°C and DO concentrations greater than 11 mg/L. Turbidity and total suspended solids (TSS) levels are low during summer (1.4 NTU and 11 mg/L, respectively). Most median total metal concentrations in Roberts Bay are below detection limits and below the CWQG; exceptions are cadmium and chromium which are occasionally above guidelines.

Vegetation

Vegetation in the Project are can be broadly divided into marine, upland and lowland sub-arctic ecosystems. Marine ecosystems are limited to the edge of the active marine environment and include marine parent materials and high salinity vegetation communities. The upland ecosystems are predominantly sparsely-vegetated and vegetated terrestrial ecosystems are dominated by lichen or bryophyte communities. Most of the lowland ecosystems are wetlands, many of which occur as a combination of wetland fens and bogs. Plant species identified include 19 shrubs, 92 herbs, 18 grasses, 32 sedges and rushes, 21 mosses and 8 species and/or genera of lichen. Inuit traditionally use many local plant species and understand the relationship between plants and caribou habitat requirements including the early showing of plants in snow free areas and the importance of such areas to caribou calving locations in the region. None of the local plants identified during the course of baseline studies are designated as endangered or threatened (COSEWIC, 2004).

Wildlife

Wildlife that occur in the Project area are typical of the Arctic coast. Two caribou herds occur in the area. The Dolphin and Union herd overwinters on the Arctic coast and travels to Victoria Island in the spring to calve and feed during the summer, returning in the fall when the sea ice freezes. This herd occurs at low density in the Project area during the winter months. The Beverley herd calves to the east of the Project Area, in the Queen Maud Gulf Bird Sanctuary. This herd is a combination of

the former Ahiak herd which calved to the east of the Project area, and the former Beverley herd which calved to the north of Garry Lake. During the late 1990s and early 2000s, the Beverly herd joined the Ahiak herd to calve in the Queen Maude Gulf Bird Sanctuary and the combined herd was re-designated as the Beverley herd in 2012. During the late 1990s and early 2000s, the Ahiak herd (prior to merger with the Beverly herd) summer range overlapped the southern portion of the Project area, but the range of this new Beverly herd has moved to the east and no longer overlaps the Project area.

Other large wildlife in the Project area include grizzly bears, muskox, and wolves. Bears occur at a relatively high density along the coast and at rivers containing Arctic char. The area also contains a meso-carnivore group, including wolverine, Arctic and red foxes, and birds include cliff-nesting raptors, waterfowl and upland breeding birds. Ringed seals are regularly observed in Roberts Bay and Melville Sound.

Land & Water Use

The Hope Bay Project is situated almost entirely on Inuit owned land administered by the KIA with minerals development authority vested within Nunavut Tunngavik Inc. (NTI). Mineral rights are also held by the Crown on select areas of the Hope Bay Belt, which include Boston, part of Windy Camp, and the Madrid exploration area.

Protected Areas

There are no protected areas in, or adjacent to the Project area. The closest designated land use restriction is the Queen Maud Gulf Bird Sanctuary located approximately 40 km east of the Hope Bay Belt.

Archaeological/Special Sites

The West Kitikmeot has a diversity of archaeological and historic resources, and such resources comprise an important aspect of Inuit culture, spirituality and perspectives with respect to relationships with the land. Comprehensive baseline surveys for historic and cultural resources in the Project area have been conducted, and have identified over 280 sites with some being in close proximity to Project features.

3.2 Project Activities

The Hope Bay Project, currently in Care and Maintenance, includes the Doris North Camp located at approximately N 68° 08.298’ W 106° 36.612’ was constructed in 2008 and designed to house a maximum of 180 people, as well as the necessary infrastructure to support the camp and exploration drilling and development activities.

Hope Bay Project also includes the Boston Camp located at approximate N 67° 39.454’ W 106° 23.093’, approximately 55 km south of Doris Camp. The Boston Camp site is in Care and Maintenance and typically only used seasonally to support exploration activities. The camp was closed in November 2011 and has not reopened to date, however, the facility was re-supplied with fuel in April 2012 in anticipation of possible exploration work. The camp can house a maximum of 65 people, as well as the necessary infrastructure to support the camp and the exploration drilling activities in the area.

The Hope Bay Project also includes a closed exploration camp, the Windy Camp, located at approximate N 68° 03.715' W 106° 37.109', 10 km south of Doris Camp, and 45 km north of Boston camp. This camp is currently not inhabited and is under ongoing closure and reclamation with regular inspections conducted by Hope Bay Project personnel. Reclamation and decommissioning of the camp area is in progress and will continue over the next several years. Chemicals and bulk hydrocarbons are not stored at Windy Camp. Small amounts of fuel are transported to the site when equipment is in use for maintenance activities; therefore, this Hope Bay Spill Contingency Plan is considered applicable and appropriate for application at Windy Camp.

The Patch Lake Laydown has been decommissioned. Some debris is stacked at the laydown, awaiting transport to the Roberts Bay waste management area for proper disposal. A small excavator has been staged at the laydown for use in reclamation of hydrocarbon contaminated soils. Fuel and chemicals are not stored at Patch laydown. Small quantities of fuel and chemicals will only be transported to site on an as needed basis to resupply equipment.

3.3 On-site Hazardous Materials

The most prevalent hazardous materials currently on the Hope Bay Project site are currently petroleum derived materials. The petroleum derived materials included in this Plan can generally be divided into two categories:

1. Flammable immiscible liquids.
2. Flammable compressed gases.

3.3.1 Flammable Immiscible Liquids

Flammable immiscible liquids are all hydrocarbon-based and will ignite under certain conditions. Gasoline and aviation fuel pose the greatest fire (and safety) hazard.

All hydrocarbon-based materials are insoluble and float unless mixed into the water column and can be recovered when safety allows. They are:

- Gasoline with a low flash point (burns easily);
- Jet A;
- P50 Diesel Fuel;
- Lube Oil with a high flash point; and
- Waste Oil.

3.3.2 Flammable Compressed Gasses

Propane, acetylene and oxygen are the flammable gases common to the Hope Bay Project site. These gases are:

- Usually highly explosive;
- May be heavier than air and, therefore, concentrate in low lying locations; and
- May be lighter than air and may be highly noxious or toxic.

3.3.3 Other Products

Because of the nature of the Hope Bay Project, there are a variety of other chemicals and reagents that are used.

These include:

- Calcium chloride;
- Sewage treatment plant chemicals (Sodium Hypochlorite Solution, Oxalic Acid and Citric Acid in small volumes;
- Domestic sewage;
- Glycols;
- Methyl hydrate (small volumes);
- Lead acid batteries;
- Marisol Boiler Treatment; and
- Petroleum contaminated soil.

Product specific Material Data Safety Sheets (MSDS) and associated spill response procedures are available on site and for regulatory review.

3.4 Inventory of Fuel Storage Facilities

Table 1 provides a summary of all petroleum storage tanks that are currently in use on the Hope Bay Project. All of the tanks are above ground and the majority contain diesel fuel. Empty tanks are stored on the upper and lower reagent pads. As tanks are emptied, they will be tagged with a sign "Removed from Service" along with the date. All tanks that will remain in service will be labelled with the contents. Signs will also be attached to the seacans containing drums, totes or pails of hydrocarbons.

Table 1: Hope Bay Project Permanent Petroleum Storage Facilities

Location	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Maximum Expected Quantity Stored During C&M
Robert's Bay Bulk Fuel Storage Facility (Quarry 1 / ST-6a)	1 @ 5,000,000 L Tank– empty/piping decommissioned Dispensing Module (Inactive)	Field-erected	Gravel/HDPE, 3,200,000 L	Waste Oil in Lined Seacans Drummed Jet-A Fuel 1000L Engine Oil Totes	No Diesel Fuel in Tank. Berm is currently used to house oil totes and fuel barrels whose cumulative quantities averaging < 500,000 L.
Robert's Bay Bulk Fuel Storage Facility (ST-6b)	3 @ 5,000,000 L Tanks	Field-erected	Gravel/HDPE, 9,190,000 L	Diesel Fuel	15,000,000 L
Batch Plant/equipment storage	1 @ 1240 L	Pre-fabricated, double-walled, portable	Spill containment	Diesel Fuel	1116 L
Doris Camp Plant Site Fuel Storage Facility (ST-5)	5 @ 1.5,000,000 L Tanks Dispensing Module (Active)	Field-erected	Gravel/HDPE, 2,976,000 L	Diesel Fuel	7,500,000 L

Location	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Maximum Expected Quantity Stored During C&M
Doris Helipad (office, washcar)	1 @ 1240 L	Pre-fabricated, double-walled, portable	Insta-berm, spill containment	Diesel Fuel	1116 L (empty when camp closed)
Doris Helipad (landing pads)	Drum fuel (8) placed at each active helicopter landing pad	Drums	Plastic spill pallets, 220 L	Jet A Fuel	1640 L (empty when camp closed)
Doris Muster Station	1 @ 1240 L	Pre-fabricated, double-walled, portable	HDPE/Wood spill containment	Diesel Fuel	1116 L
Doris Powerhouse (old)	1 @ 15,000 L	Pre-fabricated, double-walled, portable	HDPE/Wood spill containment	Diesel Fuel	15,000 L
Doris Powerhouse (new)	2 @ 5000 L	Pre-fabricated, double-walled, portable	2 @ Concrete, 5500 L each	Diesel Fuel	10,000 L
Roberts Bay Waste Management Facility Generator	Internal tank 2250 L	Pre-fabricated, double-walled,	Internal steel spill containment	Diesel Fuel	2025 L
Roberts Bay CY100 Incinerator	1 @ 1500 L	Pre-fabricated, double-walled	Steel Spill containment	Diesel Fuel	1350 L (empty when closed)
Waste Management Facility Waste Oil Burner	2 @ 850 L	Plastic Cube	Spill containment	Waste Oil	1700 L (empty when closed)
Doris Vent Raise	1 @ 70,000 L	Pre-fabricated, double-walled, portable	Gravel/HDPE, 77,000 L	Diesel Fuel	Empty
Doris Airport Tower Generator	1 @ 1240 L	Pre-fabricated, double-walled, portable	Steel spill containment; in seacan	Diesel Fuel	1116 L (empty when closed)
Doris Airport Tower (aircraft fuel)	Drum fuel (8) by airport tower	Drums	Plastic spill pallets, 220 L each	Jet A or B Fuel	1640 L (empty when closed)
Boston Camp Bulk Fuel Storage Facility (BOS-5)	6 @ 77,000L Tanks 2 @ 33,500L Tanks	Pre-fabricated	Gravel/HDPE, 84,700	Diesel Fuel	377,127 L
Boston Fuelling Stations (tidy tank beside bulk storage)	1 @ 1374 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment	Diesel Fuel	1236 L
Boston Fuelling Stations (fly tank beside bulk storage)	1 @ 785 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment	Gasoline	628 L

Location	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Maximum Expected Quantity Stored During C&M
Boston Helipad	Drum storage (8 drums)	Drums	Plastic spill pallets, 220 L each	Jet A Fuel	1640 L (empty when Project closed)
Boston Jet A fuel storage	Drum storage (1 seacan)	Drums	Lined seacan	Jet A	8200 L
Boston Generator Daytanks	2 @ 1240 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment (2)	Diesel Fuel	2232 L
Boston Fuelling Station (North, by camp facilities)	1 @ 1374 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment	Diesel Fuel	1236 L
Boston Tent Heaters Daytank	1 @ 1374 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment	Diesel Fuel	1236 L
Boston Daytank (inside)	1 @ 350 L	Pre-fabricated, Single walled	Steel floor and kickplate	Diesel Fuel	315 L
Boston Camp Daytank (NE side of camp between main camp and tents	1 @ 1374 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment	Diesel Fuel	1236 L
Boston Incinerator	1 @ 400 L	Pre-fabricated, double-walled	Steel spill containment	Diesel Fuel	360 L
Windy Washcar	Internal Tank, 500 L	Pre-fabricated, double-walled	Steel spill containment	Diesel Fuel	450 L (empty when Project closed)

At Doris, the unopened barrels, totes and pails of hydrocarbons and glycols are stored at Roberts Bay in the 5 million litre tank berm (Quarry 1), and drums/cubes containing waste products, are stored in lined seacans or in the 5 million litre tank berm. Empty drums are sealed and stacked on their sides north of the 5 million liter tank berm.

At Boston, the unopened barrels, totes and pails of hydrocarbons, as well as waste containers are stored in lined seacans. Empty drums are sealed and stacked on their sides beside the seacans of full product south of the ore piles.

3.5 Inventory of Other Chemical Storage Areas

In addition to the hydrocarbons that will be stored on-site, Table 2 lists the locations and quantities of other chemicals that will be stored. There will also be a variety of project domestic consumables such as household cleaners, laundry soaps, light bulbs (fluorescent, incandescent, LED, quartz, metal halide, high pressure sodium, and ultraviolet), and batteries.

Table 2: Hope Bay Project Chemical Storage Areas

Product	Location	Storage Container Type	Approximate Quantity

Product	Location	Storage Container Type	Approximate Quantity
Acetylene	Reagent Pad	Seacan	10 - WTL bottles (~3600 cu.ft. of product)
Propane	Reagent Pad	Seacan	30 – 100 lb bottles (3000 lbs)
Oxygen	Reagent Pad	Seacan ERT building ERT building	10 - K bottles (6900L ea) 3 - M bottles (3000L ea) 4 – D bottles (350L ea) (~79,400 L. of product)
Calcium Chloride	Reagent Pad	Seacans with 23 kg bags	11,030 tonnes (~44,800 bags)
PH Enhancer	Wastewater Treatment	Jugs	40 L
12% hypochlorite	Wastewater Treatment	Jugs	240 L
Suppressor 2360	Wastewater Treatment	Jugs	220 L
Polymer	Wastewater Treatment	Boxes	174 kg
PH Enhancer 7007	Wastewater Treatment	Jug	4.5 L
PH Enhancer 7004	Wastewater Treatment	Jug	4.5 L
Citric Acid	Wastewater Treatment	Jug	10 L
Caustic Powder	Wastewater Treatment	Pail	10 L
Hydrated Lime	Wastewater Treatment	Boxes	4.5 kg
Flame Out Foam	ERT building – Fire Caddy	Drum	205 L
2-3% AFFF	ERT building	Pail	230 L (will not be on site when closed)

3.6 Potential for Spills

Based on a review of the hazardous materials management at the Hope Bay Project, the most significant potential for spills on the site are during the three separate stages of petroleum fuel management activities. These are:

1. The transfer of fuel (primarily diesel) between the transport barge and bulk storage tanks at Roberts Bay.
2. The transfer of fuel (primarily diesel) between the bulk fuel storage tanks and fuel transport trucks.
3. The refuelling of mobile or stationary equipment.

To reduce the potential for spills, all fuel storage tanks, piping and transfer vehicles are inspected on a regular basis. In addition, flow charts outlining the Fuel Handling and Spill Response Standard Operating Procedures are presented in Appendix A. These flow charts provide procedures designed to minimize the potential for spills during fuel handling, as well as to clearly identify actions to be undertaken in the event that a spill of fuel does occur during any of the three scenarios identified.

A detailed SOP for the Bulk Diesel Fuel Offload can be found in the Oil Handling Facility OPPP/OPEP.

4 Spill Response Organization

4.1 Summary

Prompt, effective and organized response to an unanticipated discharge or spill will enhance the health and safety of all employees, serve to minimize, to the extent possible, the potential adverse environmental impacts resulting from such an event, and ensure effective communication with the appropriate regulatory agencies and the general public.

Refer to the Quick Reference Section (Spill Response Summary of Responsibilities) at the front of this document for a general overview of the spill response organization at the Hope Bay Project site.

Each identified individual or group has been assigned a specific set of responsibilities in the event that a spill response is required. The following provides a description of the required action of each.

4.1.1 First Responder

The First Responder is defined as any person on the Hope Bay Project site who comes across or sees an unanticipated discharge or spill. As a result, every person on the Project site is considered as a potential First Responder and receives appropriate training during their initial site orientation.

When someone on site sees an unanticipated discharge or spill, he or she is immediately designated as the First Responder and, as such, shall complete the following actions:

1. Assess the spill site by:
    a. Identifying the spilled material.
        i. Review MSDS for spilled material;
        ii. If it is not possible to identify material, or if there is a potential risk of fire or explosion, the first responder will immediately report spill to supervisor (proceed with Action 4); and
    b. Assessing (estimating) the size of leak.
    c. Assessing the safety of area by.
        i. Eliminating ignition sources by turning off vehicles, etc. and not smoking;
        ii. Assessing the physical stability of site, while always;
        iii. Approaching the spill site and material from upwind.
    d. Providing first aid to any injured parties if required AND it is safe to do so.
2. Stop the flow of material if it is safe to do so by:
    a. Putting on appropriate Personal Protective Equipment (PPE);
    b. Approaching the spill site from upwind;
    c. Tracing (or tracking) the source of the material; and
    d. Stopping the flow if it is safe to do so.
3. Contain the spilled material if it is safe to do so by:
    a. Constructing a temporary berm if possible;
    b. Constructing a temporary containment ditch if possible; and

c. Placing absorbent materials from the spill kit in the flow path of the spilled material.

4. Report the spill to immediate supervisor or Surface Manager by radio or phone, giving:
    a. Their name;
    b. The specific location of the spill;
    c. The type of spilled material; and
    d. The type and extent of injuries on scene (if applicable).
5. Secure the immediate area of the spill by:
    a. Evacuating the area if required;
    b. Diverting or stopping traffic in the vicinity; and
    c. Keeping people away from the area.
6. Remain at/on scene until assistance arrives.

Refer to the Quick Reference Section (First Responder) for a summary of the spill response actions of the First Responder.

4.1.2 Supervisors (All)

In the event that a Supervisor is informed of a spill by any employee, he/she will immediately inform the Surface Manager, using the phone numbers or radio channel provided (See Quick Reference section of this Plan) and proceed to the site of the spill.

Upon being informed of an unanticipated discharge or spill, the Surface Manager will immediately become the Person-in-Charge and will proceed to the spill site. As the Person-in-Charge, they will be responsible for implementing the Spill Contingency Plan. Prior to proceeding to the spill site, the Surface Manager will contact the Environmental Manager, who will initiate the spill reporting procedures and assemble resources, and they will also contact the Chief Operations Officer.

4.1.3 Surface Manager (Spill Response Coordinator)

Once notified of the spill, the Surface Manager (Spill Response Coordinator) or designate will become the Person-in-Charge and immediately equip him/herself with the appropriate Personal Protective Equipment (PPE) and proceed to the site of the spill. He/she will contact the Environmental Manager. Once at the site, he/she will:

1. Assess the site by:
    a. Confirming the identity of the spilled material;
    b. Assessing (estimating) the size of leak;
    c. Assessing the safety of area by;
        i. Eliminating ignition sources by turning off vehicles, etc. and not smoking;
        ii. Assessing the physical stability of site, while always;
        iii. Approaching the spill site and material from upwind.
    d. Providing first aid to any injured parties if required AND it is safe to do so.
2. Stop the flow if not done and safe to do so.

3. Contain spilled material if safe to do so by:
    a. Constructing a temporary berm if possible;
    b. Construct a temporary ditch if possible; and
    c. Placing absorbent materials from the spill kit in the flow path of the spilled material.
4. Assemble the Spill Response Planning/Advisory Team composed of him/herself, the site Safety representative (may be the site medic), and the Environmental Manager, and, based on advice from those people, assemble the technical resources deemed necessary to respond to the spill (e.g. equipment, personnel, etc.).
5. Establish communication with the Chief Operations Officer
6. Determine and secure human, technical and physical resources (including equipment) required to complete an effective and efficient clean-up of the spill.

    If, in the opinion of the Planning and Advisory Team, the size and/or type of spilled material requires the mobilization of off-site resources in order to effectively manage the spill and its clean-up, The Surface Manager will immediately notify of the Chief Operations Officer. It is the responsibility of the Chief Operations Officer to communicate with, and secure, any off-site resources that may be required to address the spill; however, the Chief Operations Officer may request that the Environmental Manager take on this responsibility.
7. Supervise all of the clean-up operations, including, but not necessarily limited to:
    a. The removal, storage and eventual disposal of all spilled material in an appropriate manner;
    b. The removal and appropriate disposal of any material contaminated by the spill; and
    c. The dismantling of any temporary containment works if applicable.
8. Remain on site until relieved or clean-up is complete.
9. Maintain a log (both written and photographic) of all activities undertaken in response to the spill.

The Surface Manager/Spill Response Coordinator will also be responsible for ensuring the timely replacement of all spent spill response materials and equipment including, but not necessarily limited to, those associated with the primary and secondary containment equipment, the contents of any Spill Kit used to respond to the spill as well as any equipment mobilized to the spill site.

Refer to the Quick Reference Section for a summary of the spill response actions of the Spill Response Coordinator.

4.1.4 Environmental Manager

In addition to assisting the Spill Response Coordinator and Chief Operations Officer with organizing the spill response team, the Environmental Manager will be responsible for providing updates to the Director of External and Community Affairs throughout the event and will be responsible for a number of activities after the spill has been stopped and the affected area is cleaned-up.

1. Establish a functional communications link with the Chief Operations Officer and the members of the Spill Planning/Advisory Team using on-site radios, satellite and/or traditional phones.
2. In the event of a significant spill, will maintain a log of their internal and external communications.
3. Conduct an investigation to identify the reason for spill (natural, technical or human causes).
4. Based on the results of that investigation, initiate corrective actions as required at both the spill site and other similar situations on site to reduce the potential of a repeat occurrence.

5. Assess impacts of spill and determine if on-going monitoring is required.

In the event that the spill is deemed "reportable" under the applicable legislation/regulations the Environmental Manager, in consultation with the Spill Response Planning/Advisory Team, will be responsible for preparing the draft Spill Reports for review and submission. These include:

1. Completing and submitting the NT-NU Spill Report Form (see Appendix B) to the NT-NU 24 Hour Spill report Line (see contact information in Quick reference section) within 24 hours of the event (if required).
2. Assessing the impacts of the spill and its clean-up and determining, in consultation with senior environmental personnel, whether any on-going monitoring is required. In the event that such monitoring is required, the Spill Response Planning/Advisory Team will be responsible to ensure the conduct of such monitoring is done in a safe manner and by qualified and capable people.
3. Enter the TMAC Accident/Incident Report information and results of any internal investigation into the Environmental Incident Database.
4. The detailed written spill report which will be completed and submitted to the appropriate regulatory agencies within 30 days of the event.

Refer to the Quick Reference Section for a summary of the spill response actions of the Environmental Manager.

4.1.5 Spill Response Planning/Advisory Team

The Spill Response Planning/Advisory Team is composed of the Environmental Manager, the safety representative (may be the site medic), and the Surface Manager. It is the responsibility of the Team to provide advice and support to the Spill Response Coordinator (Surface Manager) to ensure that:

- Human life is protected and the potential for injury is minimized to the extent possible during all spill response activities;
- All adverse environmental impacts are kept to a minimum during all spill response activates;
- Resources are used effectively;
- All materials resulting from the spill and spill clean-up are managed, stored and disposed of in an appropriate and approved manner; and
- All required regulatory reporting is completed on time and in the prescribed manner.

4.1.6 Director of External and Community Affairs

During a spill response event, the Director of External and Community Affairs will maintain regular communication with the Environmental Managers, as well as the Chief Operations Officer to effectively monitor the spill response. In addition, the Director of External and Community Affairs will:

1. In consultation with the Environmental Managers, inform all agencies including, the Kitikmeot Inuit Association, the Nunavut Water Board, Environment Canada, Aboriginal Affairs & Northern Development Canada Field Operations Manager, and Fisheries & Oceans Canada, if appropriate (see Quick reference Section for contact information).
2. In the event of a significant spill, will maintain a log of internal and external communications.
3. In consultation with the TMAC executive, Environmental Managers and appropriate regulatory agencies, advise the public in the immediate vicinity of the spill if warranted.

4.1.7 Chief Operations Officer

During a significant spill response event, the COO will maintain regular communication with site to effectively monitor the spill response and clean-up activities. In addition, the COO will:

1. Maintain a written log of all communications both internal to the site as well as all external communications with regulatory agencies, land agencies and the public.
2. Provide regular updates to Corporate management off-site.
3. Conduct a post-clean-up inspection of the spill site that will include, but not necessarily be limited to, the management of the recovered product, the appropriate disposal of materials used in the clean-up, remediation activities, and corrective actions taken.
4. Review the Accident/Incident Report prepared by the Environmental Manager.

Refer to the Quick Reference Section for a summary of the spill response actions of the COO.

4.1.8 On-Shore Supervisor/Incident Commander

The On-Shore Supervisor position will be held by the Surface Manager or designate and only pertains to bulk fuel transfers during the summer months at the port site fuel storage facility in Roberts Bay. When the Surface Manager is notified that a spill has occurred during the bulk fuel transfer they effectively become the Incident Commander for the response organization and will:

1. Ensure the transfer process of fuel is stopped immediately.
2. Alert other relevant departments.
3. Depending on the size and extent of the spill activate the Emergency Response Team.

The relevant departments and Emergency Response Team will follow tasks and steps outlined in section 4 of this document and section 3.5 of the Oil Pollution Prevention Plan/Oil Pollution Emergency Plan.

For a complete list of roles and responsibilities pertaining to the bulk fuel off load process refer to the Oil Pollution Prevention Plan/Oil Pollution Emergency Plan.

4.2 Spill Response Communications

During a spill response event, staff on site will report through the Environmental Manager or Surface Manager to the COO. The COO (or designate) will maintain regular contact with the Environmental Manager.

During such an event, on-site staff WILL NOT communicate directly with regulatory agencies, the press or other parties off of the mine site. All external communication is to be through the COO, the Director of External and Community Affairs, the Vice President Human Resources, or the – Environmental Manager. This is to prevent inaccurate information being spread that could lead to inappropriate response, cause undue stress to family members awaiting word, or cause undue panic to members of the general public.

4.2.1 On-Site Communications

Specific on-site personnel are equipped with portable radios. All front line supervisors are required to carry a functional portable radio at all times while working on site. Independent satellite phones are also available for crews working off site and for emergency communications in the unlikely event that the radio and phone systems fail.

5 Spill Response Actions

The Hope Bay Project is a remote location that is only rapidly accessible by plane. As a result, the *Hope Bay Project Spill Contingency Plan* does not rely on off-site resources to successfully respond to spills. It is anticipated that the Hope Bay Project will have sufficient resources and trained personnel to respond to all types/sizes of spills that could potentially occur on site.

The following issues are a consideration in spill contingency planning given the remote Arctic location of the Project:

Environmental Factors

- High density of wildlife habitat use during summer seasons;
- Extreme seasonal ecological sensitivity variations;
- Unique shore types, (tundra coasts);
- Unique oceanographic and shoreline seasonal changes (open water, freeze-up, breakup, frozen conditions); and
- Slow weathering and longer persistence of spilled product.

Operational Considerations

- Remote logistical support;
- Need to improvise response using available means until support equipment arrives;
- Safety in cold, remote areas;
- Cold temperature effects on the efficiency of equipment and personnel;
- Boat operations in ice-infested waters during transition periods, winter dynamic ice conditions;
- On-ice operations in winter;
- Seasonal daylight variation;
- Minimization of damage to permafrost during land-based staging and clean-up operations; and
- Need of aircraft for logistics, surveillance, and tracking.

5.1 Fuel Spills on Land

Containment and Clean-up

In the event of a liquid spill on gravel, rock, soil or vegetation, it is very important to prevent the liquid from entering any body of water where it will spread and likely have a greater environmental impact. Liquid spills on gravel, rock, soil or vegetation will be contained and cleaned up by:

- Constructing a temporary soil berm in front of the leading edge of the spill and down slope of the spilled liquid. Plastic tarps can then be placed over and at the foot of the berm to permit the liquid to pool on the plastic and facilitate easy recovery.
- For small volumes of spilled material, absorbent pads etc. can be used to recover the spilled material. When such pads are saturated with fuel they can be squeezed into empty drums and re-used.
- The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.
- Larger volumes of spilled material may be pumped to empty steel drums or empty fuel storage tanks (i.e. Tidy Tanks), if available. Care must be taken when transferring the spilled material in order to prevent a secondary spill during this pumping and transfer.
- In extreme circumstances, such as the recovery of large volumes of spilled material, consideration may also be given to employing the vacuum truck and/or service truck capabilities.

Impacts to Archaeological and Historical Resources

If a spill is determined to have impacted any archaeological or historical resources, prior to removing soils or vegetation, the Environmental Manager will immediately contact the Project Archaeologist. The Project Archaeologist will provide advice on the next steps, and she may need to travel to site to mitigate and document the archaeological site. The Archaeologist will also coordinate permits and communications with the Government of Nunavut Culture Language Elders and Youth (CLEY) department.

Impacts to Terrestrial Wildlife

All reasonable measures will be taken to deter wildlife from coming in contact with the impact area of a spill to prevent mortalities and health effects.

If a spill has directly impacted animals or bird nests, the Environmental Manager and Director of External and Community Affairs will coordinate with the Government of Nunavut Wildlife Officers, and will report the incident to the appropriate federal and territorial authorities, and the Kitikmeot Inuit Association.

Removal of Contaminated Soil and/or Vegetation

In general, all contaminated material generated from a spill will be stored in steel drums for appropriate disposal which may include the off-site transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility operated under the Doris Type A Water Licence if directed by the Environmental Manager.

In the event that a particular spill requires the removal and appropriate disposal of large volumes of contaminated soil, rock or vegetation, the Spill Response Coordinator will contact the other members of the Advisory Team to discuss the most appropriate recovery strategy and transportation or storage methods.

Restoration of Affected Areas

Determination of the required level of final clean-up, restoration (or mitigation) and on-going monitoring will be completed in consultation with, and to the satisfaction of, the AANDC Inspector and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.2 Fuel Spills on Fresh Water

Containment and Clean-up

In the event of a liquid spill on water, it is very important to limit, to the extent possible, the spread of the spilled material. The following steps will be taken for spills on water:

- Limit the area of the spill on water to the extent possible. For example, place a large wide board (e.g., plywood) horizontally across the culvert inlet, raised above the bottom if substantial flow, to control the water level while retaining the spilled fuel on the surface. The board can be secured by stakes and absorbent materials used to recover the fuel on the water surface.
- Small volume spills on water will be recovered by the use of absorbent pads, socks and similar materials (granular sorbent materials are NOT to be used for spill response on water).
- For larger areas, absorbent boom(s) will be deployed to contain the spilled material and to facilitate recovery. Absorbent booms will be drawn slowly in to encircle spilled fuel and absorb it.

The boom materials are hydrophobic (absorb hydrocarbons and repel water). The effectiveness of this action can be limited by winds, waves and other factors.

- Sorbent booms, socks and/or pads can also be used to recover hydrocarbons that escape containment booms.
- Consideration may also be given to employing the vacuum truck and/or service truck capabilities in extreme circumstances such as the recovery of large volumes of spilled material.
- In certain circumstances it may be possible to deploy skimmers in open-water areas.
- The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.

Removal of Contaminated Substrate and/or Vegetation

If shoreline substrates or aquatic vegetation have been impacted, these materials will need to be removed. The Environmental Manager and Director of External and Community Affairs will contact Environment Canada and the Department of Fisheries and Oceans for advice prior to initiating removal.

All contaminated material generated from a spill response will be stored in containers (such as steel drums) for appropriate disposal which may include the off-site transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility.

Impacts to Semi-Aquatic and Aquatic Wildlife

All reasonable measures will be taken to prevent semi-aquatic wildlife from accessing the impacted area. Waterfowl and shorebirds will be deterred from the area. If wildlife has been directly impacted by the spill, the Environmental Manager and the Director of External and Community Affairs will contact the appropriate regulatory agencies, and in cases where wildlife can be rescued, wildlife spill response experts will be contact for assistance.

Restoration of Affected Areas

Determination of the required level of final clean-up, restoration and on-going monitoring will be completed in consultation with, or to the satisfaction of, the AANDC Inspector, and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.3 Fuel Spills on Snow

Fuel spills on snow will be contained and recovered by:

- Limiting the area of the spill to the extent possible by compacting the snow into snow-berms and then placing a liner of plastic sheeting at the toe and over the berm in order to collect the spilled material and facilitate recovery.
- Using the snow as a natural absorbent to collect spilled fuel.
- For small volumes of spilled material, absorbent pads etc. can be used to recover the spilled material. When such pads are saturated with fuel they can be squeezed into empty drums and re-used. The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.
- Snow, saturated with the spilled material, may also be scraped up and stored in a lined containment area (i.e., the Doris Land farm if determined appropriate by the Environmental Manager) or placed in steel drums for appropriate disposal or incineration.
- Larger volumes of material may be pumped to empty steel drums or empty fuel storage tanks (i.e. Tidy Tanks), if available. Care must be taken when transferring the spilled material to prevent a secondary spill during pumping and transfer.

- Consideration may also be given to employing the vacuum truck and/or service truck capabilities in extreme circumstances, such as the recovery of large volumes of spilled material.

Removal of Contaminated Materials

All contaminated material generated from a spill response will be stored in steel drums or other suitable containers for appropriate disposal which may include the offsite transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility.

Restoration of Affected Areas

Determination of the required level of final clean-up, restoration and on-going monitoring will be completed in consultation with, or to the satisfaction of, the AANDC Inspector, and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.4 Fuel Spills on Ice

Fuel spills on ice will be contained and cleaned up by:

- Limiting the area of the spill to the extent possible by compacting the snow around the edge of the spill to act as a berm. Time permitting; the berm can be lined with plastic sheeting. The underlying ice will prevent or reduce the rate of seepage of the fuel into the water below the ice.
- Scraping up contaminated snow/ice and placing it in covered drums or in a lined secondary containment area on land.
- In certain circumstances it may be possible to deploy skimmers in open-water areas. Deploying skimmers in broken-ice conditions may be effective as spills tend to spread far less than in ice-free water however, under normal ice-covered periods, skimmers are unlikely to be effective.
- Using snow as an absorbent to collect spilled fuel.
- For small volumes of spilled material, absorbent pads, etc. can be used to recover the spilled material. When such pads are saturated with fuel they can be squeezed into empty drums and re-used. In addition the spilled material may be scraped up and stored in a lined containment area or placed in steel drums for appropriate disposal or incineration.
- The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.
- Larger volumes of material may be pumped to empty steel drums or empty fuel storage tanks (i.e. Tidy Tanks) , if available. Care must be taken when transferring the spilled material in order to prevent a secondary spill during pumping and transfer.
- Consideration may also be given to employing the vacuum truck and/or service truck capabilities in extreme circumstances such as the recovery of large volumes of spilled material.

Removal of Contaminated Materials

Burning off spilled hydrocarbons on-ice offers the potential to remove the majority of a spill with minimal residue volumes left for manual recovery. Burning of spilled hydrocarbons on-ice has been considered as a primary arctic spill countermeasure. However, prior to initiating such action, the Environmental Manager and the Director of External and Community will secure permission from the appropriate agencies (i.e. the KIA, Environment Canada, AANDC, and other applicable regulatory authorities).

All contaminated material generated from a spill response will be stored in steel drums for appropriate disposal which may include the offsite transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility.

Restoration of Affected Areas

Determination of the required level of final clean-up, restoration and on-going monitoring will be completed in consultation with, or to the satisfaction of, the AANDC Inspector, and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.5 Fuel Spills in a Marine Environment

This section provides a guideline for a petroleum product spill response specific to the unique climatic and physiographic features of the Arctic environment and provides general information on typical approaches to dealing with hydrocarbon spills in the marine environment. TMAC Resources Inc. will rely on the Shipping Contractor for primary marine spill response under their Shipboard Oil Pollution Emergency Plan (SOPEP) while bulk fuel and containerized shipments of hydrocarbon-based products are in transit between the Shipping/Receiving Port and the Project site. All bulk transfer operation details are discussed fully and agreed upon between the On-Shore Supervisor and On-Board Supervisor before any transfer commences to ensure proper coordination between the SOPEP and, the Transport Canada approved Ocean Pollution Prevent Plan/Oil Pollution Emergency Plan for the land-based Oil Handling Facility (OHF).

The Hope Bay Project maintains marine spill response equipment at the Roberts Bay jetty site. The spill response equipment is stored within identified Seacans for deployment while barges are being loaded/offloaded. This equipment includes, among other things, floating containment booms and a small skimmer unit designed to address potential spills during the offloading process (see section 1.4.1 for a more detailed inventory).

The following definitions are provided for three “sea conditions” (calm water, protected water, and open water) used in the following discussion (Table 3).

Table 3: Definitions of Sea Conditions

Response Environment	Significant Wave Height (m)	Wind Speed (km/h)
Calm waters	Less than 0.3	Less than 10
Protected water	0.3 to 2	10 to 30
Open waters	2 or greater	30 or greater

5.6 Spill Response in a Marine Environment

5.6.1 General Guidelines

The most effective way to minimize environmental damage is to focus on source control and to prevent product from spreading. As a precautionary measure, during fuel loading at Roberts Bay, the fuel barges will be encircled with floating skirted spill response booms to provide spill containment.

Slick tracking and surveillance should utilize locally available resources to determine optimum response strategies by:

- Locating brown-color slicks to be skimmed or burned; and
- Locating shiny, rainbow sheens which can disperse naturally but shoreline protection/treatment, plans should be prepared, if appropriate.

In breaking waves higher than 1 m, surveillance and monitoring may be the only practical response options.

5.6.2 Response Strategies and Methods

Responding to spills from vessels and barges in a marine situation can involve controlling slicks at source and removing product that escapes initial containment. The objective of both operations is to minimize the spreading of spilled product and subsequent environmental impacts and damage to resources. Protection of the environment and resources located in the path of a marine spill usually involves the deployment of mechanical equipment.

1. Initially, estimate the direction and speed of movement of the oil. Then identify the resources at risk from the spill and evaluate whether protection operations actions are likely to be successful, and then take the following actions for mechanical containment and removal strategies:
2. Deploy diversion boom with both top and bottom tension members and high reserve buoyancy to exclude or divert oil.
3. Secure and then regularly monitor anchor systems.
4. Using stationary skimmers such as smaller oleophilic skimmers, e.g., disc, drum and rope mop~~s~~ units, to remove light and medium viscosity oils for storage in either water – or land based storage systems.

5.6.3 Containment and Recovery

Containment

- Use mobile floating booms, best deployed down drift from the release point, in order to contain and concentrate product.
- Deploy mobile floating booms in U, V or J configurations. Interception of free-floating, thick slicks is not as effective as containment and removal of product at surface.
- Mobile floating booms are effective in currents less than 0.5 m/s (1 knot) and winds less than 35 km/h (20 knots).

Recovery

- Advancing skimmers (Oleophilic Skimmers – units with a recovery mechanism to which oil adheres) are useful: Disc, drum and rope mop skimmers can remove light and medium viscosity oils; brush and belt skimmers can collect heavy oils.
- Large volume advancing skimmers can be used when oil/water separators are available or when there are large accumulations of thick, emulsifying oil.
- Subsurface barriers should be used to contain spilled oil that might sink before it submerges, if possible. Locating submerged oil is difficult, and control and collection of such is even more difficult.
- If brush or belt skimmers cannot collect heavy, floating oil then trawl systems can be tried for recovery.
- Planning adequate storage capacity is critical to the entire response operation to avoid operation bottlenecks.
- Storage options include barges, towable tanks, tankers and/or other means that are appropriate for the type and volume of oil being recovered.

Less-Desirable Options

In extreme situation, booms and skimmers may fail. For example, in storm surges, hydrocarbons may mix in the surf zone, limiting the effectiveness of booms and skimmers. In these situations, discussing in situ burning with regulators may be an option. However, with the types and quantities of materials being handled at Hope Bay, it is unlikely that the situation would come to this point.

Dispersion

Although chemical dispersants are effective at breaking up large hydrocarbon spills, the product does not remove the hydrocarbons from the water column. Dispersants work by binding with hydrocarbons and sinking. Several scientific studies have suggested that the chemical dispersants can be toxic to fish when ingested.

Chemical dispersants are quite expensive, and also require an intensive permitting process that would automatically preclude the use of this option due to the length of time required to obtain the permits.

In-situ burning must be quickly implemented, before the light ends of the diesel fuel evaporate and before the fuel becomes spread and diluted. The diesel concentration should be 75% or more in the area to be burned. Often, to ignite the diesel, an accelerant such as gasoline would have to be added, which is not an ideal situation.

Although this method is effective in ideal conditions, it is a tightly regulated process. Permits must be obtained to conduct in-situ burning of spills, which would preclude the use of this option at Hope Bay due to the length of time required to obtain the permits.

5.6.4 Shoreline Treatment

First response activities usually take place on a shoreline only if available resources are not required for source control, recovery of free oil or protection. This might be the case for a land-based spill, e.g. a tank farm, or if all or most of the oil has washed ashore.

Low pressure, cold-water wash is generally practical and effective before the oil has weathered, i.e. in the early stages of a spill, on:

- Impermeable (bedrock, man-made) shore types;
- Fine sediment beaches or flats (sand, mud); and
- Vegetated shores (marshes, peat, low-lying tundra).

On sheltered, low wave-energy shores with fine sediment, trenching can be a rapid and effective method for containing stranded oil and preventing further redistribution. Oil in the trench can be removed with sorbents or vacuum trucks. If a vacuum truck is not available in remote areas, sufficient bags of corn-cobs should be used to absorb the remaining oil in the trench.

Use manual and/or mechanical removal methods to recover oil on open beaches with wave action. If possible, this should be done before the oil/sediments are reworked by wave action, and the oil is potentially buried.

Following the removal of as much oil as possible, mixing (also known as tilling) and sediment reworking (surf washing) should be done to move oiled sediments so that they are exposed to weathering processes, such as evaporation or wave action, to accelerate natural cleaning of an oiled beach. The techniques may involve the use of earthmoving equipment but do not involve mechanical removal of oiled sediments from beach for disposal.

Table 4 lists the recommended initial treatment methods according to various shore type in the event of an uncontrolled environmental incident.

Table 4: Recommended Initial Treatment for Shoreline Incidents

Environmental Habitat – Shore Type	Recommended Treatment Method
Bedrock	Low pressure cold water wash Manual removal Vacuum system

Environmental Habitat – Shore Type	Recommended Treatment Method
Man-made solid structure	Low pressure cold water wash Manual removal
Ice or ice-covered shores	Low pressure cold water wash Low pressure , warm or hot water wash Manual removal Vacuum system Burning
Sandy beaches	Flooding Low pressure cold water wash Manual removal Mechanical removal Mixing Sediment relocation
Mixed sediment beaches	Flooding Low pressure cold water was Manual removal Mechanical removal Mixing Sediment relocation
Pebble/cobble beaches	Low pressure cold water wash Manual removal Mechanical removal Mixing Sediment relocation
Boulder beaches and rip-rap	Low pressure cold water Manual removal Passive sorbents
Sand flats	Low pressure cold water wash Manual removal Vacuum system Mechanical removal
Mud flats	Low pressure cold water wash Manual removal Vacuum system Mechanical removal
Salt marshes	Flooding Low pressure cold water wash Manual removal Vacuum removal Passive sorbents

5.7 Spills of Salt or Brine

The Hope Bay exploration and mining programs use salts to produce brine for use during the drilling activities to prevent the drill rods from freezing in when drilling in permafrost. Calcium chloride is generally used for this purpose, but occasionally sodium chloride is used.

The main risk of a salt and brine spill is to the environment, including both aquatic and terrestrial environments, and permafrost.

1. Spills of Dry Product to Land with no Risk of Entering a Waterbody

   The source of the spill will be stopped as soon as possible. The majority of the spilled dry salt product for on-land spills will be picked up, and repackaged. If appropriate, a shallow excavation of the material would be performed to remove all of the material.

2. Spills of Dry Product to Land with Risk of Entering a Waterbody

   If a salt spill occurs in a location where the product may enter a waterbody, all reasonable measures will be taken to prevent this from occurring. The source of the spill will be stopped as soon as possible. The majority of the spilled dry salt product for on-land spills will be picked up, and repackaged. A shallow excavation of the material would be performed to remove all of the material if necessary. And, if required, small surface water diversions installed to prevent materials from entering the waterbody.

3. Brine Spills to Land with no Risk of Entering a Waterbody

   The spill will be stopped as soon as possible and, if feasible, the brine will be pumped back off the tundra. Any remaining product will be diluted well with fresh water to minimize salt burns to vegetation and impacts to permafrost, and removed by the vacuum truck if road-accessible. In cases where the brine is immediately absorbed into the soil, TMAC will assess each individual situation and may consult a remediation specialist for advice in addition to discussions with the KIA and AANDC.

4. Brine Spills to Land with Risk of Entering a Waterbody

   If a brine spill occurs at a location where the product may enter a waterbody, all reasonable measures will be taken to prevent this from occurring. The source of the spill will be stopped as soon as possible. Similar to a hydrocarbon spill, a trench may be dug and lined with plastic to collect and remove flowing water. TMAC will consider options for flushing and collecting water where feasible. TMAC will assess each individual situation and may consult a remediation specialist for advice in addition to discussions with the KIA, AANDC, DFO, and Environment Canada, where appropriate.

Internal and external reporting procedures will be followed for all types of salt or brine spills.

5.8 Spills of Compressed Gas

If an accidental release of compressed gas occurs, TMAC will attempt to stop the source, if safe to do so. The area will be allowed to ventilate, as dilution of the gas is the primary spill response method available. Most of the gases present at Hope Bay are flammable or explosive in elevated concentration, therefore, the area will be cordoned off to prevent accidental ignition or human inhalation incidents. Only employees that have the proper training and PPE will attempt to mitigate the release.

Internal and external reporting procedures will be followed.

5.9 Spills of Other Chemicals

Most other chemicals stored onsite are kept in small quantities and are, therefore, not expected to result in a major spill incident. The MSDS for any product will be consulted prior to initiating any spill response. The MSDS will indicate the proper PPE requirements and proper spill response procedures to follow.

Internal and external reporting procedures will be followed.

5.10 Disposal of Materials

At the Hope Bay Project site, the disposal of spilled material and/or contaminated soil is governed under the Nunavut Waters and Nunavut Surface Rights Tribunal Act. A copy of the Act will be maintained on site for reference.

Clarifications and information regarding waste management and disposal issues will also be obtained from the Government of Nunavut and AANDC. As part of the Doris North Project, the land farm will be available for managing hydrocarbon contaminated soils. An alternate option is to seal the material in 45-gallon drums or 1 ton Mega-bags and transport it offsite to an approved disposal facility which would be coordinated through KBL Environmental. When hazardous waste is transported off site, the generator (TMAC Resources Inc.), carrier and receiver are registered with their respective provinces/territories. Prior to shipment off site, TMAC will register as a waste generator with the Government of Nunavut's Environmental Protection Services, Department of Sustainable Development, and the Protection Services. TMAC will ensure that each material carrier and the receiver of those materials are either registered in Nunavut or in the province or territory in which the company is based.

The Surface Manager, in consultation with the Spill Response Planning/Advisory Team shall investigate the most appropriate disposal options for the spilled material. In addition to transporting the material offsite, disposal for on-site remediation may be possible in the land farm.

6 Spill Reporting

6.1 Summary

Refer to the Quick Reference Section (Spill Response Communication) for a summary of Spill Response Communication & Reporting for the Hope Bay Project.

6.2 Internal TMAC Spill Reporting

In the event of a significant spill the Environmental Manager will prepare the internal TMAC Accident/Incident report through the TMAC incident reporting system. For easy reference, TMAC has a spill reporting sheet that can be used to collect the information (Appendix C).

6.3 External Spill Reporting

Section 9 (1) of the *Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations (Dated 22 July, 1993)* states:

> ***9. (1)*** *The owner or person in charge, management or control of contaminants at the time a spill occurs shall immediately report the spill where the spill is of an amount equal to or greater than the amount set out in Schedule B.*
>
> ***(2)*** *Where there is a reasonable likelihood of a spill in an amount equal to or greater than the amount set out in Schedule B, the owner or person in charge, management or control of the contaminants shall immediately report the potential spill.*

The Reportable Spills Table in the Quick Reference Section is a reproduction of Schedule B of the *Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations (Dated 22 July, 1993).*

In the event of any spill to the marine environment during bulk fuel loading, the Coast Guard must be notified immediately pursuant to *Pollutant Discharge Reporting Regulations SOR/95-351 (Dated 26 June, 1995)* which states:

> **5(9)** *A report shall be made by the operator of an oil handling facility to a pollution prevention officer.*

In the event that a particular material spill meets or exceeds the amount specified in the Reportable Spills Table in the Quick Reference Section, the Environmental Manager will immediately report the spill by telephone to the NT-NU 24 Hour Spill Report Line, Yellowknife, Tel: 867-920-8130 (Fax: 867-873-6924) using the NT-NU Spill Report form. A sample NT-NU Spill Report form is provided as Appendix B.

When making the report, the Environmental Manager will provide, to the extent possible, the following:

1. The date and time of spill;
2. The location of spill;
3. The type of contaminant spilled and quantity spilled;
4. The cause of spill;
5. A description of existing containment;
6. Whether spill is continuing or has stopped;
7. The direction spill is moving;
8. Actions taken to contain, recover, clean-up and dispose of spilled material;
9. The name and phone number of a contact person close to the location of spill;
10. The name, address and phone number of person reporting spill; and
11. The name of owner or person in charge, management or control of contaminants at time of spill.

The Environmental Manager will not delay making the required report if he/she does not have all of the specified information.

The Environmental Manager will be responsible for the submission of the required detailed written spill report to the appropriate agencies within thirty (30) calendar days of the reported spill, after the document has been reviewed by the TMAC President or Chief Executive Officer. The written report will include, but not necessarily be limited to:

- The original NT-NU 24 Hour Spill Report submission, and any updated submissions;
- A description of the spill location and of the area surrounding the spill location;
- The type and quantity of the spilled material;

- The cause of the spill;
- The potential effect(s) of the spill;
- Details of action taken or proposed to be taken to remediate affected areas;
- Details of further action contemplated or required; and
- Measures undertaken or anticipated to reduce the potential for a reoccurrence of the spill at the specific location or other similar locations under the control of TMAC Resources Inc.

Other items that may be included in the 30 day follow-up report, if applicable, are:

- The names of agencies on the scene;
- The names of other persons or agencies advised concerning the spill;
- Copies of analytical results from external laboratories;
- A chronological sequence of events including internal and external notifications; and
- Analysis of the events leading up to the spill and critique of the internal response and handling of the incident.

If required, continuing or progressive sample collection/analysis will be conducted and reported upon until the completion of all prescribed remedial activities.

In the event that any spill or discharge occurs to the marine environment during the fuel loading, the Surface Manager (acting as the On-Shore Supervisor of the OHF) must immediately contact the regional Canadian Coast Guard station at Tel: 1-800-265-0237. The report will provide to the extent possible, the following:

1. The identity of any ship and oil handling facility involved;
2. The time and location of the discharge or estimated time and location of the probable discharge;
3. The nature of the discharge or probable discharge, including the type and quantity of pollutant involved;
4. A description of the assistance and salvage measures employed; and
5. Any other relevant information.

Additionally, the Environmental Manager will be responsible for submit a written report within 24 hours of any discharge or anticipated discharge of oil to a Transport Canada Marine Safety Inspector and to the Canadian Coast Guard, after review by the Chief Executive Officer or President. The report should include the following information:

- Identity of any vessel involved;
- Name and address of the oil handling facility;
- Name and position of the person who is responsible for implementing and coordinating the oil pollution emergency plan;
- Time and location of the discharge or estimated time and location of the anticipated discharge;
- Nature of the discharge or anticipated discharge, including the type of oil and an estimate of the quantity of oil involved;
- Description of the response actions to be taken;
- On scene conditions; and
- Any other relevant information.

The most Chief Executive Officer, or the Surface Manager in the absence of the Chief Operations Officer will be responsible to attend the scene of any spilled materials to photograph and measure the affected area and will be responsible to engage properly qualified personnel to collect samples of

the materials or soils. No person will be permitted to sample or handle spilled materials unless that person has received adequate training in the identification of the hazards associated with the spilled material, the selection and use of appropriate personal protective equipment, and safe sampling procedures. Generally, the Environmental Manager will coordinate the collection of the samples and will submit them to the laboratory for analysis.

6.4 Reporting to the Public

In the unlikely event that a spill poses the potential for the general public to be impacted, only individuals authorized by the Chief Executive Officer (CEO) or the President will be allowed make contact and inform the media or general public. These individuals would usually be the Director of External and Community relations and the Vice President Human Resources. Such notification will only be made after appropriate discussion and approval of the Hope Bay Legal Counsel, the TMAC Executive, and others as required, and only after discussion with appropriate representative of the Nunavut government and the Kitikmeot Inuit Association (KIA). The Environmental Manager will assist in these notifications if needed.

7 Spill Response Training

Training of all Hope Bay Project employees to familiarize them with the Spill Contingency Plan and testing the plan's elements through mock spill exercises is critical to ensuring the success of the plan. Training and training exercises prepare personnel, evaluate the plan holder's ability to respond to a spill and demonstrate to government and to the public that there is adequate preparation should a spill occur. TMAC commits to on-going training and refresher training for employees.

On-site training at the Hope Bay Project site commences with every employee during their initial site orientation. At that time, every employee is informed that he/she is potentially a First Responder to any spill or unanticipated discharge event and is provided a brief explanation of the actions expected of every First Responder and where to find the First Responder SOP (flow chart) which is included in the site spill kits. Spill response plans are also located in accessible public locations on site.

Additionally, more detailed training is provided to select supervisory individuals in years of fuel offloading activities, through consultants such as Riverspill Response Canada Ltd. The instructional sessions include site safety, materials properties and strategies as well as tactics for containment and recovery in-facility, on land (brief) and on water spills. This training also includes the performance of mock spill response practical exercises including deployment of spill response equipment under typical operating conditions.

These training programs ensure that Hope Bay Project personnel understand the procedures in the *Hope Bay Project Spill Contingency Plan,* the hazards of the materials stored on-site, who is responsible for what activities, how to initiate a response, where to find and use response equipment, and how to obtain off-site resources.

8 Document Control Record

8.1 Review and Revision

This *Hope Bay Spill Contingency Plan* is considered an "active" document that will undergo an annual review, at minimum, or as Project phase changes occur, and will be revised as required. Revisions will be made to the procedures where necessary to reflect changes in site conditions and any new applicable legislation or regulations. This Plan will incorporate the lessons learned at each stage of the process and will reflect input from the Kitikmeot Inuit Association (KIA), as representative of the surface land owner (the Inuit beneficiaries of the Nunavut Land Claims), local communities, Nunavut Tunngavik Incorporated whom, along with AANDC, hold subsurface mineral rights in the Hope Bay Belt, and other stakeholders who have an interest in how the Hope Bay Project is managed.

Each revision is recorded in Table 5.

Table 5: Hope Bay Project Spill Contingency Plan History of Revisions

Revision Number	Revision Date	Description of Revisions	Revised By
1	August 2009	Hope Bay Project Spill Contingency Plan, August 2009	SRK Consulting
2	Feb. 2010	Update phone numbers	SRK Consulting
3	July 2010	Update phone numbers	SRK Consulting
4	July 2011	Update channels, figures, included OPPP info, updated phone numbers, revised fuel storage locations	SRK Consulting
5	October 2012	Overall revision for change to Care and Maintenance. Updated roles and responsibilities, phone numbers, fuel storage, added non-hydrocarbon chemicals, updated spill response procedures	Angela Holzapfel
6	January 2014	Overall revision for Care and Maintenance under ownership of TMAC Resources Inc. Updated roles and responsibilities, contact information, fuel storage, updated spill response procedures	Katsky Venter

8.2 Review and Revision Responsibility

Responsibility for the regular review and updating of the Plan is vested in the Environmental Manager.

The document will then be reviewed and approval by the TMAC President and COO. Once approved, all relevant personnel will be notified, and a new hardcopy will be posted on site bulletin boards along with the Emergency Response Plan. The controlled version (electronic) will be on the Hope Bay server.

This revised Hope Bay Project Spill Contingency Plan has been reviewed and is approved by:

Gord Morrison, President, TMAC Resources

Grant Goddard, Chief Operations Officer, TMAC Resources

References

Contingency Planning and Spill Reporting in Nunavut, A Guide to the New Regulations, Environmental Protection Service, Department of Sustainable Development, Government of Nunavut

Consolidation of Environmental Protection Act (R.S.N.W.T 1988, c.E-7) Current to August 29, 2010, Government of Nunavut

Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations as provided by the Government of Nunavut website

Guidelines for Spill Contingency Planning, Water resource Division, Indian and Northern Affairs Canada, April 2007

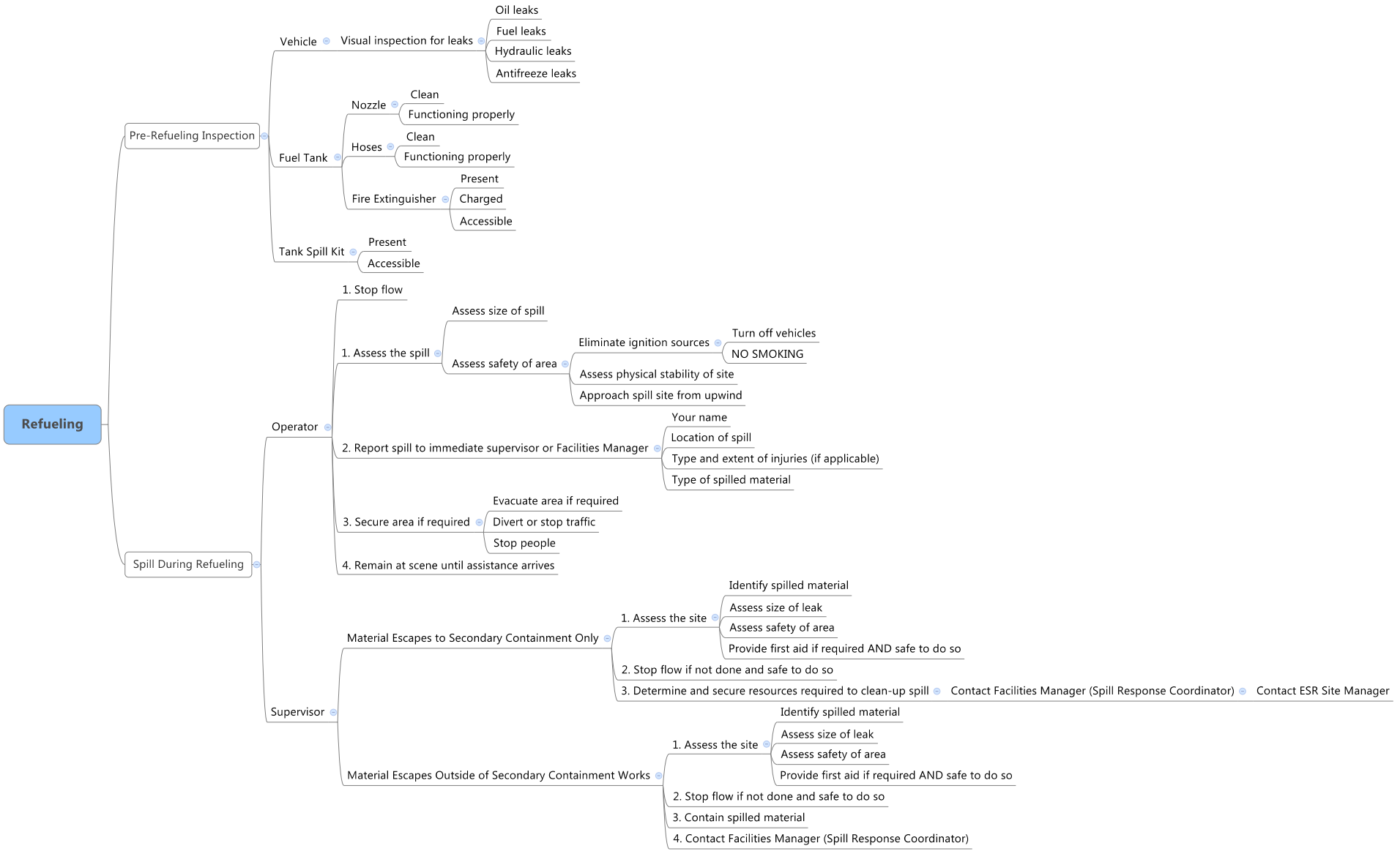
Nunavut Waters and Nunavut Surface Rights Tribunal Act (S.C.2002, c.10) Current to May 5, 2011, Aboriginal Affairs and Northern Development Canada

Appendices

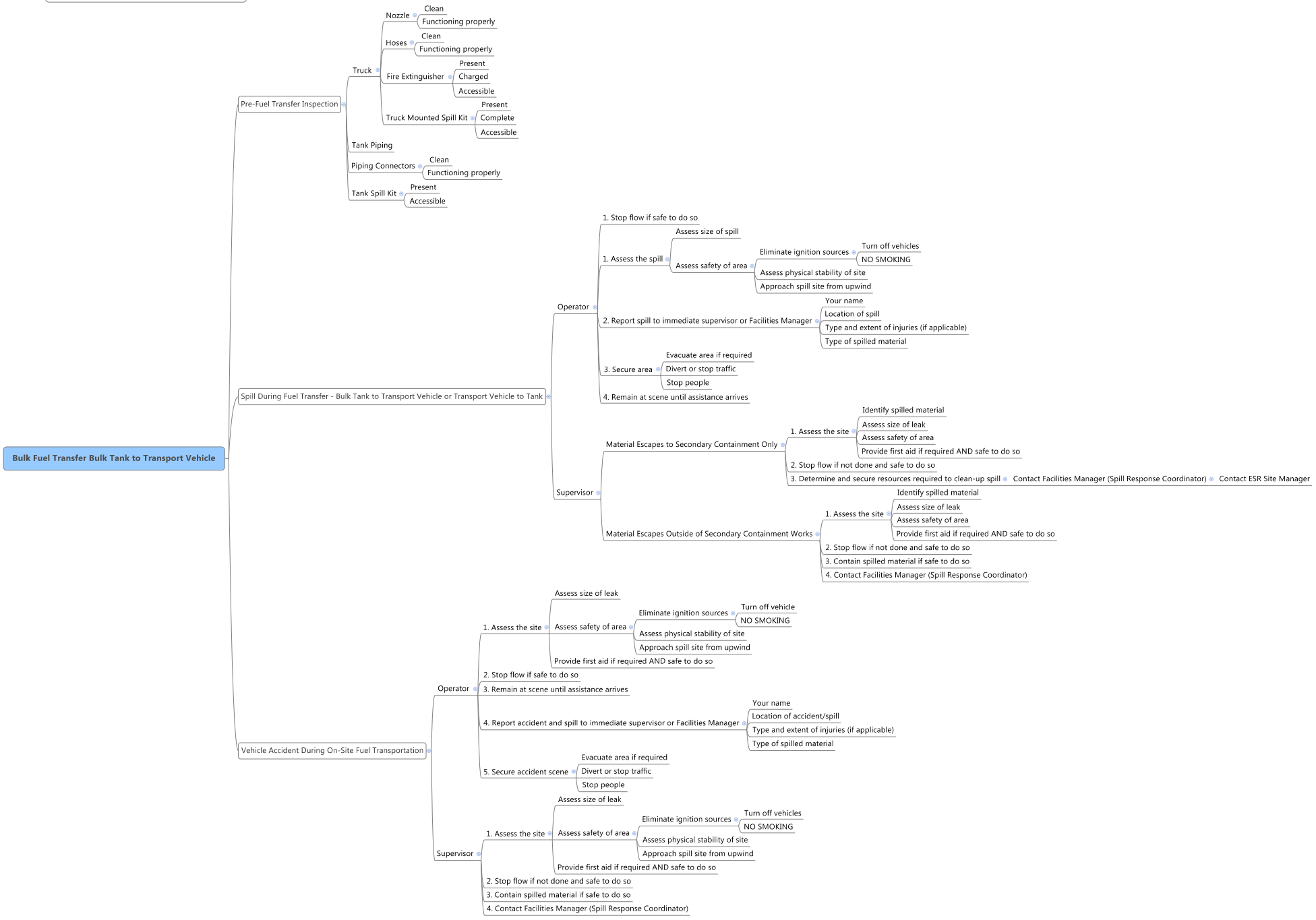
Appendix A
Fuel Handling SOP Flow Charts

Fuel Handling & Spill Response SOP

Refueling



Bulk Fuel Transfer with Fuel Truck



Appendix B
NT-NU Spill Report Form

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 THE NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR
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			

Appendix C
Accident/Incident Spill Report Form

Environmental and Compliance Incident Report

Date of Report:			**Reported by:**	
Date of Incident:			**Time of Incident:**	
Location Description:			**GPS Coordinates:**	
Personnel/Equipment Involved:				
Category: (*circle applicable*)	Wildlife	Air / Land / Water	Spill/ Uncontrolled Release	
Near Miss	Archaeology	Regulatory/Licence Non-compliance	**Product Identification**	**Quantity (L / kg)**
			UN Number	**MSDS Attached?** Y / N / n/a
Description of Incident:				
Immediate Actions:				
Corrective/Preventative Actions:				
Incident Reported to:			**Date/Time:**	
Signature of Reporter:			**Date/Time:**	

For Completion by TMAC Environmental Department	
Water Licence #:	**External Reporting Required? Y / N**
Land Use Permit #	**NT/NU 24 Hour Spill Report? Y / N**
Entered into Incident database (date):	**Other Regulatory Agency? Y / N**
Incident # Issued:	**Which Agencies?**