



SPILL CONTINGENCY PLAN

HOPE BAY, NUNAVUT

April 2016

PLAIN LANGUAGE SUMMARY

This Plan describes the spill response procedures to be used at the TMAC Resources Inc. Hope Bay Project. This Plan ensures that 1) human life is protected and the potential for injury during spill response activities is minimized to the extent possible, 2) all potentially harmful environmental impacts are kept to a minimum, 3) resources are used effectively and efficiently, and 4) all required internal and regulatory reporting is completed on time and as required.

HOPE BAY EMERGENCY PHONE NUMBERS

Onsite Contacts	Day (7am to 7pm)	Night (7pm to 7am)
General Main Line/Emergency Line (Medic)	1-867-988-6882	1-867-988-6882
Surface Manager Kelly Schwenning	1-867-988-6882 ext. 106 Offsite Office: 1-604-947-9707	Offsite Cell: 1-604-209-1726
Surface Manager/Electrical Ron Bertrand	1-867-988-6882 ext. 101	Offsite Cell: 1-250-488-1217
Manager of Mining Paul Christman	1-867-988-6882 ext. 100	
Environmental Coordinator Sarah Warnock Amber Chelczynski	1-867-988-6882 ext. 102	
Site Services (Nuna) Project Manager	1-780-702-6879	
Offsite Contacts	Day (7am to 7pm)	Night (7pm to 7am)
V.P Environmental Affairs John Roberts	1-416-628-0216	1-416-522-5718
V.P Operations Floyd Varley	1-416-628-0216	416-986-1501
Environmental Advisor Katsky Venter	1-250-538-2306	1-250-538-2306
Chief Executive Officer (CEO) Catharine Farrow	1-416-628-0216	
President Gordon Morrison	1-416-628-0216	
Director, External and Community Affairs, Cambridge Bay Alex Buchan	1-867-983-2385	1-867-445-6675
Director Environmental Affairs Oliver Curran	1-416-577-5829	1-416-577-5829

SITE RADIO CHANNELS

Channel 1	Emergency
Channel 3	Aviation
Channel 4	Roads
Channel 5	Site Services
Channel 6	Medic
Channel 7	Environment Department

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
INAC (Indigenous and Northern Affairs Canada)	Field Operations Manager	Iqaluit	867-975-4295	
INAC (Indigenous and Northern Affairs Canada)	Inspector	Yellowknife	867-669-2438	867-669-2702
ECCC (Environment and Climate Change Canada)	Manager of Enforcement	Yellowknife	867-669-4730	867-669-6831
ECCC (Environment and Climate Change Canada)	Environmental Assessment Officer	Yellowknife	867-669-4766	
DFO (Fisheries & Oceans Canada)	Habitat Team Leader	Ottawa	705-522-9909	

OFFSITE RESOURCE CONTACTS

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

IMMEDIATELY REPORTABLE SPILLS

Description of Contaminant	Amount Spilled	TDG Class
Explosives	Any amount	1.0
Compressed gas (toxic/corrosive)		2.3 / 2.4
Infectious substances		6.2
Sewage and Wastewater (Unless otherwise authorized)		6.2
Radioactive materials		7.0
Unknown substance		None
Compressed gas (Flammable)	Any amount of gas from containers with a capacity greater than 100L	2.1
Compressed gas (Non-corrosive, non-flammable)		2.2
Flammable Liquid	≥ 100L	3.1 / 3.2 / 3.3
Flammable Solid	≥ 25kg	4.1
Substances liable to spontaneous combustion		4.2
Water reactant substances		4.3
Oxidizing substances	≥ 50 L or 50 kg	5.1
Organic peroxides	≥ 1 L or 1 kg	5.2
Environmentally hazardous substances intended for disposal		9.0
Toxic substances	≥ 5 L or 5 kg	6.1
Corrosive substances	Not defined	8.0
Miscellaneous products, substances or organisms		9.0
PCB mixtures of 5 or more ppm	≥ 0.5 L or 0.5 kg	9.0
Other contaminants – for example, crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater.	≥ 100 L or 100 kg	None
Sour natural gas (i.e. contains H ₂ S)	Uncontrolled release or sustained flow of 10 minutes or more	None
Sweet natural gas		
Flammable liquid	≥ 20 L when released on a frozen water body that is being used as a working surface	
Vehicle fluid		
Reported releases or potential releases of any substance that: 1. are near or in an open water body (freshwater or marine); 2. are near or in a designated sensitive environment or habitat; 3. Pose an imminent threat to human health or safety; or 4. Pose an imminent threat to a listed species at risk or its critical habitat		

In the event that a particular material spill meets or exceeds the amount specified or conditions outlined in the above table the Environmental Coordinator will immediately report the spill by telephone to the NT-NU 24 Hour Spill Report Line, Yellowknife, Tel: 867-920-8130 (Email: spills@gov.nt.ca; Fax: 867-873-6924) using the NT-NU Spill Report. 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.

FIRST RESPONDER

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

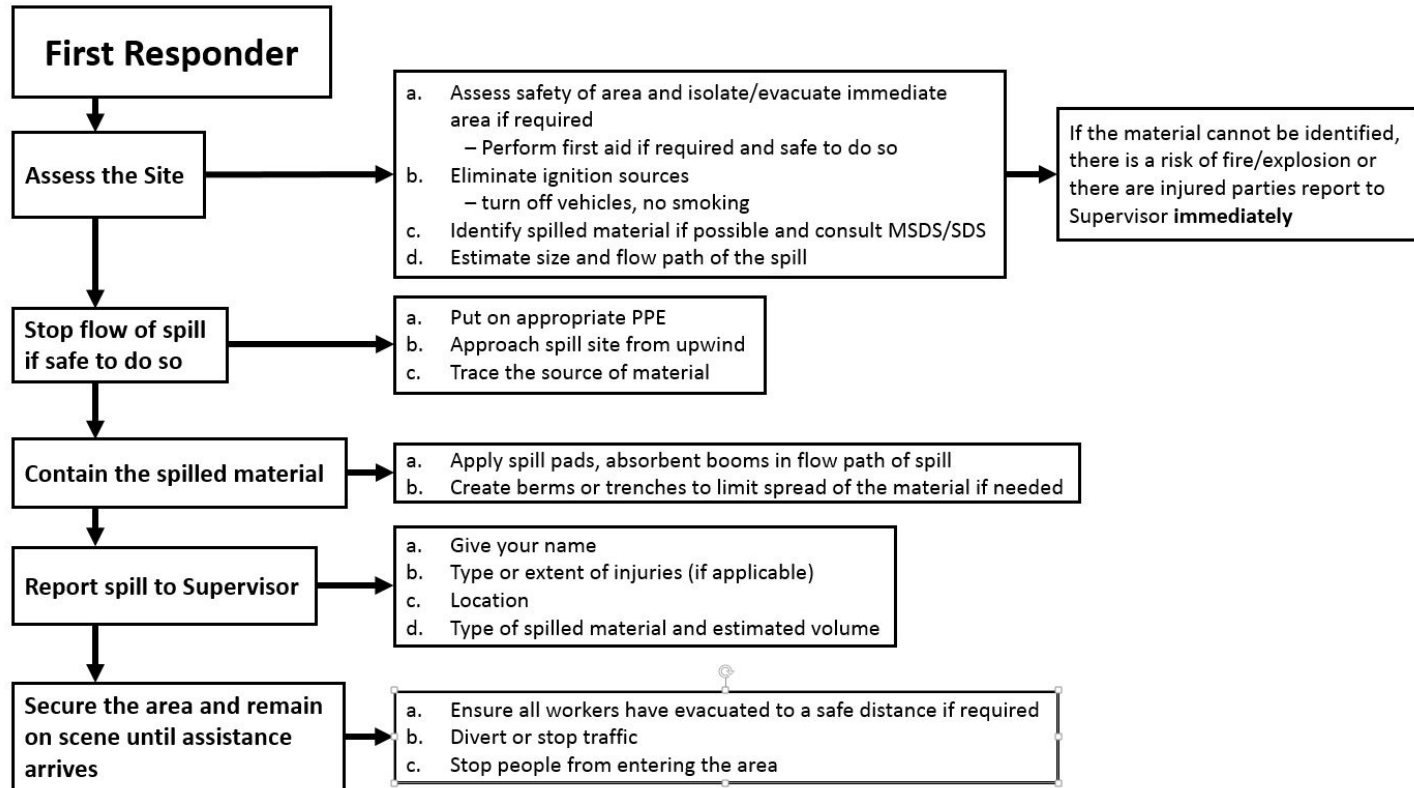


Figure 1: First Responder Spill Response Actions

SPILL RESPONSE ORGANIZATION STRUCTURE

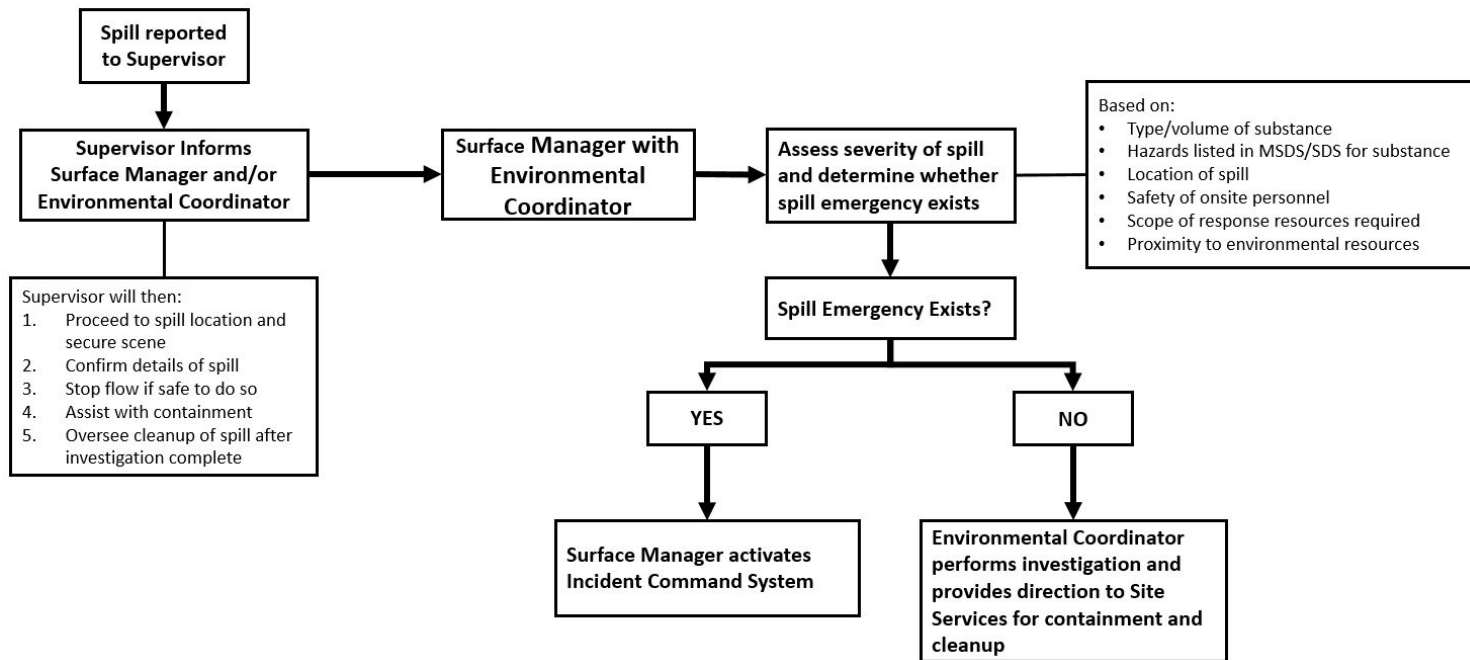


Figure 2. Spill Response Organizational Structure

SPILL EMERGENCY INCIDENT COMMAND SYSTEM

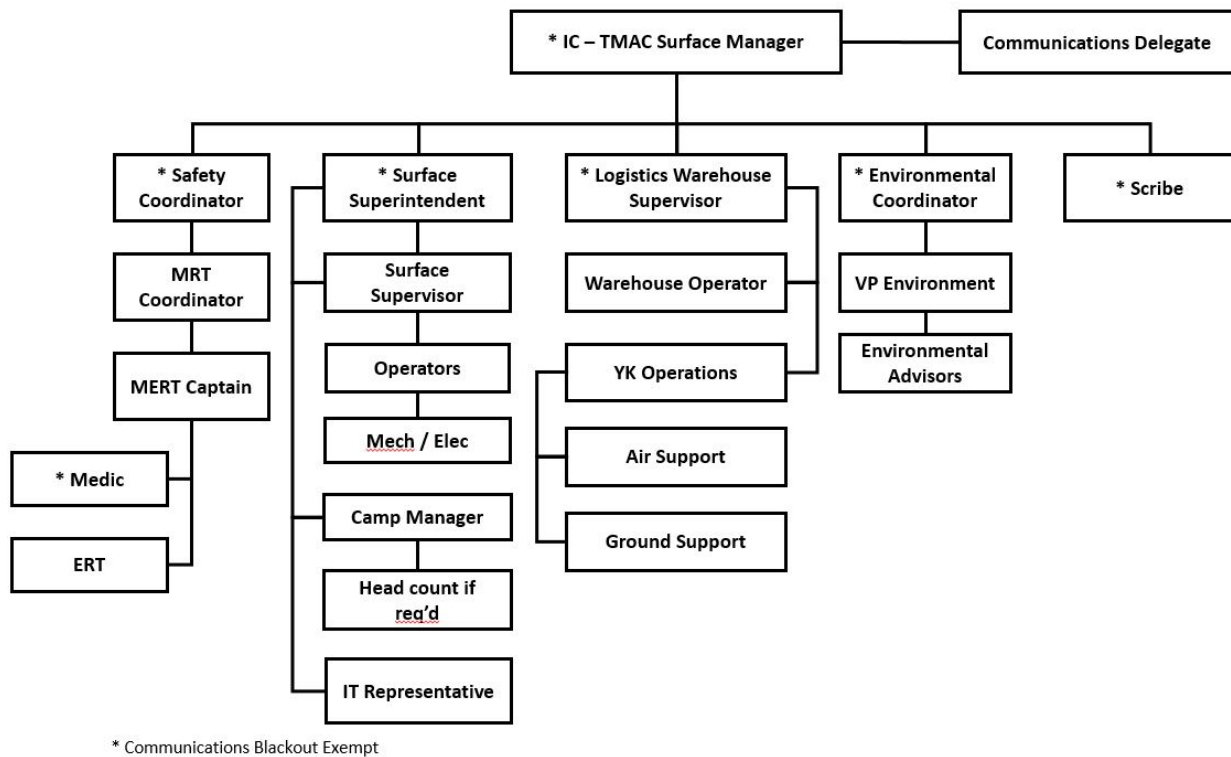


Figure 3. Incident Command System organizational structure in the event of a spill emergency.

REVISION HISTORY

Revision #	Date	Section	Summary of Changes	Author	Approver
1	2009		Hope Bay Project Spill Contingency Plan, August 2009	SRK Consulting	HBML
2	Feb. 2010		Update phone numbers	SRK Consulting	
3	July 2010		Update phone numbers	SRK Consulting	
4	2011	Throughout	Update channels, figures, included OPPP info, updated phone numbers, revised fuel storage locations	SRK Consulting	Newmont
5	2012	Throughout	Overall revision for change to Care and Maintenance. Updated roles and responsibilities, phone numbers, fuel storage, added non-hydrocarbon chemicals, updated spill response procedures	HBML	Newmont
6	2014	Throughout	Overall revision to include Care and Maintenance under ownership of TMAC Resources Inc. Updated roles and responsibilities, contact information, fuel storage, updated spill response procedures	TMAC	TMAC
7	2016	Throughout	Updated to reflect comments on 2014 Plan and other stakeholder inputs. Changes to document structure and addition of licence specific modules and Incident Command System response structure. Revisions to reflect Construction and Operations phases for Doris and anticipated chemical storage quantities. Inclusion of Product-specific response plans, updated contacts.	TMAC	TMAC

GLOSSARY AND ACRONYMS

TERM	DEFINITION
CWS	Canadian Wildlife Services
DoE	Department of Environment
ECCC	Environment and Climate Change Canada
ERT	Emergency Response Team
ERP	Emergency Response Plan
GN	Government of Nunavut
IC	Incident Commander
ICS	Incident Command System
KIA	Kitikmeot Inuit Association
MSDS/SDS	Material Safety Data Sheet/Safety Data Sheet
NWB	Nunavut Water Board
PSSR	Product Specific Spill Response
PPE	Personal Protection Equipment
VPO	Vice President of Operations

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1. INTRODUCTION

This Hope Bay Spill Contingency Plan (the Plan) has been prepared by TMAC Resources Inc. (TMAC) in accordance with three Nunavut Water Board (NWB) water licences held by TMAC associated with developments throughout the Hope Bay region.

The Plan is intended primarily for use by TMAC and its contractors to ensure that best practices for response are implemented in the event of a spill or unintentional release, and that the conditions of water licences and project permits are met.

This Plan is structured in a manner such that one document pertaining to spill response is approved and implemented across all TMAC Hope Bay project sites, while still addressing site- and licence-specific needs: the main document outlines TMAC's approach to spill response planning and management as it pertains to all TMAC Hope Bay developments; subsequent modules provide details for each site and the associated water licence. In the event of a new water licence, or an existing licence amendment, only the specific modules pertaining to that licence and site may need to be revised. This is intended for consistency and efficiency across operations and for compliance management.

This Plan has been developed to be applicable for all phases of the various Hope Bay Belt projects. This Plan is reviewed annually and updated as necessary.

1.1. OBJECTIVES

TMAC's vision and values which strive for zero harm are protective of people and the environment. Safe work procedures and training provided to all employees promote best practices and sound environmental management; however, the potential exists for unanticipated discharges or spills to occur during the course of operations. TMAC recognizes that prompt, effective and organized responses to an unanticipated discharge or spill will enhance the health and safety of all employees, minimize the potential adverse environmental impacts resulting from such an event, and ensure effective communication with the appropriate regulatory agencies and the general public. Consistent with TMAC's intent to be a responsible operator, these objectives are described as follows:

- Provide procedures for every employee should he/she identify an unanticipated discharge or spill;
- Define roles, responsibilities and procedures for spill response actions, documentation, reporting, incident investigation and review following an event;
- Outline a process to be followed when conducting spill clean-up activities to promote safe and effective recovery of spilled materials and minimize impacts to the environment;
- Provide information on available resources and potential operational hazards/risks that may be encountered during spill response activities;
- Define methods to provide spill response training for all employees, and;
- Implement a process to evaluate and continuously improve site spill response procedures

1.2. RELEVANT LEGISLATION AND GUIDANCE

Table 1 Regulations and Guidelines governing the Hope Bay Spill Contingency Plan

Regulation/Guideline	Year	Governing Body	Relevance
Guidelines for Spill Contingency Planning	2007	Indian and Northern Affairs Canada, Water Resources Division	Provides guidelines and requirements for the

			development of spill contingency plans
Environmental Protection Act	1999	Environment Canada	Spill contingency planning and reporting regulations (Section 34)
Environmental Emergency (E2) Regulations	2011	Environment Canada	Outlines requirements for hazardous materials emergency planning

1.3. RELATED TMAC DOCUMENTS

The documents listed in Table 2 are expected to be referenced and utilized in conjunction with the Spill Contingency Plan.

Table 2 List of TMAC documents Related to the Hope Bay Spill Contingency Plan

Document Title	Year	Relevance
Hazardous Waste Management Plan	2012	Describes proper handling, storage and disposal procedures for hazardous wastes.
Non-Hazardous Waste Management Plan	2012	Describes proper handling, storage and disposal procedures for non-hazardous wastes.
Doris North Landfarm Management and Monitoring Plan	2014	Describes process for remediating hydrocarbon contaminated soil, water and gravel and criteria for determining level of remediation.
Surface Emergency Response Plan	(in prep.)	Describes Incident Command System and actions relating to all surface emergencies. This Plan will replace the current ERP (2014).
Doris North Tailings Operations, Management and Surveillance (OMS) Plan	(in prep.)	Describes the tailings management procedures and the aspects of the pipelines designed to reduce spills of tailings and effluent.

1.4. PLAN MANAGEMENT

The Vice President of Operations (VPO) has the overall responsibility for implementing this management plan and will provide the on-site resources to respond to unanticipated discharges and spills that occur in the Hope Bay Belt in accordance with this plan.

The Surface Manager is responsible for implementing this plan at the Hope Bay site, and providing on-site support and resources for spill response management. The Surface Manager will act as Incident Commander (IC) in the event that a spill occurs that requires activation of the Emergency Response Plan (ERP). As Incident Commander, the Surface Manager will coordinate the spill response efforts that protect the health and safety of all responders, and minimizes impacts to the environment.

The Environmental Coordinator is responsible for revising this plan and will investigate spill incidents, develop corrective actions for those incidents as necessary, maintain records of all spill events, and complete appropriate reporting as required by TMAC policies and relevant regulations as identified in this plan. The Environmental Coordinator will also conduct and record regular inspections of spill response resources. In the event that a spill requires activation of the Emergency Response Plan, the Environmental Coordinator will provide guidance to the Surface Manager regarding implementing response actions according to this plan and evaluating priorities for protection of sensitive habitats/species and archeological features at risk.

1.5. PLAN IMPLEMENTATION

In accordance with the requirements of the General Conditions (Part B) of the applicable water licences, this plan will be immediately implemented following its submission, subject to any modifications proposed by the NWB as a result of the review and approval process.

This plan will be reviewed annually and updated as necessary to capture changes to site operational structure/contacts, response technologies or applicable legislation and regulations.

1.6. PROJECT DESCRIPTION

The Hope Bay Project is a gold mining project located in the West Kitikmeot region of Nunavut approximately 125 km southwest from Cambridge Bay and 75 km northeast from Umingmaktok. 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 60 km to the south. All components of the supporting infrastructure, with the exception of the marine and adjacent infrastructure, have been constructed on Inuit Owned Land. The jetty extends into Roberts Bay and is located on foreshore Crown Land. The Hope Bay mineral exploration rights property comprises an area of 1078 km² and forms a contiguous block that is approximately 80 km long by up to 20 km wide. Descriptions of project infrastructure pertinent to each licence area are provided in the appended modules.

The Hope Bay Project area has a low arctic eco-climate and consists of coastal lowland habitats with numerous fresh water lakes and ponds. The drainage basins are generally long and narrow and predominately oriented along the north-south axis and are separated by bedrock ridges. Continuous permafrost covers the project area with a surficial active layer of approximately 1 m. Groundwater movement only occurs in the shallow active layer during the seasonal thaw period and within the talik zones (unfrozen ground underlying larger water bodies). Permafrost underlying the area is generally impervious to groundwater movements.

2. SPILL RESPONSE AND MANAGEMENT

2.1. SPILL INCIDENT ALERTS

Any person on the Hope Bay Project site who comes across or sees an unanticipated discharge or spill is designated as the First Responder and will complete the following actions (Figure 1):

1. Assess the Site
 - a. Assess safety of area and isolate/evacuate immediate area if required
 - b. Perform first aid if required and safe to do so
 - c. Eliminate ignition sources – turn off vehicles, no smoking
 - d. Identify spilled material if possible and consult MSDS/SDS
 - e. Estimate size and flow path of the spill

NOTE: If the material cannot be identified, there is a risk of fire/explosion or there are injured parties report to Supervisor **immediately** (Step 4).

2. Stop flow of spill if safe to do so
 - a. Put on appropriate PPE
 - b. Approach spill site from upwind
 - c. Trace the source of material
3. Contain the spilled material
 - a. Apply spill pads, absorbent booms in flow path of spill
 - b. Create berms or trenches to limit spread of the material is needed
4. Report spill to Supervisor
 - a. Give you name

- b. Type or extent of injuries (if applicable)
 - c. Location
 - d. Type of spilled material and estimated volume
- 5. Secure the area and remain on scene until assistance arrives
 - a. Ensure all workers have evacuated to a safe distance if required
 - b. Divert or stop traffic
 - c. Stop people from entering the area.

All personnel receive appropriate training during their initial site orientation of what to do when he/she sees an unanticipated discharge or spill anywhere at the Hope Bay site. A flow-chart summarizing the First Responder spill actions is provided in Figure 1 as a quick reference at the beginning of this plan and is available in all spill kits on site.

2.2. SPILL RESPONSE ORGANIZATIONAL STRUCTURE

Once a spill has been identified by the First Responder the following spill response organizational structure will be implemented. The responsibilities of the individuals involved in spill response actions is summarized in the sections below. A flow-chart summarizing this structure is provided in Figure 2 as a quick reference at the beginning of this plan.

2.2.1. SUPERVISORS

In the event that a Supervisor is informed of a spill by an employee, he/she will immediately inform the Surface Manager or Environmental Coordinator that a spill has occurred and provide details of the spill as outlined in Section 2.1 above. The Supervisor will proceed to the spill location, secure the scene, confirm the type of material/size of the spill and assist with containment actions. Depending on the severity of the spill incident, either the Surface Manager or Environmental Coordinator will provide direction to the Supervisor regarding the removal, storage and disposal of the spilled material. The incident scene is not to be disturbed until an incident investigation can be completed. Removal and disposal of spill materials is only to be conducted after this investigation is complete and the scene is released by the Surface Manager and/or Environmental Coordinator.

2.2.2. SURFACE MANAGER

Once notified of the spill, the Surface Manager will consult with the Environmental Coordinator to assess the severity of the spill incident and determine whether a spill emergency exists that requires activation of the Incident Command System (ICS) emergency procedures. This assessment will take into account the type and volume of the substance that has spilled, the location of the spill, safety of site personnel, scope of resources required to respond and the proximity of the spill to environmental resources at risk, including water bodies, sensitive habitat, archeological sites or sensitive species in the area.

The ICS is a command structure used in the Emergency Response Plan (ERP) at the Hope Bay site. This structure is designed to have a documented sequence of decisions that has been reviewed in advance of an emergency situation and establishes a chain of command to minimize confusion, so that employees will have no doubt who has the authority for making decisions.

If the ICS is activated in response to a spill emergency, the Surface Manager becomes the Incident Commander and implements the ICS command system outlined in Figure 3 at the beginning of this plan. The Incident Commander will communicate with onsite managers and direct all efforts in the spill response including evacuating personnel, identifying resources required to respond to the incident and activating the Emergency Response Team (ERT). The Incident Commander will direct Site Services to complete containment and clean-up actions based on safety of the responders and environmental protection priorities as identified by the Safety Coordinator and Environmental Coordinator. In the event of a large spill, the Incident Commander may direct the Logistics Warehouse Supervisor to secure off-

site resources and facilitate shipment to the Hope Bay site. The Incident Commander will establish communications with the offsite Public Relations Delegate and regularly brief this individual on the status of the spill emergency. A scribe will be assigned to the Incident Commander to document all communications and response actions of the spill incident.

After the spill emergency has been contained, the Incident Commander will conduct an incident investigation with the assistance of the Environmental Coordinator, Safety Coordinator and other site managers as required.

If the spill is not deemed an emergency by the Surface Manager, the ICS will not be activated and the Environmental Coordinator will provide direction to Site Services for containment and clean-up of the spill after an incident investigation has been completed.

2.2.3. ENVIRONMENTAL COORDINATOR

The Environmental Coordinator will assist the Surface Manager in evaluating the severity of a spill situation to determine whether a spill emergency exists. The Environmental Coordinator will identify environmental resources at risk, including water bodies, sensitive habitat and species, or archeological sites in proximity to the spill based on the size/location of the spill, anticipated path of flow and weather conditions at the time. If a spill emergency exists that triggers the ICS, the Environmental Coordinator will advise the Incident Commander on the prioritization of containment and clean-up efforts. If the ICS is not triggered, the Environmental Coordinator will provide direction to Site Services for containment and clean-up of the spill after an incident investigation has been completed.

The Environmental Coordinator will document and investigate the cause of all spills, and work with onsite managers to develop corrective actions as required to prevent a repeat occurrence of the incident.

The Environmental Coordinator is also responsible for reporting of incidents as outlined in Section 3 of this plan and implementing follow-up monitoring actions deemed necessary to evaluate the extent of the spill and effectiveness of clean-up/remediation efforts. The Environmental Coordinator will communicate with the Vice President of Environmental Affairs and the Environmental Advisor at any time as required to determine effective clean-up measures, discuss reporting submissions and implement environmental monitoring as necessary.

2.2.4. COMMUNICATIONS DELEGATE

In the event of a spill emergency, a Communications Delegate will be identified by TMAC Executive, and will communicate regularly with the Incident Commander to monitor the spill response and maintain a log of internal and external communications. The Communications Delegate will inform all appropriate agencies, which may include the Kitikmeot Inuit Association, the Nunavut Water Board, the Nunavut Impact Review Board, Environment and Climate Change Canada, Indigenous and Northern Affairs Canada, the Department of Fisheries and Oceans Canada and advise the public in the immediate vicinity of the spill if warranted. The Communications Delegate may designate alternative personnel to perform these communications. This individual will also update the TMAC Executive as required.

2.2.4.1. SPILL RESPONSE COMMUNICATIONS

During a spill emergency, 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 Communications Delegate. Communication systems will be shut down at the direction of the Incident Commander and only emergency radio and phone lines identified in the Incident Command organizational structure will remain operational.

All on-site communication with the Communications Designate will occur through or at the direction of the Incident Commander. On-site communications will use portable radios on designated radio

channels. Independent satellite phones are available for crews for emergency communications in the unlikely event that the radio and phone systems fail.

2.3. SPILL RESPONSE ACTIONS

Most chemicals appropriately labelled and stored onsite are kept in small quantities and not expected to result in a major spill incident. Any chemical which is a product listed under the Environmental Emergency Regulations (E2) and which will be stored in quantities on site equal to or greater than that listed in the E2 Schedule 1 will have an additional Product Specific Spill Response (PSSR) Plan detailed for that product. These PSSR plans can be found in Appendix A of this document.

The product label will be used to identify the substance and hazards, the Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS) will be consulted to determine the proper PPE requirements and appropriate spill response procedures. The following sections outline general spill response actions to be taken in the event of a spill in each associated environment. The basic spill response steps to be taken in the event of the spill are illustrated in Figure 4 below.

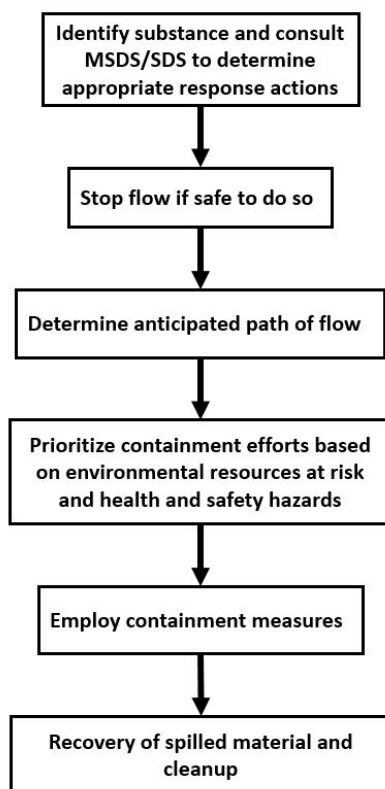


Figure 4. General spill response actions

2.3.1. SPILLS ON LAND AND WATER

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 greater environmental impact. Liquid spills on land will be contained and cleaned up by:

- Covering the spill with appropriate absorbent pads and placing absorbent booms in the path of flow of the spill
- Constructing temporary berms from soil or snow at the leading edge of the spill to minimize flow

- Plastic tarps can be placed over and at the foot of the berm to capture pooling liquid and facilitate recovery
- Temporary berms are an interim measure and will be removed as soon as possible after the spill is contained and remedial actions complete
- Pumping spilled material to empty drums or tanks
- Using a vacuum truck to recover spilled material
- Excavators and other heavy equipment may be used to excavate contaminated materials
- If safe to do so, blow torches (Tiger Torches) may be used to clean small hydrocarbon spills that occur on unlined areas of the camp pad to reduce waste generation and handling

In the event of a spill on water, the spread of the spilled material will be limited to the extent possible. The following steps will be taken to contain and clean-up a spill on water:

- Identify the direction and speed of the flow path of the product based on weather conditions and drainage patterns
 - Monitor the spread of the material from helicopter if possible to identify the area of spread
- Use appropriate absorbent pads, socks and similar materials to recover spilled product
 - Granular sorbent materials are NOT to be used for spill response on water
- Hydrophobic absorbent booms will be deployed to contain large spills and to facilitate recovery
 - Absorbent booms will be drawn slowly in to encircle the spilled product and absorb it
 - High winds, waves and other factors may limit the effectiveness of these materials
- Skimmers will be deployed in open-water areas to remove product from the water surface and boards or plywood may be used in streams or culverts to reduce the flow of spilled product on the surface and limit the area of the spill on the water
- Use of sub-surface barriers to contain spilled product that may sink
- Pump contaminated water into tanks or storage bladders if possible
 - A vacuum truck may be used to recover spilled product
- Contaminated substrate and vegetation will be removed either manually or with the use of heavy equipment if feasible
- Chemical dispersants should not be used as a spill response technique at the Hope Bay project, seek direction from VP Environment

Also see section 4.5 of this document for guidance related to additional spill protection, clean-up, and reporting measures for environmentally sensitive species and archaeological sites.

2.3.2. SPILLS IN A MARINE ENVIRONMENT

The most effective way to minimize environmental damage is to focus on source control and to prevent product from spreading. The following steps will be taken in the event of a spill in the marine environment:

- Identify the direction, speed and flow path of the product based on weather conditions and drainage patterns
 - Monitor the spread of the material by helicopter if possible to identify the area of spread
- Use of appropriate absorbent pads, socks and similar materials to recover small volumes of spilled product
 - Floating spill response booms will be used to encircle a barge prior to off-loading chemicals and fuel from the barge as a precautionary measure
- Use appropriate absorbent pads, socks and similar materials to recover spilled product
 - Granular sorbent materials are NOT to be used for spill response on water
- Hydrophobic absorbent booms will be deployed to contain large spills and to facilitate recovery
 - Absorbent booms will be drawn slowly in to encircle the spilled fuel and absorb it
 - High winds, waves and other factors may limit the effectiveness of these materials
- Skimmers will be deployed in open-water areas to remove product from the water surface
- Use of sub-surface barriers to contain spilled product that may sink

- Pump contaminated water into tanks or storage bladders if possible
- Chemical dispersants should not be used as a spill response technique at the Hope Bay project, seek direction from VP Environment

Also see section 4.5 of this document for guidance related to additional spill protection, clean-up, and reporting measures for environmentally sensitive species and archaeological sites.

Spill response measures specific to bulk fuel offloads completed at Roberts Bay are detailed in the Hope Bay Ocean Pollution Prevention Plan/Oil Pollution Emergency Plan (OPPP/OPEP). The OPPP/OPEP is the main document of reference for spill control actions during a fuel offload at the Hope Bay project and is revised in each fuel offload year.

2.3.3. SPILLS ON SNOW

Spills on snow will be contained and recovered by:

- Use of appropriate absorbent pads, socks and similar materials to recover spilled product
- Compacting the snow into snow-berms and placing a liner of plastic sheeting at the toe and over the berm to collect spilled material and facilitate recovery
- Using the snow as a natural absorbent to collect spilled product
- An excavator, grader or other heavy equipment may be used to scrap up contaminated snow to be stored in a lined containment area or placed in steel drums

2.3.4. SPILLS ON ICE

Spills on ice will be contained and cleaned up by:

- Use of appropriate absorbent pads, socks and similar materials to recover spilled product
- Creating snow-berms by compacting snow around the edge of the spill and placing a liner of plastic sheeting at the toe and over the berm to collect spilled material and facilitate recovery
- Scraping contaminated snow/ice from the ice surface and placing in lined containment
 - Snow may act as a natural absorbent to collect spilled product
- In broken-ice conditions a skimmer may be used to collect product on the surface of open-water areas
 - Caution must be used when conducting spill response efforts in broken-ice situations. An appropriate safety plan and PPE must be determined before initiating these actions
- An excavator, grader or other heavy equipment may be used to scrap up contaminated ice to be stored in a lined containment area or placed in steel drums
 - A vacuum truck may be employed to recover large volumes of spilled material

2.3.5. SPILLS UNDER ICE

Hydrocarbon spills under ice will be contained and cleaned up by:

- An appropriate safety plan and PPE must be determined before initiating these actions
- Testing of the ice to ensure thickness is safe for personnel to work on the surface
- Once ice has been deemed safe, slots will be cut in the ice surface in the area surrounding the spill and downstream of the anticipated direction of flow/spread
 - Contaminant will rise to the surface within the slots
 - Determine the direction of any currents (if expected; this would not be the case in an ice-covered lake) to identify the direction of flow and conduct ice profiling beyond the extent of the spill to identify any spread of the contaminant
- Contaminant will be skimmed/scooped out from within the slots and placed into empty pails/drums as it is recovered

- Pockets within the ice where contaminants can pool will be identified (this applies to ice which may have buckled areas where spills may pool; largely an ocean occurrence)
- Appropriate absorbent pads and booms will be used to contain spill if there is water moving past the ice edge (if any) where the spill took place
 - Set booms ahead of the spill based on the direction of anticipated flow
- A vacuum truck may be employed to recover larger volumes of spilled material or utilizing an Auger and pump system to pump spilled material into containers (e.g. drums)

2.3.6. SPILLS OF COMPRESSED GAS

If an accidental release of compressed gas occurs:

- Stop the source if safe to do so
- Ventilate the area well to dilute the gas
- Cordon off the area to prevent accidental ignition, explosion or inhalation by personnel
- Only employees with proper training and PPE will attempt to mitigate the release

2.3.7. BURNING SPILLS

Small spills of hydrocarbons (<100L) may be removed from unlined camp pad areas by using a propane torch. This response method would reduce the waste production and handling/storage of contaminated materials associated with the spill, and would reduce the risk of spreading or contaminating other areas during transport of these materials. No water would be used and no waste would be deposited to water as a result of this response method.

Extra safety precautions must be taken prior to the use of a propane torch in the event of a spill. The MSDS/SDS for the product will be reviewed to check for the reaction of the substance to heat. PPE such as Fire Resistant clothing and the proper gloves and respirator will also be worn and a spotter with a fire extinguisher rated for the type of spill and fire must be present during the clean-up.

Burning of larger spills may be considered on a case by case basis and only once TMAC has consulted with and received approval from ECCC, the KIA, the INAC Inspector and any other associated regulatory agencies. This method of response is only useful if quick action is possible, and prior to natural spill dispersal and loss of the more ignitable hydrocarbon fraction.

2.3.8. SPILLS AFFECTING ENVIRONMENTALLY SENSITIVE SPECIES OR ARCHEOLOGICAL SITES

The Hope Bay Project contains a number of diverse environmentally sensitive habitats, species and sites of archeological and historical importance. The possibility exists for a spill to impact these environmental and cultural resources.

TMAC and previous companies operating on the Hope Bay site have conducted numerous ecological surveys to identify these areas at risk, with the focus of identifying those areas immediately surrounding Project infrastructure which are at greatest risk of impact from a spill.

In the event that a spill enters the natural environment, the Environmental Coordinator will use maps identifying these sensitive areas to prioritize the protection of these resources. Examples of these maps are provided in Appendix C.

All of the communications outlined in this section would occur in addition to any appropriate spill reporting outlined in Section 3.

2.3.8.1. MITIGATION OF IMPACTS TO WILDLIFE

All reasonable measures will be taken to deter wildlife from coming into contact with any spilled material. In the event that wildlife does come in contact with a spilled material, TMAC will contact the Kitikmeot Inuit Association and either Environment and Climate Change Canada (ECCC) (in the case of

migratory birds (does not include raptors)) or Government of Nunavut Wildlife Officers (in the case of other animals) to inform them of the impact and determine an appropriate course of action. In cases where wildlife can be rescued, wildlife spill response experts will be contacted for assistance and guidance.

2.3.8.2. MITIGATION OF IMPACTS TO BIRDS

In the event that a contaminant is released to a body of water, initial wildlife response measures will be exercised in alignment with the *Birds and Oil-CWS Response Plan Guidance* document if migratory birds are or may be impacted. Environment and Climate Change Canada's Canadian Wildlife Service (ECCC-CWS) will be consulted to determine response strategies including the most appropriate humane treatment of oiled wildlife. Initial wildlife responses measures should include:

- Hazing to deter wildlife from using spill area
 - Watercraft
 - Sound makers such as whistles or horns
 - Helicopter* (if available and safe to do so)
- Wildlife monitoring
 - Assessment surveys for oiled and unoled wildlife
 - Wildlife observers will be on vessels and aircraft if possible
- Bird Collection*
 - To collect dead and live birds within the spill area and adjacent. All response vessels should be equipped with dip nets, large plastic collecting bags to hold dead birds, and cloth bags or cardboard boxes to hold live oiled birds.

*The use of helicopters to deter migratory birds and the collection of live and dead birds require an authorization from ECCC-CWS.

2.3.8.3. MITIGATION OF IMPACTS TO ARCHEOLOGICAL FEATURES AND SENSITIVE HABITATS

If a spill is determined to have impacted any archeological or historic resources, prior to removing soil or vegetation, TMAC will immediately contact the Project Archaeologist. The Project Archaeologist will provide advice on next steps, and may travel to site to mitigate the archeological site. The Archeologist will also coordinate permits and communications with the Government of Nunavut Territorial Archaeologist.

In the event that shoreline substrates or aquatic vegetation have been impacted, TMAC will contact Environment and Climate Change Canada and the Department of Fisheries and Ocean for advice prior to initiating removal.

2.4. DISPOSAL OF CONTAMINATED MATERIALS

All contaminated materials generated during a spill event will be contained and disposed of as appropriate per the product specific MSDS/SDS and as outlined in the Hazardous Waste Management and Non-Hazardous Waste Management Plan. Empty drums, barrels, mega-bags and storage tanks are available to store contaminated materials for disposal.

Hydrocarbon contaminated soil, snow and water may be remediated in Landfarm facilities as per the Landfarm Management Plan if these materials meet the requirements for remediation in these facilities.

2.5. SPILL RESPONSE RESOURCES

2.5.1. ON-SITE RESOURCES

Spill Response Kits will be available near (within 200 m) any areas where chemicals are stored and used on site, including near all bulk fuel berms and smaller fuel tanks. Spill response kits will be easily accessible for personnel responding to a spill. As project activities evolve and new locations of chemical storage and use are identified new spill kits will be added as needed, and all active construction areas where equipment is operating will also have a spill kit located within 200 m.

Additional spill response equipment is maintained for response in an aquatic environment. This equipment is stored in seven moveable containers that can be relocated for rapid response to a spill in a stream, lake or marine environment.

A list of supplies contained in each spill kit type, and in the aquatic spill response containers, is provided in Appendix B.

All fuel transfer vehicles are also equipped with a spill kit designed to address smaller spills of hazardous fluids (<40 L). Personnel are trained in proper fueling procedures and spill trays are used during all fueling activities to minimize the potential of an unintentional release.

TMAC also maintains an on-site supply of roll, pad and mat absorbents, plug and dyke kits, mini booms, absorbent socks, peat moss, crushed corn cobs, coconut mats, hand tools, empty storage tanks and various pieces of heavy equipment including a vacuum truck, grader, dozers, excavators and haul trucks that would be used in the event of a large spill.

Spill kits are replenished as needed after use and inspected at least once per calendar year. The purpose of the inspection is to evaluate the location of spill kit proximity to associated work activities, inspect the condition of the spill kit, and check that all required contents are available and in good condition.

The aquatic response supplies and equipment are inspected annually prior to fuel offloading events and after use in the event of a spill to the aquatic environment.

2.5.2. 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. The Hope Bay Project 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.

Additional off-site resources are available to the Hope Bay Project from the Mackenzie Delta Spill Response Corporation, which focuses on the protection of the Arctic Marine environment. TMAC may secure additional equipment or assistance from the Mackenzie Delta Spill Response Corporation in the event of a significant spill to an aquatic environment.

3. SPILL INVESTIGATION, DOCUMENTATION AND REPORTING

3.1. SPILL INVESTIGATION

The Environmental Coordinator is responsible for investigating and documenting the cause of all spills that occur at the Hope Bay site. This investigation will be aimed at determining the root cause of a spill and identifying corrective actions that will reduce the risk of a repeated incident. The Site Safety Representative and Surface Manager may participate in the investigation and assist in developing corrective actions. Any corrective actions that are identified will be implemented immediately, entered

into the Environmental Incident Register and communicated with all personnel at the Hope Bay site through email communications and/or discussions at departmental safety meetings.

3.2. TMAC INTERNAL REPORTING

An Incident Event notification will be sent by the Environmental Coordinator to environmental personnel and Supervisors working at the Hope Bay site within 24 hours of the spill event. This notification will provide a brief description of the spill, consequences of the spill, root cause of the event if identified and a brief description of the response including containment and cleanup actions.

If the spill produced is greater than 25% of what is outlined in the Reportable Spills Regulation the Environmental Coordinator will also complete an Environment and Compliance Incident Report that will be distributed to environmental personnel and Supervisors working at the Hope Bay site. This report will provide a detailed description of the incident, root causes, immediate response actions taken and any corrective/preventative actions that were identified during the course of the investigation.

All details of the spill investigation and implementation of corrective/preventative actions will be documented in the Environmental Incident Register by the Environmental Coordinator.

3.3. EXTERNAL REPORTING REQUIREMENTS

In the event that a particular material spill meets or exceeds the amount specified in the Immediately Reportable Spills Table (located at <http://www.enr.gov.nt.ca/programs/hazardous-materials-spills/reporting-spills>, and at the beginning of this plan), the Environmental Coordinator or representative will complete the NT-NU Spill Report form (available through the preceding link) and report the spill to the NT-NU 24 Hour Spill Report Line by phone (867-920-8130) and/or e-mail (spills@gov.nt.ca) as soon as possible within 24 hours of the event. The INAC Inspector will be copied on these submissions. The submission of the report will not be delayed even if not all information is available at the time of submission.

In the event that a spill has occurred to the marine environment, the Surface Manager and/or Environmental Coordinator will also notify the Canadian Coast Guard station immediately and provide details on the time and location of the discharge, type and quantity of pollutant, description of assistance and salvage measures employed and any other relevant information. A written report will also be submitted within 24 hours to the Canadian Coast Guard. A copy of this report will be submitted to a Transport Canada Marine Safety Inspector if required.

The Environmental Coordinator will communicate with the VP Environmental Affairs and the Environmental Advisor during the incident to determine additional notifications to be submitted to regulatory agencies during the event.

Within 30 days of the event, the Environmental Coordinator will submit a detailed written spill report to the appropriate regulatory agencies. This report will include a description of the spill location, type and quantity of spilled material, associated causes that led to the incident, details of actions taken to remediate affected areas and potential effects of the spill, measures undertaken to reduce the potential for a reoccurrence of a similar incident, results of monitoring activities undertaken and details of any further actions required. Other applicable details such as the names of agencies on the scene, persons or agencies advised concerning the spill, a chronological sequence of events including internal/external notifications, and lessons learned from events leading up to the spill and the response actions taken may be included in this report. Additional follow-up engagement may occur as deemed appropriate by the VP Environment and based on the specific spill and stakeholder input.

A list of spills reported to the NT-NU Spill Report Line will also be provided in the annual report for each of the licence areas.

3.4. MONITORING AND RESTORATION

Monitoring activities may be conducted to assess the impacts of the spill and the effectiveness of associated cleanup/remediation efforts in the event a spill cannot be completely removed. This may include a number of monitoring techniques and collection of samples for laboratory analysis. The monitoring program will be developed by the Environmental Coordinator in consultation with the VP Environmental Affairs, the Environmental Advisor and associated regulatory agencies.

The Environmental Coordinator will be responsible for overseeing the implementation of these monitoring activities. No person will be permitted to sample 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.

The final required clean-up, restoration (or mitigation) and on-going monitoring will be conducted as needed, and where appropriate in consultation with, and satisfaction of, the INAC Inspector and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

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

4. SPILL RESPONSE MANAGEMENT ISSUES AND CONTINGENCIES

4.1. ISSUE: SPILL FROM A CHEMICAL STORAGE TANK OR CONTAINER

A fuel storage tank, containment area, sump, emergency dump catch basin or other fuel tanks may release their contents for a number of reasons, such as due to puncture, openings developed over time due to degradation (such as rusting), or overfilling.

Equipment malfunction or facility failure may cause a spill event to occur, particularly during extreme winter temperature conditions experienced at the Hope Bay site.

4.1.1. MANAGEMENT RESPONSE

This risk is minimized through the use of secondary containment and spill containment. All bulk fuel facilities are located in secondary containment (i.e. containment designed to contain volumes equivalent or greater than 110% of the aggregate or total volume of the largest container in the containment (whichever is greater)). Smaller chemical storage tanks are either double walled (have built-in secondary containment), and are located in spill trays such that any leakage from hoses or lines are further contained or are located in secondary containment berms. Spill trays are used under fuel drums and other smaller chemical containers.

Inspections of all containment structures will be routinely conducted to ensure concerns are noted and are addressed promptly.

In the event that a spill exceeded the capacity of a containment berm (for example, if more than one container in a berm was breached) or a containment berm became compromised, the spill response actions outlined in Section 2 would be implemented. Containment measures would be deployed to prevent the spread of the chemical into the natural environment. This would include deploying absorbent materials or booms and constructing diversion trenches or sumps to intercept the spilled product. The vacuum truck and all available pumps would be deployed to transfer spilled product into empty storage tanks or alternative containment berms if necessary.

4.2. ISSUE: SPILL DURING TRANSPORT

Spills may occur during the transport of chemicals from one site location to another.

4.2.1. MANAGEMENT RESPONSE

As new chemicals, fuels and hazardous materials are brought to site, standard operating procedures are developed that outline the process for safely transporting or transferring these products between locations at site. Experienced operators transport these materials and are familiar with site road conditions. Traffic right-of-way procedures are established that reduce the risk of an accident between two vehicles and all vehicles are equipped with radio communication to ensure operators can remain in contact at all times. A spotter is used to direct operators loading and off-loading these materials from transport vehicles to reduce the risk of damage to chemical storage containers during transport and loading. Spill trays are used when chemicals are transferred to equipment or secondary containers for use.

4.3. ISSUE: SPILL DURING TRANSFER

Spills have an increased likelihood of occurring during transfer of chemicals. This may be the case during equipment refuelling, transfer of chemicals between containers, or transfer of wastewater in pipelines. Such spills may result from human error (overfilling, inaccurate filling) or equipment malfunction (such as a break in the transfer line/pipe due to wear or freeze/thaw cycles).

4.3.1. MANAGEMENT RESPONSE

As new chemicals, fuels and hazardous materials are brought to site, standard operating procedures are developed that outline the process for safely using these chemicals during operations. Workers who use chemicals or fuels during daily operational activities receive training in the proper handling, storage and disposal of these materials prior to commencement of work. Any applicable MSDS/SDS sheets are reviewed by all workers using these chemicals to identify potential hazards. Workers are encouraged to plan work activities before beginning a task to reduce the potential for inadvertent errors.

Fueling of mobile equipment generally takes place at the Doris Fueling station, which is located inside of the Doris Bulk Fuel Containment berm, minimizing risk to the environment. Remote fueling, such as occurs for stationary equipment and helicopters, requires a spill kit be easily accessible and spill trays are used.

Fuel tanks are not filled to full capacity, to reduce the possibility of overflow during fueling or due to expansion.

Workers are provided with on-site training in spill response techniques and are familiar with the response resources available in the event of a spill.

Wastewater transfer pipelines, for sewage as well as other wastewaters, are constructed to reduce breakage due to freeze/thaw cycles and are inspected as needed to ensure they are functioning. Additional design features of the tailings lines which reduce the risk of spills are outlined in the Doris North Tailings Operations, Management and Surveillance (OMS) Plan (*in prep.*).

Should any of the above measures fail, spill response would be undertaken as outlined in this document.

4.4. ISSUE: SPILLS FROM EQUIPMENT

Spills may occur from mobile and stationary equipment during routine maintenance or due to equipment malfunction or wear combined with extreme weather conditions.

4.4.1. MANAGEMENT RESPONSE

All equipment at site undergoes routine preventative maintenance, and mobile equipment is subject to daily pre-operational inspections to identify specific issues for mechanical resolution. Where possible, all equipment maintenance is performed in designated maintenance areas. During equipment

maintenance, spill trays are used as needed. Spill trays are also used for stationary equipment, or those parked for extended periods of time.

4.5. ISSUE: HEALTH AND SAFETY OF SPILL RESPONDERS

Some products and chemicals used at the Hope Bay site may pose a risk to the health and safety of personnel responding to a spill. Spilled materials may create toxic, explosive or flammable hazards that must be considered during response efforts.

4.5.1. MANAGEMENT RESPONSE

Personnel working at the Hope Bay site are provided on-site training in the proper handling, storage and disposal of chemicals related to their tasks. The product MSDS/SDS is reviewed by personnel prior to using these chemicals to identify potential hazards related to handling these materials.

The MSDS/SDS for each chemical outlines the specific personal protective equipment (PPE) required when handling each product and provides information on methods for clean-up in the event of an accidental release to the environment. MSDS/SDS sheets are maintained at site for all chemicals stored and used at the Hope Bay Project.

In the event that a spill poses toxic, explosive, flammable or other hazards that endanger personnel or the environment, the Emergency Response Team (ERT) will be activated through the Incident Command System. Members of the ERT are equipped with additional PPE that allows them to safely respond to hazardous situations and receive additional training in response techniques for these scenarios.

Site chemicals are reviewed annually and compared to the Environmental Emergency Regulations. If any chemicals are anticipated to be stored in quantities exceeding the volume thresholds outlined in these regulations a Product Specific Spill Response Plan will be developed and submitted as an addendum to this Plan. Product Specific Spill Response Plans identified as necessary for construction and operations phases are located in Appendix A of this Plan.

4.6. ISSUE: SPILLS TO WATER

Spills to water are of particular concern due to the sensitivity of water environments and potential of rapid spread of spills into water.

4.6.1. MANAGEMENT RESPONSE

No chemicals are stored within 31 m of water. All chemicals are kept in containment, and spill kits are located nearby which contain small booms and absorbent pads. In the event of a large spill to water, additional itemized and audited Aquatic Spill Response Equipment is located at Roberts Bay in movable seacans. Response actions protective of wildlife are outlined in environmentally Sensitive Species section above.

4.7. ISSUE: OPERATIONAL CONSIDERATIONS FOR SPILL RESPONSE

Hope Bay is a remote project site that experiences extreme weather conditions and seasonal daylight variations which may impact the effectiveness of spill response actions. The Hope Bay Project is only accessible by plane for the majority of the year, with a short open-water ship access season.

4.7.1. MANAGEMENT RESPONSE

This 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.

The majority of activities conducted at the site occur on the project infrastructure roads and camp pads. In the event that a spill occurs off the site infrastructure, helicopters and off-road tundra (low impact) vehicles, such as the Rim-pull, will be used to mobilize spill response resources. The impact from these vehicles will be monitored and damage to the surrounding tundra minimized to the extent possible.

Extreme weather conditions, such as sub-zero temperatures, that may impact the response capabilities of personnel will be mitigated by rotating personnel from response activities to break areas as needed. This may include using heated vehicles, portable shelters or heated buildings.

Portable light plants are available on-site and will be used in seasonal darkness to aid in spill response containment, clean-up and remedial actions.

5. TRAINING

All personnel working at the Hope Bay site receive onsite training during the 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.

Supervisors provide task-specific training to workers using chemicals onsite which includes appropriate handling, storage, disposal, and where to find guidance on spill response for these chemicals. Workers are provided with information on spill response requirements and the locations of spill kits in their immediate work area. Spill response techniques are reviewed in departmental safety meetings by the Environmental Coordinator on a regular basis and lessons learned from spill investigations are communicated to all workers as corrective actions are developed.

Additionally, more detailed training is provided to workers involved in 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 in years of fuel offload, including deployment of spill response equipment under typical operating conditions.

Members of the Emergency Response Team receive frequent training regarding a variety of incident scenarios and response techniques applicable at the Hope Bay site. This training includes response to fire, explosive or toxic incidents, including spill of materials that could result in these 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.

6. RESPONSES TO COMMENTS RECEIVED ON PREVIOUS PLAN VERSIONS

This Plan replaces the 2014 Spill Contingency Plan for the Hope Bay Project. Table 3 below outlines the comments received on the previous version of this Plan and TMAC's responses.

Table 3 Comments received on the previous version of this Plan and TMAC's responses

Reviewer	#	Section	Comment	Recommendation	Response
AANDC	1	Section 1 Introduction	Section 1.4.1 (On-Site Resources) of the spill management plan lists the locations of spill kits. However the list does not contain any spill kits located at the wastewater treatment plant.	Spill kits should be located at the wastewater treatment plant. Spill kits should also be readily available where any other chemical product is stored.	A spill kit has been added at the wastewater treatment plant. Section 2.5.1 of the revised Spill Contingency Plan states that a spill kit will be available within 200m of locations where chemicals are stored and used on site.
AANDC	2	Section 3 Project Description	Section 3.6 (Potential for Spills) of the spill management plan states that "...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 to these protocols it is recommended that spill kits be moved to strategic locations during fuel transfer operations to minimize the effects of a potential spill. As well it is recommended that during refueling operations secondary containment should be used (i.e., drip pans or trays).	Spill kits are located in close proximity to fuel storage locations and are easily accessible by personnel conducting these activities. Fuel transfer vehicles are equipped with additional spill response supplies. Personnel involved in fuel transfers are provided training in spill response techniques and spill trays are used during daily fuelling activities. See Plan sections 4.2 and 4.3.
AANDC	3	Section 5 Spill Response Actions	Section 5.9 (Other Chemicals) of the Spill Management Plan does not specifically address how hazardous materials will be managed in the	The spill plan should address how all chemicals on-site will be acted upon in the event of a spill, particularly products or chemicals	Section 2 of the revised Spill Contingency Plan outlines response actions to be taken in the event of a spill of any substance on

Reviewer	#	Section	Comment	Recommendation	Response
			event of a spill. In addition, Section 3.5 (Inventory of Other Chemical Storage Areas) does not list where cyanide products or ammonia nitrate are stored.	that are readily soluble in water (i.e cyanide products), as well as listing where and how these products are stored.	site, which includes consultation of the applicable MSDS sheet for substance-specific spill clean-up actions. Substance-specific spill response plans have been developed for Ammonium Nitrate and Sodium cyanide in Appendix A of this revised Plan. A list of chemical products, details of storage locations and containment capacities are provided in the appended modules for each of the three licence areas.
AANDC	4	Section 5 Spill Response Actions	Section 5 (Spill Response Actions) does not describe how they would handle a spill “under ice”.	Section 5 should be revised to contain a section describing how to handle a spill “under ice conditions”.	Spill response actions for a spill under ice has been addressed in section 2.3.5 of the revised Spill Contingency plan.
AANDC	5	Section 8 Spill Reporting	Section 6.3 (External Spill Reporting) does not list AANDC Manager of Field Operations as a person to contact during a spill event	Section 6.3 should be revised to include AANDC, Manager of Field Operations as a person to contact during a spill event.	Section 3.3 of the revised Spill Contingency Plan provides detail on external reporting for spill incidents at the Hope Bay site. TMAC routinely copies spill reports sent to the NT-NU spill line to the INAC Inspector.
EC	1	NA	During the review of the Hope Bay Project Spill Contingency Plan (the Spill Plan), EC also reviewed elements of the document titled Hazardous Materials Management Procedures – Doris North Project (November 2005), which was prepared by Miramar Hope Bay Ltd.		TMAC notes that the current Hazardous Materials Management Plan for the Project is the one dated 2012 and found on the NWB ftp site.

Reviewer	#	Section	Comment	Recommendation	Response
			In particular, EC reviewed Appendices B, C, and D.		
EC	2	NA	The Spill Plan does not contain hazard identification and risk assessment information for project activities involving the use and handling of hazardous substances.	EC recommends that the Proponent undertake and incorporate hazardous substance identification and risk assessment into the Spill Plan in order to provide the required basis for accident scenario characterization and response planning.	Hazardous substances are identified by their labels and by reviewing the product specific Material Safety Data sheet as per the spill response actions outlined in section 2.3 of the revised Plan. Spill response actions are based on recommended containment, clean-up and personal protective equipment outlined in the MSDS. Appendix A of the revised spill plan contains product-specific spill plans for those products which may trigger the Environmental Emergency Regulations thresholds.
EC	3	NA	The scope of the revised Spill Plan does not cover potential spills of cyanide or of ammonium nitrate, specifically spills of these products to water. Instead, the Proponent relies on the following appendices of the Final Environmental Impact Statement Hazardous Materials Management Procedures – Doris North Project (November 2005): Appendix B: International Cyanide Management Code; Appendix C: Cyanide Spill Prevention and Response; and Appendix D: Spill Procedures for Products on Site.	Ideally, separate management plans should be developed for the cyanide products and the ammonium nitrate that will be used on-site, with each management plan taking into consideration site-specific factors such as transportation, storage and handling, and response procedures for all potential accident scenarios, including spills to water. Simply referring to the International Cyanide Management Code and to a technical paper on Cyanide Spills Prevention and Response is not	A product specific spill response plan has been developed for Sodium Cyanide and Ammonium Nitrate in the revised Plan (Appendix A). Sodium cyanide is the only cyanide product expected to be used on site for processing. TMAC has elected not to mix ANFO on site, and, as such, Ammonium Nitrate will only be present on site in the form of pre-mixed explosives. Additional substance-specific response plans will be developed if materials are brought to site in quantities that near or

Reviewer	#	Section	Comment	Recommendation	Response
				<p>an adequate or acceptable replacement of a site-specific Cyanide Management Plan – especially when it is unclear if the Proponent is even a signatory to the International Cyanide Management Code.</p> <p>Alternatively, if the Proponent chooses not to develop separate management plans for their cyanide products and ammonium nitrate, then the Hope Bay Project Spill Contingency Plan should be revised to address potential accident scenarios involving these two products, with special emphasis on potential spills to water since both products are soluble in water and are deleterious to fish and aquatic organisms.</p>	exceed the Environmental Emergency Regulation thresholds.
EC	4	NA	The Spill Plan does not provide any spill scenarios, namely a worst-case scenario and alternative accident scenarios.	EC recommends that proponents prepare contingency plans that reflect a consideration of potential accidents and malfunctions and that take into account site-specific conditions and sensitivities. The Canadian Standards Association publication, Emergency Preparedness and Response, CAN/CSA-Z731-03 is a useful reference for this.	Contingency plans of potential accidents and malfunctions are provided in Section 4 of the revised Spill Contingency Plan. This section will continue to be refined in future revisions to capture additional scenarios as operational activities evolve and corrective actions/lessons learned are developed through incident investigations.

Reviewer	#	Section	Comment	Recommendation	Response
EC	4	NA	The Spill Plan does not provide any spill scenarios, namely a worst-case scenario and alternative accident scenarios.	EC also recommends that, for each hazardous product stored and handled on-site, proponents document and provide information on worst-case accident scenarios in a manner that is consistent with one or both of the OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response, and the MIARC 2007 Risk Management Guide for Major Industrial Accidents. [Reference 1: OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response – Guidance for Industry, Public Authorities, Communities and Other Stakeholders, Second edition, 2003; Reference 2: Major Industrial Accidents Reduction Council (MIARC), 2007, Risk Management Guide for Major Industrial Accidents, 436pp.]	Section 5 in the revised Spill Contingency plan outlines worst-case spill scenarios. This section will continue to be refined in future revisions to capture additional scenarios as operational activities evolve and corrective actions/lessons learned are developed through incident investigations.
EC	5	NA	The legend in the Spill Response & Communications SOP flowchart presented in the Spill Response – Communications Summary (no page number indicated) indicates that a “red 1” is for those items requiring “Contact within 24 hours of event if spill is deemed reportable”. The Proponent should be aware that the	Although EC acknowledges that Section 6.3 External Spill Reporting correctly indicates immediate notification to the Canadian Coast Guard pursuant to the Pollutant Discharge Reporting Regulations SOR/95-351 as well as to the NT-NU 24 Hour Spill Report Line, the Legend in the Spill	Clarification of the spill reporting requirements is provided in Section 3.3 of the revised Spill Contingency Plan.

Reviewer	#	Section	Comment	Recommendation	Response
			wording relevant to spills notification in the Fisheries Act states: "...shall without delay notify...", with a follow-up written report to authorities being required by "...as soon as feasible after the occurrence, or as regulations may stipulate...". Similarly, the wording relevant to spills notification in the Canadian Environmental Protection Act, 1999 states: "...shall as soon as possible in the circumstances...".	Response & Communications SOP flowchart should be revised as necessary.	
EC	6		The Spill Plan references the Hope Bay Oil Pollution Prevention Plan/Oil Pollution Emergency Plan (OPPP) when discussing marine-focussed spill response capacities for spills resulting from fuel tanker transfer activities.	Because the Hope Bay OPPP was not reviewed, EC cannot provide comments on the adequacy of the OPPP nor on any potential preparedness and response planning gaps that may exist between the OPPP and the revised Spill Plan.	The Hope Bay OPPP/OPEP document is specific to fuel off-loads conducted in Robert's Bay and is supplemental to the Hope Bay Spill Contingency plan. Section 2.3.2 of the revised Spill Contingency Plan outlines spill response actions to be completed in the event of a spill to a marine environment outside of the bulk fuel off-load events.
EC	7	Section 5: Spill Response Actions	Section 5: Spill Response Actions (Page 19) indicates "Unique shore types (tundra coasts)" as "... a consideration in spill contingency planning given the remote Arctic location of the Project."	In addition to documenting environmental baseline data in advance of a project, EC recommends that proponents undertake environmental sensitivity mapping (which would likely include local land use and Traditional Knowledge), especially in and around nearby water bodies and water courses that	In addition to documenting environmental baseline data, TMAC has conducted environmental sensitivity mapping with the focus of these activities being in areas around project infrastructure which are at highest risk of impact from a spill. Sensitivity maps are provided in

Reviewer	#	Section	Comment	Recommendation	Response
				have potential to be affected by a spill incident. EC's established characterization criteria contained within the Arctic SCAT (Shoreline Clean-up Assessment Technique) Manual is a useful guide for this. [Reference 3: Environment Canada, Emergency Prevention, Preparedness and Response – A Program of the Arctic Council, The Arctic SCAT Manual – A Field Guide to the Documentation of Oiled Shorelines in Arctic Regions, 2004].	Appendix C of the revised Spill Contingency plan.
EC	8	Section 5: Spill Response Actions, Operational Considerations	Section 5: Spill Response Actions, Operational Considerations (Page 19) does not indicate spilled petroleum products beneath ice.	The characterization of likely accident scenarios and associated response methods and strategies would greatly benefit Section 5 Spill Response Actions.	Spill response actions for a spill under ice has been addressed in section 2.3.5 of the revised Spill Contingency plan.
EC	9	Section 7	The Spill Plan only briefly covers Spill Response Training in Section 7 (Page 31).	EC encourages proponents to include a description of any environmental emergency response training regimes (including refresher training) for their response personnel within their Emergency Response Plan or their Spill Plan.	Section 5 of the revised Spill Contingency Plan provides details on training programs conducted at the Hope Bay site.
EC	10	Section 2 Applicable Legislation, Licensing and Guidelines	Section 2 Applicable Legislation, Licensing and Guidelines (Page 5) indicates: "There are no qualifying substances in qualifying quantities requiring an emergency response plan under the E2 regulations."	EC recommends that the Proponent refer to Appendix 1 of EC's Implementation Guidelines for the Environmental Emergency Regulations 2011 for complete information.	Product specific spill response plans have been developed for Ammonium Nitrate, that only product to be stored and used at the Hope Bay project site that exceeds the threshold quantities

Reviewer	#	Section	Comment	Recommendation	Response
			EC takes this opportunity to remind the Proponent that ammonium nitrate is a listed substance under the Environmental Emergency Regulations and an E2 Plan would therefore be required for ammonium nitrate (at or above 81% in liquid form, and at or above 60% in solid form) stored and used on-site in quantities in excess of 20 tonnes respectively. There may also be other listed substances (i.e. forms of cyanide such as hydrogen cyanide, and hydrochloric acid) required on-site that may be stored or handled in excess of threshold quantities, thereby eventually requiring E2 Plans.		outlined in Appendix 1 of EC's Implementation Guidelines for the Environmental Emergency Regulations 2011. If additional materials are brought to site that exceed the thresholds additional specific spill response plan will also be developed for those materials.
EC	11	Section 5.2 Impacts to Semi-Aquatic and Aquatic Wildlife		EC recommends that Section 5.2 Impacts to Semi-Aquatic and Aquatic Wildlife (Page 21) make reference to a requirement for EC migratory bird handling permits for oiled birds, as well as to EC's Birds and Oil – CWS Response Plan Guidance (June 2012) for guidance on the treatment and handling of oiled birds.	Section 2.3.8.2 of the revised Spill Contingency Plan includes references to EC's Birds and Oil - CWS Response Plan Guidance document and ECCC approval prior to migratory bird handling. Further, this section has been revised to directly reflect recent ECCC input.
EC	12		EC notes that in the Final Environmental Impact Statement - Appendix D: Spill Procedures for Products on Site, there are a number of tables that contain no	EC recommends that the respective tables be completed with the required information specific to spills on/to water.	Spills to water are addressed in section 2.3.1, 2.3.2 and 4.6 of the revised Plan.

Reviewer	#	Section	Comment	Recommendation	Response
			information for spills of hazardous products on/to water, namely: Sulphuric and Hydrochloric Acid, Activate Carbon and Hydrogen Peroxide.		
KIA	1			A methodology to ensure the contact list remains current should be presented.	Addressed in Section 1.4 of the revised Plan.
KIA	2			Temporary containment berms and ditches identified within the SCP for spill containment purposes should be constructed with the following considerations: -Impacts to archeological sites, sensitive terrain, permafrost, land/water features should be avoided in response actions if other areas can meet response needs without impacts -Spill response training should identify that construction of berms/ditches constructed in manner that ensure impacts not exacerbated by response action	Section 2.3.8.3 and Appendix C of the revised Plan addresses archaeological features and sensitive habitats. These areas are prioritized for protection in the event of a spill.
KIA	3			The SCP should highlight importance on minimizing contact time of spilled material with the environment. Temporary containment measures should only be applied as interim measures - with appropriate containers utilized as soon as practical in response actions.	Spill response actions outlined in Section 2 of the revised Spill Contingency Plan are aimed at immediately containing spilled material to minimize contact time with the environment and clean-up removal efforts are conducted as soon as possible once material is contained.

Reviewer	#	Section	Comment	Recommendation	Response
				While this is important with regard to soil material, it is particularly true of snow and ice when used as a containment measure or absorption media - as melting or effectiveness of the containment/absorption properties can quickly attenuate in contact with spilled materials.	
KIA	4			The importance of obtaining data to assist in quantification of the released material and accounting of the recovered quantities should be highlighted in the SCP, as the opportunity to assess these quantities can sometimes be compromised by spill response actions. Quantification of the release and recovery is crucial in assessing the effectiveness and level of completion of spill response actions. Such quantification should be presented clearly in all reporting.	Information regarding the maximum storage capacity of a container and/or piece of equipment will be used to assess spill volume estimates during spill investigations. In the event that a maximum volume is unknown, a conservatively high estimate will be used for determining reporting requirements and assessing clean-up/remedial measures. Quantities are presented clearly in all reporting.
KIA	5			Proximity of spill kits to working equipment should be defined.	Addressed in Section 2.5.1 of the revised Spill Contingency Plan.
KIA	6			Boston Camp is not presented on the available figures. A reference figure should be included that encompasses this site.	A figure of Boston Camp is provided in Module C of the revised Plan.
KIA	7			The need for the spill kit items listed as "optional" should be defined more clearly. For	All spill kits located at the Hope Bay site (with exception of the Roberts Bay Aquatic Spill Response

Reviewer	#	Section	Comment	Recommendation	Response
				example, it is recommended that mini-booms be included in any spill kits located near surface waters.	Equipment seacans) now include the same response equipment to ensure that any spill kit may be deployed in the event of a spill regardless of the location of that spill. A list of spill kit contents is provided in Appendix B of the revised Spill Contingency Plan.
KIA	8			The basis for the identified marine spill response equipment quantities should be presented. For example, the length of required boom should be assessed with reference to anticipated response time and deployment time.	The spill response resources listed in Appendix B in addition to resupply materials available on site (see Section 2.5.1) are appropriate for various scales of response. Booms in the Aquatic Environment Response seacans would only be used in the event of a larger spill, and can be connected together in various lengths as appropriate for the response. Deployment exercises are conducted with these booms to confirm prompt response. Large spills to the marine environment resulting from bulk fuel offloads are addressed through the OPPP/OPEP and make use of additional ship-board supplies.
KIA	9			The following information should be included in Table 1 - Hope Bay Project Permanent Petroleum Storage Facilities: -Quantification of all secondary containment capacities (this is	Information on secondary containment capacities and maximum anticipated storage quantities are provided for each licence area in the appended modules of the revised Plan.

Reviewer	#	Section	Comment	Recommendation	Response
				<p>missing for a number of listed facilities)</p> <ul style="list-style-type: none"> - The SCP should state explicitly whether listed secondary containment capacity meets applicable regulations. - Some facilities identify status information (e.g. "empty") under the column 'Maximum Expected Quantity Stored During C&M'. This column should contain actual quantities - whether it is zero due to facility status or some other quantity. 	
KIA	10			As identified in BGC's review of a previous SCP, the table summarizing the size of reportable spills should be approved by Environment Canada (EC). In addition, KIA should confirm that these values are acceptable.	The table summarizing the size of reportable spills was taken from the Government of the Northwest Territories Environment and Natural Resources "Reportable Quantities for NWT Spills" website. It is our understanding that these quantities are applicable and approved in Nunavut and are acceptable to the KIA.
KIA	11			Delineation between 'emergency spill response' and follow up remedial actions should be made. The need for and degree of consultation with stakeholders' changes between these two phases of spill response.	Reporting and stakeholder engagement is outlined in Section 3.3 of the Plan, including initial and follow-up engagement.
KIA	12			The SCP does not present the decision chain for burning actions	See Section 2.3.7 of the Plan

Reviewer	#	Section	Comment	Recommendation	Response
				clearly. In addition, reference to the potential use of accelerants is unclear both in terms of methodology and the decision chain to be used in applying such an approach.	
KIA	13			It is recommended that KIA should determine if they wish to clarify their involvement in the decision to use dispersants during spill response actions.	
KIA	14			The opening sentence in the last paragraph of Section 6.3 appears to be partial and its intent is therefore not clear.	Section 3.3 of the revised Spill Contingency Plan provides detail on external reporting requirements for spill incidents at the Hope Bay site.

7. REFERENCES

Birds and oil-CWS Response Plan. 2012, Canadian Wildlife Services

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 Emergency Regulations (S.O.R. 2003-307) Current to March 16, 2016, Environment and Climate Change Canada

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

Cyanide Spills Prevention and Response. T.I. Mudder

Implementation Guidelines for Environmental Emergency Regulations. 2011, Environment and Climate Change Canada

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

The Management of Cyanide in Gold Extraction. 1999, International Council on Metals and the Environment.



SPILL CONTINGENCY PLAN

APPENDIX A – HAZARDOUS MATERIALS AND PRODUCT SPECIFIC SPILL RESPONSE PLANS

POISONOUS & TOXIC SUBSTANCES

Sodium Cyanide Specific Spill Response Plan

Note: Sodium cyanide is not currently listed in Schedule 1 of the E2 regulations. However, a Product Specific Spill Response Plan has been developed for this product based on the environmental and health and safety impacts of a potential spill. Hydrogen cyanide is produced when sodium cyanide reacts with water, acids or oxidizing agents. Hydrogen cyanide is listed in Schedule 1 of the E2 regulations.

Sodium Cyanide CAS No. 143-33-9

Potential Acute Health Effects: Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, and of inhalation. Corrosive to eyes and skin. Cyanide is classified as extremely toxic.

Storage: Sodium cyanide briquettes will be packaged in 1000kg bags. These bags must be kept dry, away from heat and sources of ignition. Keep away from oxidizing agents, acids and moisture. Bags will be stored on pallets in lined seacans or located in a lined containment berm or inside the Mill building as used. Do not store above 24°C. Avoid exposure to acid, water or weak alkalies which can react to form a toxic hydrogen cyanide (HCN) gas.

Personal Protective Equipment for Spill Response:

- Splash goggles
- Full body suit (e.g. Tyvek)
- Self-contained breathing apparatus or Vapor and dust respirator
- Boots
- Gloves

Emergency response for a Sodium Cyanide Spill:

- Isolate and evacuate the spill area if HCN has potentially been released.
 - Evacuation of other site locations may be required.
- Report spill to Supervisor immediately. Provide location, estimated quantity, physical nature of the spilled material (e.g. solid or solution) and other substances/conditions that may create hazardous conditions during response (e.g. exposure of substance to water, acids, oxidizing agents).
- Supervisor will report the spill immediately to the Surface Manager.
- Surface Manager will activate Incident Command System and Emergency Response Team if required for response.
 - Based on size, location of spill and potential hazardous conditions/environmental impacts.
 - MSDS/SDS will be consulted to confirm appropriate response measures and associated hazards.
- Ventilate the area of the spill or leak and eliminate all ignition sources.
 - Air quality monitoring will be conducted in confined spaces to determine concentration of hazardous vapours prior to initiating spill response efforts.

- Stop the flow of spill.
- Contain the spill by placing spill booms or constructing interception dikes ahead of the flow (prioritizing prevention of release to waterways or onto ice).
- Protect the spill area from water runoff by constructing dike/berm. If raining, use tarps to cover the area to minimize water contact and spread of contamination.
- For spill to land:
 - Recover spilled solid material by shoveling into drums or containers free from impurities, seal container with lid and clearly label per WHMIS guidelines.
 - Minimize dust generated to the extent possible. Use water spray to reduce vapours; avoid contact of water spray with spilled material. Use tarps to cover spill area if water spray is used to reduce vapours.
 - Recovered solids, if free from impurities, may be suitable for its intended use. In this case, material is to be placed into containers with lid, and clearly labeled as per WHMIS guidelines.
 - Recovered material which cannot be used will be packaged into drums for offsite disposal at an approved waste management facility.
 - Neutralize residual spill material with appropriate agent as recommended by the MSDS/SDS (sodium or calcium hypochlorite solution) or continue to excavate area until no visible spilled solid remains. Use suitable spill absorbent or soil to absorb the neutralized residue.
- For spill to water:
 - NaCN dissolves in water.
 - Pump contaminated water to drums, tanks or lined containment berms if possible. Isolate/confine the spill by damming or diversion if feasible.
 - Water treatment is only effective if it can be accomplished in conjunction with the spill.
 - Treatment chemicals (sodium or calcium hypochlorite) must not be added to surface waters (e.g. streams, lakes) as these are not generally effective and could result in additional environmental impacts.
 - Hydrogen peroxide for treatment of solution spills or a sulfur dioxide/air process for treatment of slurry spills may be considered. This measure may only be used as a last resort if containment is not achievable and the spill can be treated directly at the point of release.
- For indoor spills:
 - Recover spilled solid material by shoveling into drums or containers free from impurities, seal container with lid and clearly label per WHMIS guidelines.
 - Minimize dust generated to the extent possible. Use water spray to reduce vapours; avoid contact of water spray with spilled material. Use tarps to cover spill area if water spray is used to reduce vapours.
 - Recovered solids, if free from impurities, may be suitable for its intended use. In this case, material is to be placed into containers with lid, and clearly labeled as per WHMIS guidelines.
 - Recovered material which cannot be used will be packaged into drums for offsite disposal at an approved waste management facility.

- Neutralize residual spill material with appropriate agent as recommended by the MSDS/SDS (sodium or calcium hypochlorite solution) or continue to excavate area until no visible spilled solid remains. Use suitable spill absorbent or soil to absorb the neutralized residue and package into drums for offsite disposal at an approved waste management facility.
- Mop the affected area using detergent and water.
- Place this water in labeled waste drums for offsite disposal at an approved waste management facility
- Remove, bag and label personal protective equipment for offsite disposal.
- Thoroughly wash skin with soap.

EXPLOSIVE MATERIALS

Ammonium Nitrate Specific Spill Response Plan

Notes: Ammonium Nitrate is a substance listed on Schedule 1 of the E2 Regulations, with a threshold of 20 tonnes. Ammonium nitrate is part of the Amex explosives (UN No 0082) mixture used at site.

CAS No. 6484-52-2 (Ammonium Nitrate)

UN No: 0082 (Amex)

Potential Acute Health Effects: Highly Explosive. Hazardous in case of contact with skin, eyes, ingested and if inhaled. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.

Usage: Amex is used for surface blasting associated with quarrying and subsurface blasting related to mine development and mining.

Storage: Ammonium Nitrate is found in mixture form on site, in the form of Amex. Amex is stored in locked seacans located within the explosives berms or storage magazines, as well as temporary use locations during blasting preparation both underground and in the quarry sites. The magazines and explosives berm locations are established and permitted through NRCan or the Ministry of Mines as appropriate.

The explosives storage areas are constructed and located so as to minimize risk to personnel and as permitted by the Ministry of Mines. The expected quantity expected on site is 900 tonnes of Amex. The maximum allowed capacity of the largest container in which the substance is stored is 40,800 kgs.

Spill Response

Personal Protective Equipment for Spill Response:

- Chemically resistant gloves
- Protective glasses or chemical safety goggles
- Chemically resistant coveralls or tyvek coveralls
- Dust mask if spill is in confined space

Emergency response for an Ammonium Nitrate Spill:

- Isolate and evacuate the spill area if potential for explosion
- Report spill to Supervisor immediately. Provide location and estimate of spill quantity.
- Supervisor will report the spill immediately to the Surface Manager.
- Surface Manager will activate Incident Command System and Emergency Response Team if required for response.
 - Based on size, location of spill and potential hazardous conditions/environmental impacts.
- Remove all sources of heat and ignition (there is to be no smoking or use of any flames within the area). Remove all uncontaminated combustible materials or organic compounds from spill area.
- Stop flow if safe to do so.

- Ventilate space prior to entering, if indoors.
- For spills to land, snow or ice:
 - Protect spill area from storm water runoff and prevent entry into surface waters by constructing a ditch or dike using suitable absorbent materials, soil or other appropriate barriers.
 - Vacuum or sweep the spilled residue using non-metal, non-sparking tools.
 - Avoid shock, friction and contact with grit. Wet spillage with water to prevent dust generation.
 - Place the residue in a plastic container, label as per WHMIS Guidelines and transport to waste management for offsite disposal.
 - Recovered solids, if free from impurities, may be suitable for its intended use. In this case, material is to be placed into suitable containers with lid, and clearly labelled as per WHMIS Guidelines.
- For spills to water:
 - Ammonium nitrate sinks and mixes with water.
 - Isolate/confine the spill from spreading by damming or diversion if feasible.
 - Pump contaminated water to drums, tanks or lined containment berms if possible.
 - Label drums for offsite disposal at an approved waste management facility.
- Remove, bag and label personal protective equipment for offsite disposal.
- Thoroughly wash skin with soap.

ADDITIONAL E2 REGULATIONS SCHEDULE 2 MATERIALS TO BE STORED ONSITE

The hazardous materials to be stored onsite and listed in the Environmental Emergency Regulations may include the following substances throughout the duration of the project:

Formalin

Unleaded Gasoline

Hydrochloric acid

Jet-A fuel (contains naphtha)

Nitric acid

The quantities of these products are not anticipated to meet the thresholds under the Environmental Emergency Regulations for the development of a product specific spill response plan. However, if at any time the quantities of these materials stored onsite reach the threshold volume identified in these regulations a product specific spill plan will be developed and submitted as an addendum to this Plan.



SPILL CONTINGENCY PLAN

APPENDIX B – SPILL RESPONSE RESOURCES

SPILL KIT CONTENTS

Each Spill Kit contains:

- 1 roll absorbent or bundle of spill pads
- 2 plug and dyke kits;
- 1 – 3 m x 4 m tarpaulin;
- 2 pairs of disposable coveralls;
- 4 mini booms;
- 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 shovel;
- 10 disposable waste bags and ties; and
- A copy of the Spill Kit First Responder Insert

AQUATIC ENVIRONMENT RESPONSE EQUIPMENT

Response equipment available in the event of a spill to the aquatic environment is stored in seven moveable seacans, with the exception of the boats. This equipment includes:

- 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™ 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 kits;

- HAZMAT Disposal Bags and Garbage bags;
- Portable fuel bladders
- Ice scrapers;
- A net for capturing seabirds/oiled wildlife
- An 18 foot landing craft boat (with boat safety kit); and
- An 18 foot Zodiac (with boat safety kit and repair kit)

The above aquatic response equipment is considered more than necessary for the potential spills covered under this Plan. Spills to the aquatic environment are limited in potential scale as all fuel storage tanks are located in secondary containment and most are located away from water. The Roberts Bay multiple tank fuel farm berm also has significant excess capacity to contain failure of more than one tank.

As a consequence, spills that may reach water are expected to be limited in size, manageable and recoverable using the aquatic response equipment available on site. If for any reason additional resources are needed, they are available through Mackenzie Delta Spill Response.

Large spills to the marine environment resulting from bulk fuel offloads are addressed through the OPPP/OPEP. As outlined therein, shipping contractors provide all necessary equipment needed to appropriately respond to a fuel-offload spill, with TMAC supplies serving as additional resources available.



SPILL CONTINGENCY PLAN

APPENDIX C – ENVIRONMENTAL RESOURCE MAPS

ENVIRONMENTAL RESOURCE MAPS

Shown in the following resource maps, are areas of particular vegetation meaningful to the local wildlife and ecosystems which surround the project. Additional maps and information are available on site that detail locations where migratory birds, upland breeding birds, raptors and other wildlife have been observed. Information regarding archeological sites that have been identified on the Hope Bay belt are available to the Environmental Coordinator in the event of a spill. The locations of these sites are strictly confidential and information on these locations is only shared with spill responders on an as needed basis. Spill containment will be focused on protecting identified sensitive habitat's and archaeological sites.

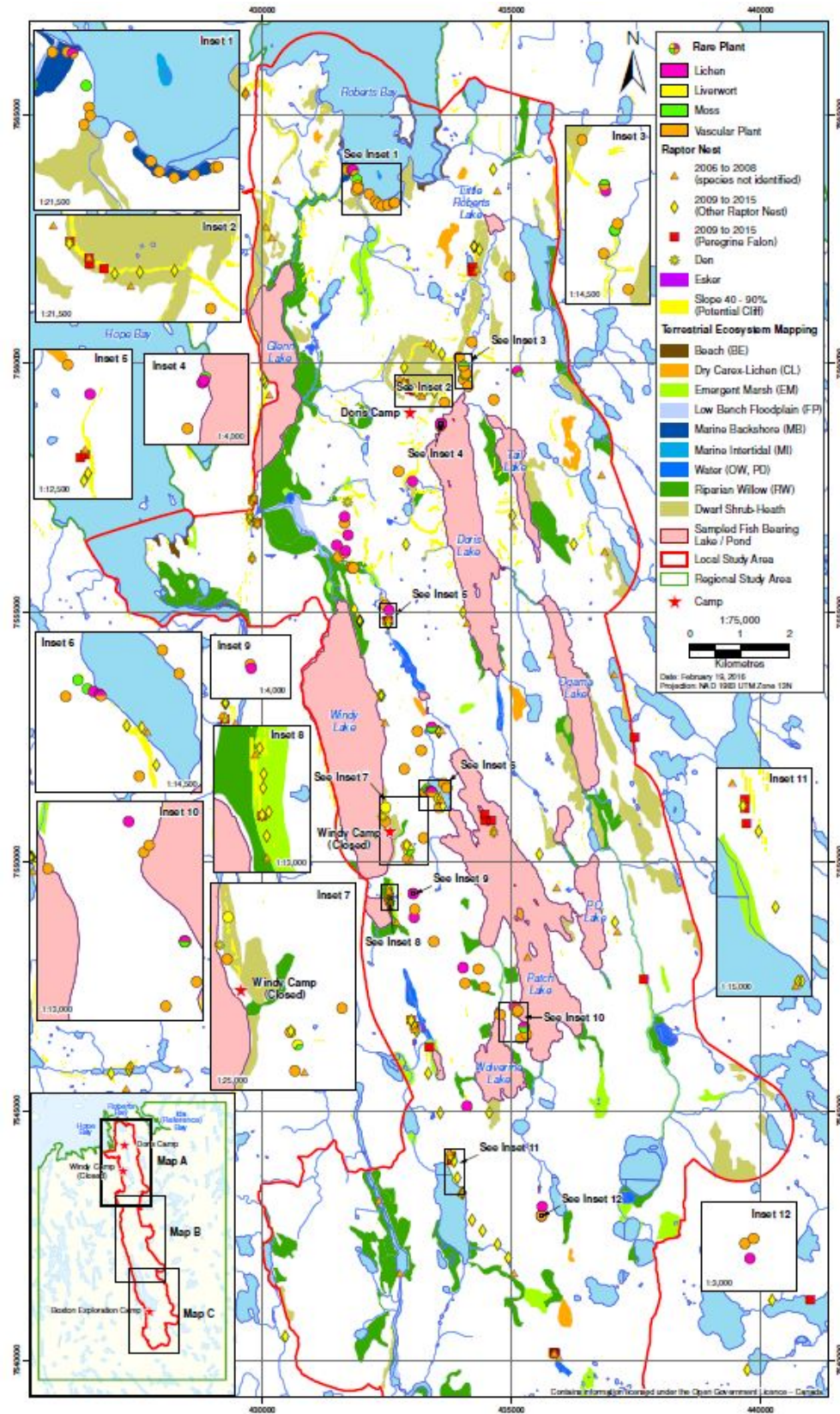


Figure C-5: Environmental Sensitivity Mapping-Map A

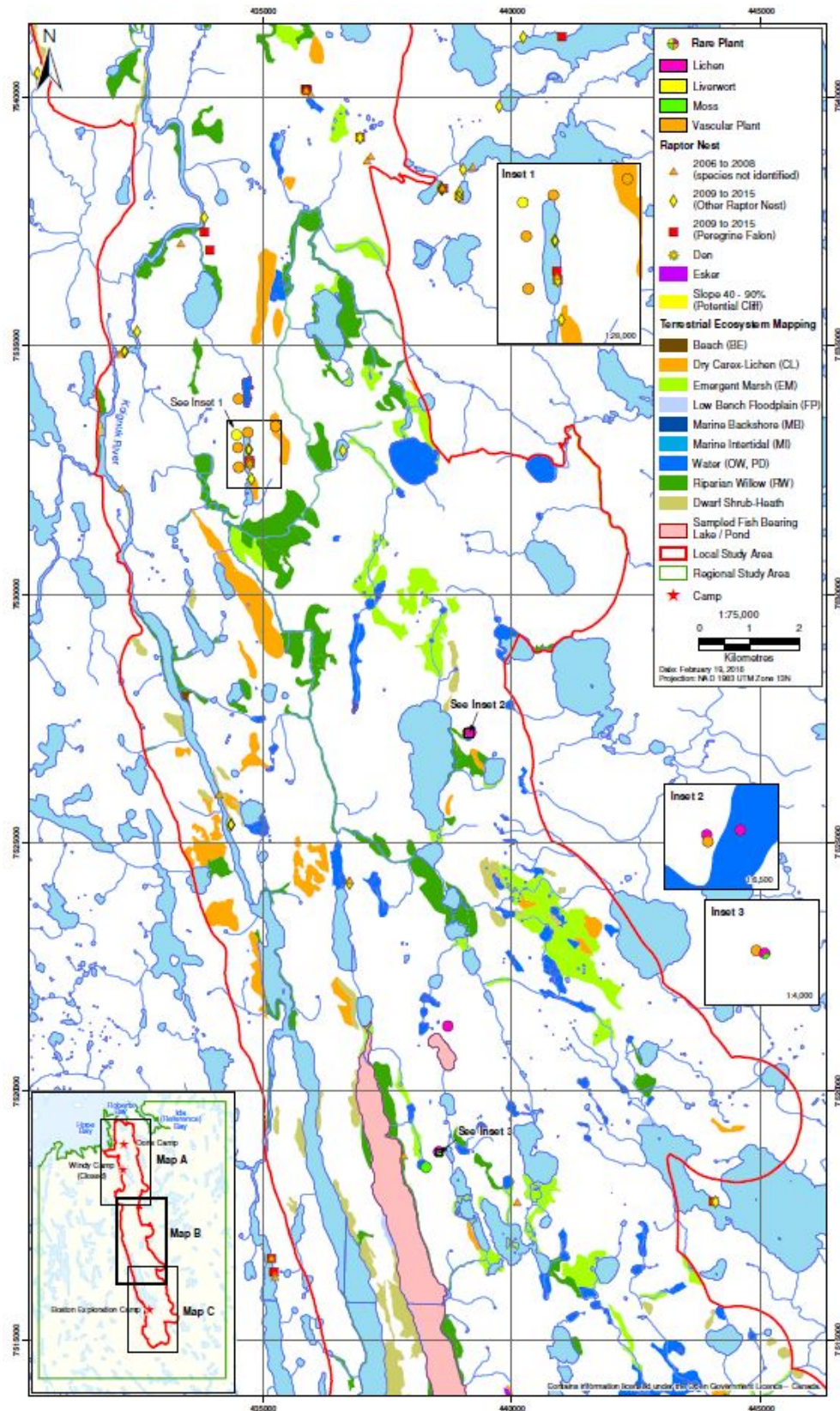


Figure C-6: Environmental Sensitivity Mapping-Map B

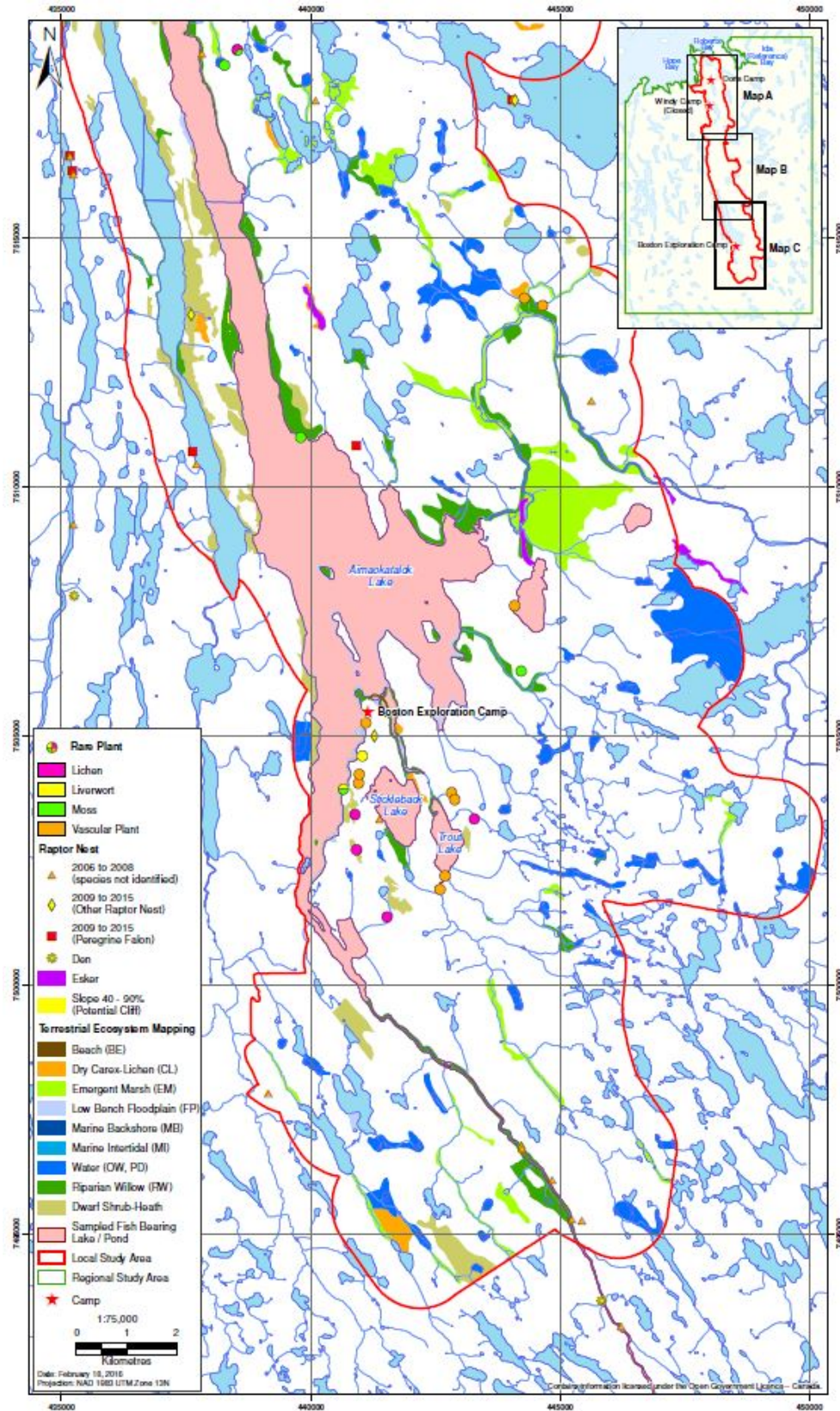


Figure C-7: Environmental Sensitivity Mapping-Map C



SPILL CONTINGENCY PLAN

MODULE A: 2AM-DOH1323 (DORIS)

CONFORMITY TABLE

Licence	Part	Item	Topic	Report Section
2AM-DOH1323	I	1.	The Board has approved the Plan entitled "Hope Bay Mining Ltd. Spill Contingency Plan HB-ER-ENV-MP-001 (REV 5)" dated October 2012 for use during Care and Maintenance. An updated Plan is required under the Assignment issued June 18, 2013, to reflect the change in ownership of the Project. Any change in the status of the Project and operations will require a review and resubmission as per Part B, Item 6.	This report
		2.	The Licensee shall prevent any chemicals, petroleum products or wastes associated with the project from entering water. All sumps and fuel caches shall be located at a distance of at least thirty one (31) metres from the ordinary High Water Mark of any adjacent water body and inspected on a regular basis.	Section 2
		3.	The Licensee shall provide secondary containment for fuel and chemical storage as required by applicable standards and acceptable industry practice.	Section 4.1
		4.	The Licensee shall perform regular inspections of Fuel Storage and Containment Areas, Sumps, Emergency Dump Catch Basins, other fuel tanks and connectors for leaks and movement and shall keep a written log of inspections to be made available to an Inspector upon request. More frequent inspections may be required at the request of an Inspector.	Section 4.1
		5.	If, during the period of this Licence an unauthorized discharge of waste and or Effluent occurs, or if such discharge is foreseeable, the Licensee shall:	See below
		5a.	Employ the Spill Contingency Plan;	Section 2
		5b.	Report the incident immediately via the 24-Hour Spill Reporting Line (867) 920-8130, to the Inspector at (867) 975-4295 and to the Kitikmeot Inuit Association at (867) 982-3310; and	Section 3
		5c.	For each spill occurrence, submit a detailed report to the Inspector, no later than thirty (30) days after initially reporting the event, which includes the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.	Section 3.3
		6.	The Licensee shall, in addition to Part I, Item 5, regardless of the quantity of releases of harmful substances, report to the NWT/NU Spill Line if the release is near or into a Water body.	Section 3.3
		7.	The Licensee shall, upon providing notification under PART L, Item 2, submit to the Board, an	Section 1.4

			addendum to the Spill Contingency Plan, detailing the changes in operations, personnel, responsibilities, availability of equipment and access to the site for assistance.	
	Schedule B		The Annual Report referred to in Part B, Item 3 shall include the following:	See below
		9.	A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.	Section 3.3

A1. INTRODUCTION

The Type A Water Licence No. 2AM-DOH1323 issued to TMAC by the Nunavut Water Board (NWB) requires the development of a Spill Contingency Plan in accordance with Part I. The Spill Contingency Plan has been prepared and is being submitted by TMAC to address this requirement, and also includes the plan for spill response throughout the Hope Bay belt.

The 2AM-DOH1323 Licence area includes the Doris North Camp and the necessary infrastructure to support surface exploration, underground mining and development activities.

A2. CHEMICAL STORAGE AT DORIS

Photos of chemical storage locations and a list of fuel and chemical storage facilities, containment capacity, products stored and maximum expected quantity to be stored within each facility for the Doris North Licence area is provided below.

Storage locations of the chemicals required for the mill processing have yet to be fully determined. The majority of these products are to be kept in lined seacans on the mill pad. This will allow for any spilled material outside the seacan to be easily contained within the current water management system located downstream of the mill building. However, dependent on available storage space some products will be kept on the Upper Reagent pad within lined seacans.

A full list of locations will be determined once products arrive to site and this plan will be revised to reflect any additional storage locations.

DORIS FUEL AND CHEMICAL STORAGE LOCATIONS

Storage Location	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Maximum Expected Quantity Stored
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	0L in Tank. Berm used to house oil totes and fuel barrels - cumulative quantities of < 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	2 @ 1240 L	Pre-fabricated, double-walled, portable	Spill containment	Diesel Fuel	2 @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
Doris Helipad (office, washcar)	1 @ 1240 L	Pre-fabricated, double-walled, portable	Insta-berm, spill containment	Diesel Fuel	1116 L
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

Storage Location	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Maximum Expected Quantity Stored
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)	3 @ 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 Incinerator	1 @ 1500 L (Inactive)	Pre-fabricated, double-walled	Steel Spill containment	Diesel Fuel	1350 L
	2 @ 1000 L	Pre-fabricated, double-walled		Diesel Fuel	2 @ 1000 L
Waste Management Facility Waste Oil Burner	2 @ 850 L	Plastic Cube	Spill containment	Waste Oil	1700 L
Doris Vent Raise	1 @ 70,000 L	Pre-fabricated, double-walled, portable	Gravel/HDPE, 77,000 L	Diesel Fuel	70,000 L
Doris Airport Tower Generator	1 @ 1240 L	Pre-fabricated, double-walled, portable	Steel spill containment; in seacan	Diesel Fuel	1116 L
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
Explosive Berm (Tail Lake Road)	Seacan	NA	NA	Amex (Ammonium nitrate)	900,000kg
Mill Pad	Seacan	TBD	TBD	Collector*	90,000 kg
Mill Pad	Seacan	TBD	TBD	Promoter*	30, 100kg
Mill Pad	Seacan	TBD	TBD	Frother*	16,000 kg
Mill Pad	Seacan	TBD	TBD	Flocculant Low pH*	16, 000 kg
Mill Pad	Seacan	TBD	TBD	Sodium Cyanide*	240,000 kg
Mill Pad	Seacan	TBD	TBD	Caustic Soda*	450,000 kg
Mill Pad	Seacan	TBD	TBD	Flocculant High pH*	2,000 kg
Mill Pad	Seacan	TBD	TBD	Sodium Metabisulphate*	240,000 kg
Mill Pad	Seacan	TBD	TBD	Copper Sulphate*	125,000 kg
Mill Pad	Seacan	TBD	TBD	Hydrochloric Acid*	4000 kg
Mill Pad	Seacan	TBD	TBD	Sodium Benzoate*	20,000 kg
Mill Pad	Seacan	TBD	TBD	Silica Sand*	5000 kg
Mill Pad	Seacan	TBD	TBD	Borax*	12,500 kg
Mill Pad	Seacan	TBD	TBD	Soda Ash*	8750 kg
Mill Pad	Seacan	TBD	TBD	Potassium Nitrate*	5000 kg
Reagent Pad	Seacan	NA	NA	Acetylene	10 - WTL bottles (~3600 cu.ft. of product)

Storage Location	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Maximum Expected Quantity Stored
Reagent Pad	Seacan	NA	NA	Propane	30 – 100 lb bottles (3000 lbs)
Reagent Pad	Seacan ERT building ERT building	NA	NA	Oxygen	10 - K bottles (6900L ea) 3 - M bottles (3000L ea) 4 – D bottles (350L ea) (~79,400 L. of product)
Reagent Pad	Seacans with 23 kg bags	NA	NA	Calcium Chloride	11,030 tonnes (~44,800 bags)
Wastewater Treatment Plant	Jugs	NA	NA	PH Enhancer	40 L
Wastewater Treatment Plant	Jugs	NA	NA	12% hypochlorite	240 L
Wastewater Treatment Plant	Jugs	NA	NA	Suppressor 2360	220 L
Wastewater Treatment Plant	Boxes	NA	NA	Polymer	174 kg
Wastewater Treatment Plant	Jug	NA	NA	PH Enhancer 7007	4.5 L
Wastewater Treatment Plant	Jug	NA	NA	PH Enhancer 7004	4.5 L
Wastewater Treatment Plant	Jug	NA	NA	Citric Acid	10 L
Wastewater Treatment Plant	Pail	NA	NA	Caustic Powder	10 L
Wastewater Treatment Plant	Boxes	NA	NA	Hydrated Lime	4.5 kg
ERT building – Fire Caddy	Drum	NA	NA	Flame Out Foam	205 L

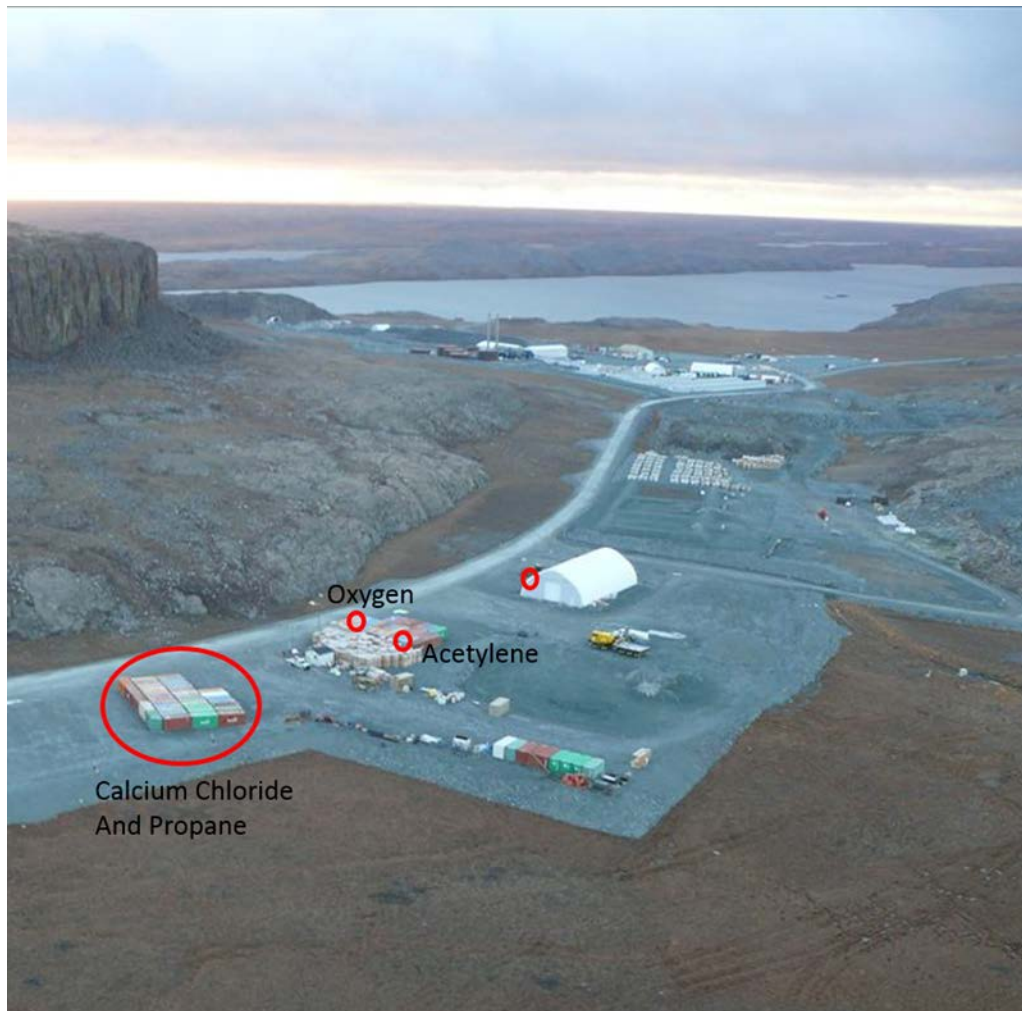
**Anticipated quantities and locations when mine and milling operational capacity is reached. The quantities listed for each of these products are operational peak estimates and expected location stored, they may vary.*

ROBERTS BAY LAYDOWN



Note: Red Circles are fuel or chemical storage locations, smaller containment locations may vary.

REAGENT PADS AND BATCH PLANT



Note: Red circles are fuel or chemical storage locations, smaller containment locations may vary.

DORIS CAMP (LEFT) AND DORIS LAKE FRESHWATER PUMPHOUSE (RIGHT)



Note: Red Circles are fuel or chemical storage locations, smaller containment locations may vary.

NORTH DAM AND VENT RAISE



Note: Red Circles are fuel or chemical storage locations, smaller containment locations may vary.



SPILL CONTINGENCY PLAN

MODULE B: 2BE-HOP1222 (WINDY)

CONFORMITY TABLE

Licence	Part	Item	Topic	Report Section
2BE-HOP1222	B	2.	The Licensee shall file an Annual Report on the appurtenant undertaking with the Board no later than March 31st of the year following the calendar year being reported which shall contain the following information:	Section 3.3
		2.e	An update to the Spill Contingency Plan, if required, including contact information in the form of an addendum;	This report
	H	1.	The Licensee has submitted, September 23, 2011, a Spill Contingency Plan entitled Hope Bay Project Spill Contingency Plan, for the Hope Bay Project, which encompasses the Hope Bay Belt projects including Roberts Bay, the Doris, Boston and Windy camps. This Plan covers the Windy Camp with respect to care and maintenance of the site. The Licensee shall submit to the Board for approval in writing, within ninety (90) days of issuance of this Licence, a revised Plan that takes into consideration the status of the entire Hope Bay Belt project as it influences the activities, environmental and safety issues of the Windy Camp and the Hope Bay Regional Exploration Project.	This report
		2.	Licensee shall submit to the Board for approval in writing, sixty (60) days prior to the resumption of exploration activity at the Hope Bay Regional Exploration Project, a revised Spill Contingency Plan that is specific to the scope of this Licence and prepared in accordance with the <i>Spill Contingency Planning and Reporting Regulations</i> developed under Section 34 of the <i>Environmental Protection Act</i> .	Plan filed in March 2014, updated here. Section 2 and Section B2
		3.	The Licensee shall, if not approved by the Board, revise the Plan referred to in Part H, Item 1, and resubmit to the Board for approval within thirty (30) days of receiving notification of the Board's decision.	Section 1.5
		4.	The Licensee shall implement the Plan specified in Part H, Item 1 as and when approved by the Board.	Section 1.5
		5.	The Licensee shall review the Plan referred to in this Part as required by changes in operation and/or technology and modify the Plan accordingly. Revisions to the Plan are to be submitted in the form of an Addendum, to be included with the Annual Report unless directed otherwise by an Inspector.	Section 1.4
		6.	The Licensee shall ensure that any chemicals, petroleum products or wastes associated with the project do not enter water. All sumps and fuel caches shall be located at a distance of at least thirty one (31) meters from the ordinary high water mark of any adjacent water body and inspected on a regular basis.	Section 4.7 and B2
		7.	The Licensee shall ensure that any equipment maintenance and servicing be conducted only in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.	Section 4.4
		8.	If during the term of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:	See below
		8a.	Employ the Spill Contingency Plan;	Section 2
		8b.	Report the spill immediately to the 24-Hour Spill Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and	Section 3.3

		8c.	For each spill occurrence, submit to the Inspector, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.	Section 3.3
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B1. INTRODUCTION

The Type B Water Licence No. 2BE-HOP1222 issued to TMAC by the Nunavut Water Board (NWB) requires the development of a Spill Contingency Plan in accordance with Part H. The Spill Contingency Plan has been prepared and is being submitted by TMAC to address this requirement, and also includes the plan for spill response throughout the Hope Bay belt.

B2. CHEMICAL STORAGE AT WINDY

Windy Camp is located 10km south of Doris Camp at N 68° 03.715' W 106° 37.109' and is in the process of being decommissioned. Fuel storage at Windy Camp is limited to one tank (double-walled Tidy Tank) containing a maximum of 1240L of diesel fuel. This tank is located more than 31 m from any waterbody and fuels a generator used to heat a pump house structure located at the potable freshwater intake south of Windy Camp.

As the camp is no longer occupied, this tank has been placed in a secondary portable berm capable of containing the full volume of this tank in the event that the double-walled system failed. In case of a potential spill involving the Tidy Tank, there are absorbent materials staged at the pump house (at the shoreline) and within the building where the tank is located.

No other hydrocarbons or chemicals are stored at Windy Camp. Any hydrocarbons or chemicals needed for decommissioning the camp structures will be brought to Windy Camp and consumed on an as-needed basis. Spill kits will be available within 200 m of working equipment during these activities.

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. Fuel or lubes required to complete reclamation work will be brought in for immediate equipment use, and a spill kit will be available on site to support operating machinery. Chemical storage locations at Windy Camp and the Bulk Fuel Storage Facility at Patch Lake are shown in photos below.

In case of exploration drilling on land and on ice, chemicals will be brought in to assist with the drilling process. Each drill will have its own fully stocked spill barrel and chemicals stored will be kept to an amount needed for each shift. Excess chemicals will not be stored within Windy Camp.

One permitted facility for explosives materials is located at Quarry A on the west side of the Doris-Windy all-weather road. This facility can store a maximum of 40,800 kg of explosive materials containing ammonium nitrate. In the event of a spill of this material, the spill response actions would be completed as outlined in the Produce Specific Spill Response plan in Appendix A of this document.

WINDY FUEL AND CHEMICAL STORAGE LOCATIONS

WINDY CAMP



Note: Red circle is fuel storage location, smaller storages locations may vary.

PATCH LAYDOWN FACILITY



Note: There are currently no chemicals stored on the Patch Laydown



SPILL CONTINGENCY PLAN

MODULE C: 2BB-BOS1217 (BOSTON)

CONFORMITY TABLE

Licence	Part	Item	Topic	Report Section
2BB-BOS1217	B	6.	The Licensee shall file an Annual Report on the appurtenant undertaking with the Board no later than March 31st of the year following the calendar year being reported which shall contain the following information:	Section 3.3
		6l.	updates or revisions to the Abandonment and Restoration Plan, QA/QC, Waste Rock and Ore Storage Plan, Spill Contingency Plan, and Landfarm Plan;	This revised plan
	H	1.	The Licensee shall submit to the Board for approval, within sixty (60) days of issuance of the Licence, an update to the Spill Contingency Plan, submitted April 12, 2012, to address the current status of the Boston Advanced Exploration Project and all activity being suspended, moving into a state of care and maintenance for the Hope Bay Project. This Plan is to be prepared in accordance with the Spill Contingency Planning and Reporting Regulations developed under Section 34 of the Environmental Protection Act.	Plan submitted in March 2014, and revised here.
		2.	Licensee shall submit to the Board for approval in writing, sixty (60) days prior to the resumption of exploration activity at the Hope Bay Regional Exploration Project, a revised Spill Contingency Plan that is specific to the scope of this Licence and prepared in accordance with the <i>Spill Contingency Planning and Reporting Regulations</i> developed under Section 34 of the <i>Environmental Protection Act</i> .	Section 2 and Module C
		3.	The Licensee shall, if not approved by the Board, revise the Plan referred to in Part H, Item 1, and resubmit to the Board for approval within thirty (30) days of receiving notification of the Board's decision.	Section 1.5
		4.	The Licensee shall ensure that any chemicals, petroleum products or wastes associated with the project do not enter water. All sumps and fuel caches shall be located at a distance of at least thirty one (31) meters from the ordinary high water mark of any adjacent water body and inspected on a regular basis.	Section 4.7
		5.	The Licensee shall ensure that any equipment maintenance and servicing be conducted only in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.	Section 4.4

		6.	If during the term of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:	See below
		6a.	Employ the Spill Contingency Plan;	Section 2
		6b.	Report the spill immediately to the 24-Hour Spill Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and	Section 3.3
		6c.	For each spill occurrence, submit to the Inspector, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.	Section 3.3

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C1. INTRODUCTION

The Type B Water Licence No. 2BB-BOS1217 issued to TMAC by the Nunavut Water Board (NWB) requires the development of a Spill Contingency Plan in accordance with Part H. The Spill Contingency Plan has been prepared and is being submitted by TMAC to address this requirement, and also includes the plan for spill response throughout the Hope Bay belt.

The 2BB-BOS1217 Licence Area includes the Boston Camp site which is currently in a Care and Maintenance phase and typically is only used seasonally to support surface exploration, water management and environmental compliance activities. The Camp was closed in November 2011 and has not reopened to date.

C2. CHEMICAL STORAGE AT BOSTON

Photos of chemical storage locations and a list of fuel and chemical storage facilities, containment capacity, products stored and maximum expected quantity to be stored within the facility for the Boston Licence area is provided below. All storage facilities are located at a distance greater than 31 m from any water body.

C3. ADDITIONAL SPILL CONTINGENCY MANAGEMENT AT BOSTON

C3.1 ISSUE: BULK FUEL TANK FARM

Eight fuel tanks are located in a lined fuel berm covered with crush material at the Boston Site. The berm was constructed on permafrost and the crush pad is thin in some areas which may lead to permafrost degradation beneath the berm over time. Foundation settlement of the tanks due to permafrost degradation could potentially occur over time and could cause the fuel tank to destabilize creating risk of one or more of the fuel tanks to destabilize and tip.

C3.1.1 MANAGEMENT RESPONSE

Fuel tanks are visually monitored for differential settlement during seasonal visits when the Boston site is accessible and during annual geotechnical inspections. Measurements of tank movement may also be collected if visual monitoring indicates a potential issue with one or more of the tanks. This may involve measuring the vertical angle of the fuel tank sidewall. A comparison of these values over time will indicate if differential settlement is occurring.

BOSTON FUEL AND CHEMICAL STORAGE LOCATIONS

Location*	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Expected Quantity Stored
Boston Camp Bulk Fuel Storage Facility (BOS-5)	6 @ 77,000L Tanks 2 @ 33,500L Tanks	Pre-fabricated	Gravel/HDPE, 84,700 L	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

Location*	Facility Description/ Storage Capacity	Tank Description	Containment Capacity	Products Stored	Expected Quantity Stored
Boston Fuelling Stations (fly tank beside bulk storage)	1 @ 785 L	Pre-fabricated, double-walled, portable	Gravel/HDPE spill containment	Gasoline	628 L
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 (seacan)	Drums	Lined seacan	Jet A	8200 L/seacan
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

*Additional portable storage facilities may be used depending on Project activity.

BOSTON CAMP



Note: Red circles are fuel or chemical storage locations, smaller storages locations may vary.