MHBL STANDARD ENVIRONMENTAL OPERATING PROCEDURE

HOPE BAY EXPLORATION PROJECT

ENVIRONMENTAL EMERGENCY SPILL RESPONSE PLAN

Fuel Barge & Equipment, Roberts Bay August 25, 2007

In compliance with Nunavut Water Board
Water Use Permit # 2BE-HOP0712

Miramar Hope Bay Limited
Suit 300-889 Harbourside Drive
North Vancouver, BC V7P 3S1

September 2007

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DOCUMENT CONTROL RECORD

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Position	Name	Signature	Date
Vice President, Operations	Jim Currie		
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The re-issues of this document, listed below, have been reviewed and approved by Quality Assurance and Management and are authorized for use within the Miramar Hope Bay Ltd organization.

DOCUMENT CONTROL REVISION HISTORY					
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**Conditional Approval subject to revisions to the original document to include specific concerns raised by Nunavut Water Board*

DISTRIBUTION LIST

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	13	Site Superintendent	Windy Camp	Folder # 6

This is a Controlled Document As the registered recipient of this manual, you are responsible for keeping it up to date through the filing of all revisions and for returning the manual, should you transfer job, location, or leave the company.

Definitions

Adverse Effects – Impairment of or damage to the environment, human health or safety or property.

Emergency – Any unplanned occurrence either resulting in, or having the likely potential to result in environmental or human health impact or posing a threat to on-site personnel or the public, or interruption in company operations.

Emergency Log – A detailed written account of times, events and actions taken during an emergency.

Emergency Response Procedures – An outline of specific tasks required to implement the counter measures called for in the Emergency Response Plan. These tasks are often part of existing operating procedures for the facility.

Five (5) Point Safety System - 5 simple, practical steps to follow in assessing workplace hazards. See Safety manual in Appendix G.

Emergency Response Coordinator – The site supervisor or designated individual assigned to coordinate the deployment personnel for the purpose of spill clean up.

Emergency Response Team – A predetermined group of individuals whose purpose is to provide on-site expertise and labor to assist the on scene commander in bringing the emergency to an early, successful conclusion. This team will also response to wildlife incidents that represent risk to human or disrupts company activities.

Hazard Area – Any area where hazardous conditions exist, either during or as the result of an emergency. All non-essential personnel should be excluded from this area.

Levels of an Emergency – A subjective measure of the overall severity of the emergency.

Risk Assessment – Characterization of the nature, magnitude and likelihood of adverse effects on human health or ecosystems from exposure to one or more contaminating substances through various routes of exposure.

Spill Contingency Plan – A plan providing guidance on the counter measures needed to minimize or eliminate the consequences of specific hazards affecting the environment, facilities or operations. It also identifies the resources and their locations that are needed to implement the counter measures**.**

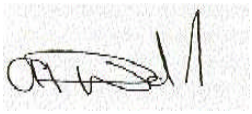
MIRAMAR HOPE BAY LIMITED

ENVIRONMENTAL POLICY

Miramar Hope Bay Limited (MHBL) is committed to maintaining sound environmental practices in all of its activities. To achieve this, MHBL is working with its employees and contractors will:

- Examine the potential impact to the environment of all proposed activities and take steps to minimize or where possible eliminate the impact.
- Ensure that all activities are in compliance with all environmental legislation and regulations.
- On a continuous basis, determine the MHBL impact to the environment and through continuous improvement, strive to attain higher levels of environmental performance.
- Maintain a high level of environmental protection by applying practices and technologies that minimize impacts and enhance environmental quality.
- Maintain dialogue with communities and other stakeholders within the area of influence of the Hope Bay Project.
- Progressively rehabilitate disturbed areas, develop closure plans that can be continuously improved and incorporate new technologies where practical.
- Encourage cooperative research programs with government and other stakeholders to better understand and monitor impacts associated with the Hope Bay Project.
- Train all employee and contractors to understand their environmental responsibility related to MHBL.

On behalf of Miramar Hope Bay Ltd.



Anthony Walsh
President and CEO
October 2006

1 INTRODUCTION

The Emergency Response and Contingency Plans were revised to include recent comments received from Department of Fisheries and Oceans to include a portion covering Roberts Bay waterfront spill plan. The document was further developed to establish a guidance document for emergency responses at the Windy Exploration Project Camp; Patch Lake Fuel Farm and exploration drill sites (see Figure 1).

The document includes appendices to assist and inform all personnel on site so that they can respond to any site emergency that has the potential to adversely affect the natural environment and/or the safety of personnel.

The plan is driven by Miramar Hope Bay Limited (MHBL) environmental and safety policies and in compliance with regulatory requirements.

The Plan provides:

1 A clear chain of command for all emergency activities;

2 Accountability for the performance of the emergency response;

3 Well-defined task and operational hazards/risk; and

4 Reporting and record keeping requirements to track program progress.

The plan will be a "living" document and will be updated on a regular basis as new information comes to light or procedures, permits and authorizations change.

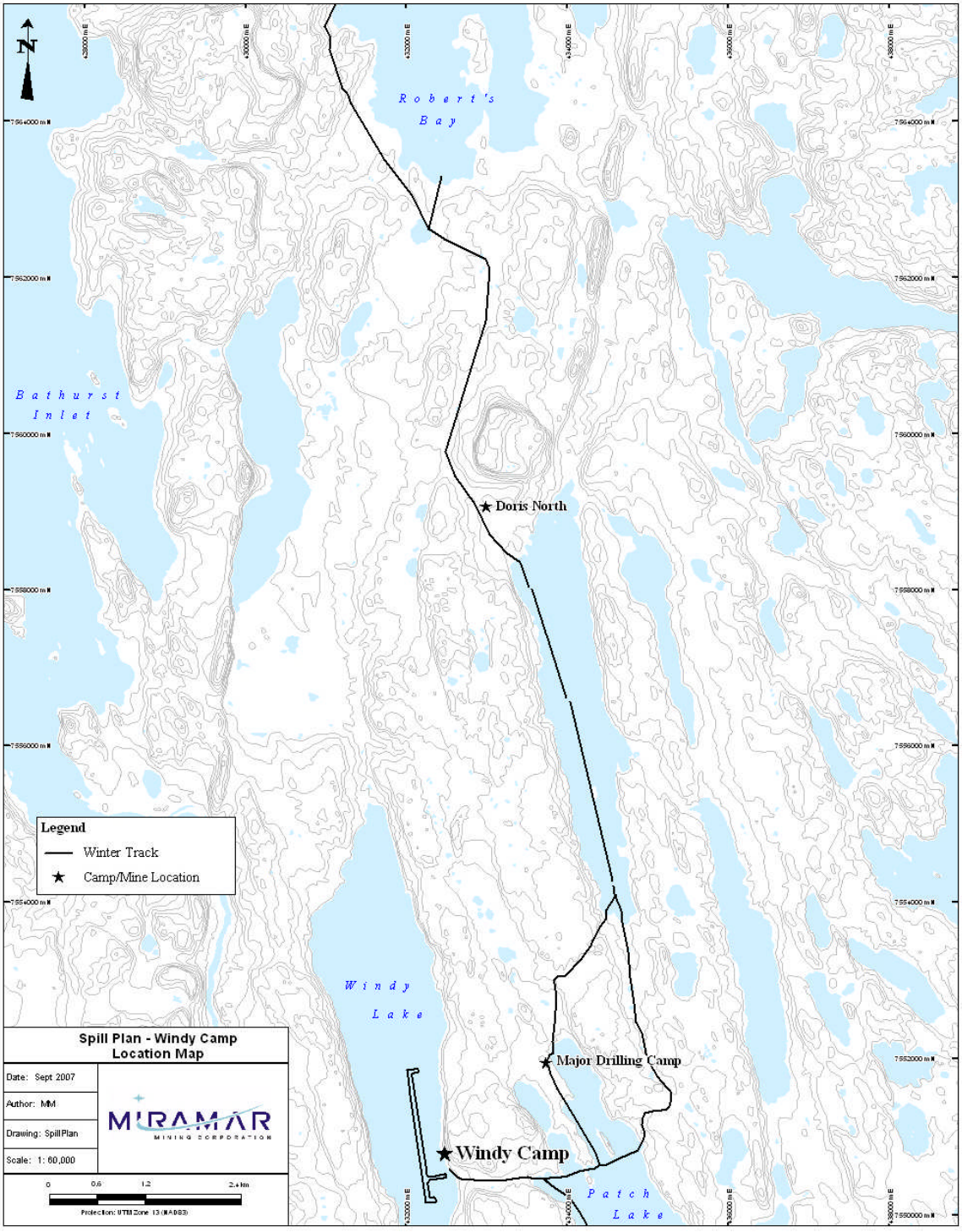


Figure 1: Winter track connecting Roberts Bay to Patch Lake Shop and Windy Lake Camp facilities

2 ADMINISTRATION

The responsibility for the administration of the Plan will rest with the Vice Presidents of Exploration and Operation. The Senior Environment Coordinator with support from the Exploration Manager and General Manager, Northern Operations, shall, in conjunction with Site Superintendent, Project Resource Managers, and Site Supervisors, review the plan on a regular basis and update as needed.

2.1 Purpose

The purpose of this document is to act as a general resource for each member of Management and all employees to enable them to react to emergencies at Windy Exploration Camp, Patch Lake Fuel Farm and Exploration drill sites. The plan will act as a guidance tool to ensure immediate and effective handling of any emergency. Prompt, effective and organized Emergency Response by the company will ensure safety of the employees, minimize the impacts on the environment and maintain effective communication with the regulatory agencies.

2.2 Prevention

MHBL is committed to a prevention strategy of ongoing maintenance, inventory control, staff training and vigilance of all aspects of the work. The following will be standard practice at Hope Bay under license 2BE-HOP0712.

Inventory control: All hazardous materials will be subject to inventory control from the time they enter the site. Logs will be kept as required for inspection by the regulatory agencies.

Storage: All hazardous materials will be stored in a manner that is required for the individual product as set out in the manufactures' material Safety Data Sheets (MSDS) (See Appendix B for list of Chemicals and Petroleum Products on site).

Daily inventory Balance: All liquid products will be checked on a daily basis and a balance sheet of inflow and outflow maintained.

Waste Disposal: All hazardous materials will disposed in compliance with the MHBL Environmental Protection Plan and the laws and regulations of Nunavut. If such laws and regulation do not exit, use similar regulations for other provinces within Canada (for specific products etc).

Employee & Contractors Reminders: Pre-Job meetings/safety meetings will contain a component to constantly remind employees to be on the look out for innovative ways to improve environmental performances.

2.3 Document Distribution

This document will be available at strategic areas on property (through your supervisor as this is a

controlled document) to all employees for reference. The Senior Environmental Coordinator onsite is responsible to keep the information current and distribute updates to all participants as required. Copies of this document will be made available upon requests from stakeholders including Kitikmeot Inuit Association, Environment Canada, Fisheries and Oceans Canada, RCMP Cambridge Bay and Nunavut Department of Environment.

3 ORGANIZATION AND RESPONSIBILITY

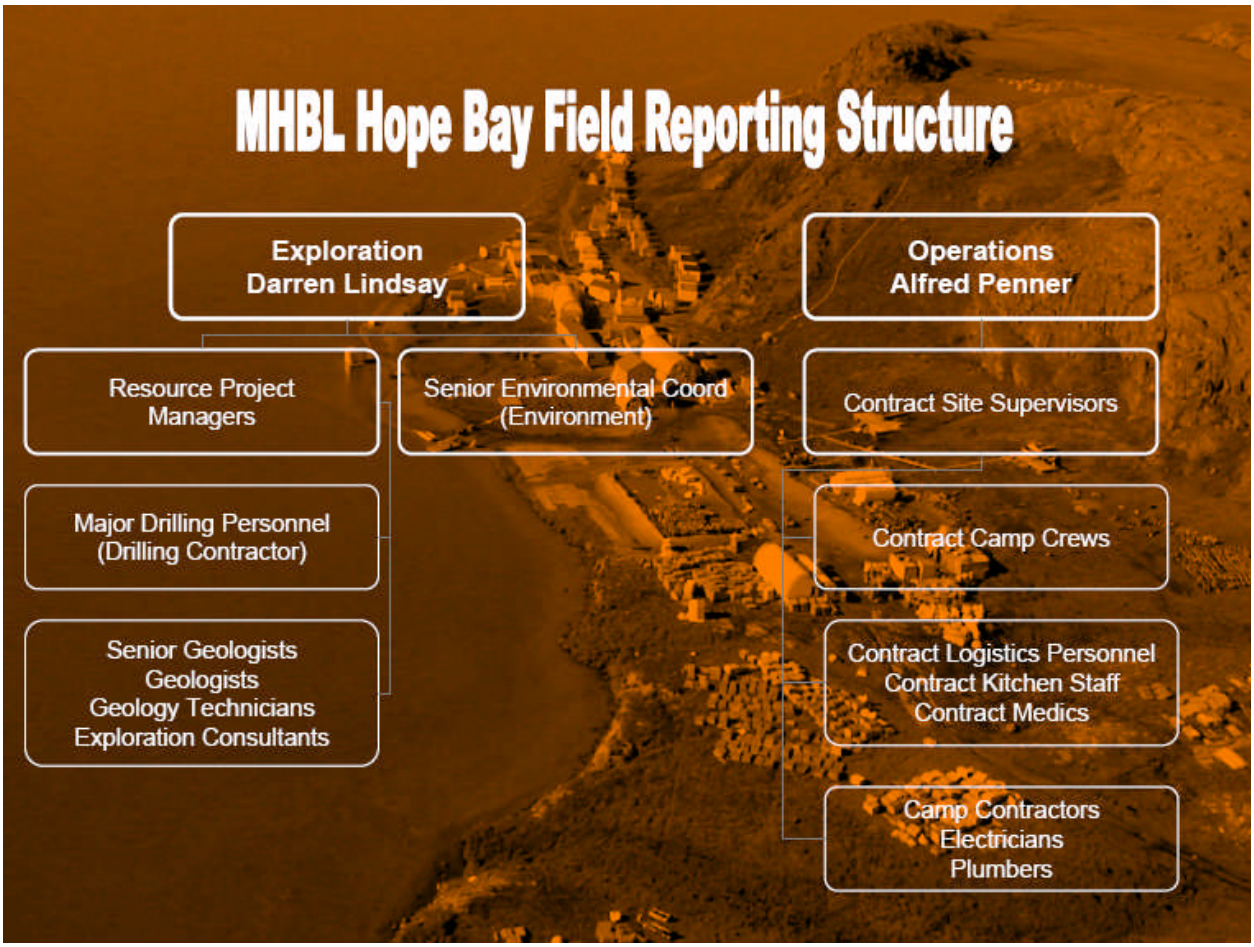
The MHBL Site Superintendent has overall control of the camps operational aspect and supplies and all aspects of the Spill Response Plan. He will be assisted and supported by the Exploration Manager and the Resource Project Managers who responsible for the exploration programs. The implementation of this plan is the responsibility of the Site Superintendent and the Camp Site Supervisors who are responsible for the fuel transportation, handling and storage, the powerhouse and the mechanical shop. The Senior Environmental Coordinator will play a supporting role by keeping current with regulations and providing advice during incidents as well as providing liaison with the regulatory agencies. If necessary, the General Manager, Northern Operations can call on corporate personnel: the Vice Presidents of Operation and Exploration, and the General Manager, Environment. The following chart as shown in Figure 2 is the Hope Bay field chain of reporting within MHBL.

3.1 Communications

In an event of a significant spill, the Person-In-Charge onsite shall be the only person in daily contact with the General Manager, Northern Operations. Communications onsite will follow reporting structure as shown in Figure 2 routine tasks and shall follow Figure 6 reporting structure in an event of a significant spill. This will ensure that decisions are made and implemented in a timely manner.

The site will be equipped with a satellite receiver and phone system as well as portable radios and a base station at the site office. All front line supervisors will carry a portable radio while working on site. Independent satellite phones will be available for crews working off site and for emergency communications if the phone system fails.

Figure 2: Hope Bay Field Operational & Exploration Chain of Command



4 PLAN OBJECTVES & SCOPE

4.1 Introduction

The roles and responsibilities of Hope Bay Exploration Project personnel, contractors, and Government are described. Response and reporting procedures are also outlined.

4.2 Purpose

Recognizing that spills or leaks of petroleum products and chemical substances have the potential of posing a variety of hazards and can endanger both short or long term public health and the environment, MHBL has developed and implemented this Spill Response Plan to address accidental releases of hazardous substances. Hazards that may exits at Exploration Camps and Regional worksites include the release of toxic vapors, fire, spills, and explosions.

4.3 Objectives

Principal objectives of the Spill Response Plan are:

- To provide information to cleanup crews, employees, contractors, KIA, and government agencies in the event of a spill;
- To promote the safe and effective recovery or disposal of spilled materials;
- To comply with the Miramar Hope Bay Limited (MHBL) environmental policy;
- To comply with federal and territorial regulations pertaining to the preparation of contingency plans and reporting requirements; and
- To minimize the negative impacts of spills on the receiving environment (water/ice and/or land).

4.4 Scope

This Plan addresses the organization of the Hope Bay Exploration Project spill response and related emergency measures. Alerting and notification procedures and cleanup strategies are outlined along with the duties and responsibilities of key spill response personnel.

5 ONSITE HAZARDOUS MATERIALS

The petroleum derived materials included in this Plan can generally be divided into two categories:

- flammable immiscible liquids; and
- flammable compressed gases.

5.1 Flammable Immiscible Liquids

These substances are all hydrocarbon-based and will ignite under certain conditions. Gasoline and aviation fuel pose the greatest fire (and safety) hazard and usually cannot be recovered when spilled on water. The remaining materials generally do not pose a hazard at ambient temperatures. They are all insoluble, float unless mixed into the water column and can be recovered when safety allows. They are:

- Gasoline Low Flash Point (burns easily);
- Jet B;
- P50 Diesel Fuel;
- Waste Oil; and
- Lube Oil High Flash Point.

5.2 Flammable Compressed Gasses

- Usually highly explosive;
- May be heavier than air and therefore concentrate in low lying locations; and
- May be lighter than air and highly noxious or toxic.
- Propane, acetylene and oxygen are the most likely flammable gases to be on site.

5.3 Other Products

Because of the nature of the exploration program process, there are chemicals and reagents that are needed for use in the drilling process. These products are:

- Sodium Chloride and Calcium Chloride;
- Explosives (ammonium nitrate fertilizer, emulsions and high explosive(stick Powder));
- Domestic sewage; and
- Petroleum contaminated soil.

Specific response procedures with the MSDS sheets will be available on site and available to the regulatory agencies. The locations and quantity of these materials are shown on Figures 3-5 and the storage details are provided in Tables 1-3.

Figure 3: Windy Camp Infrastructure Layout Map

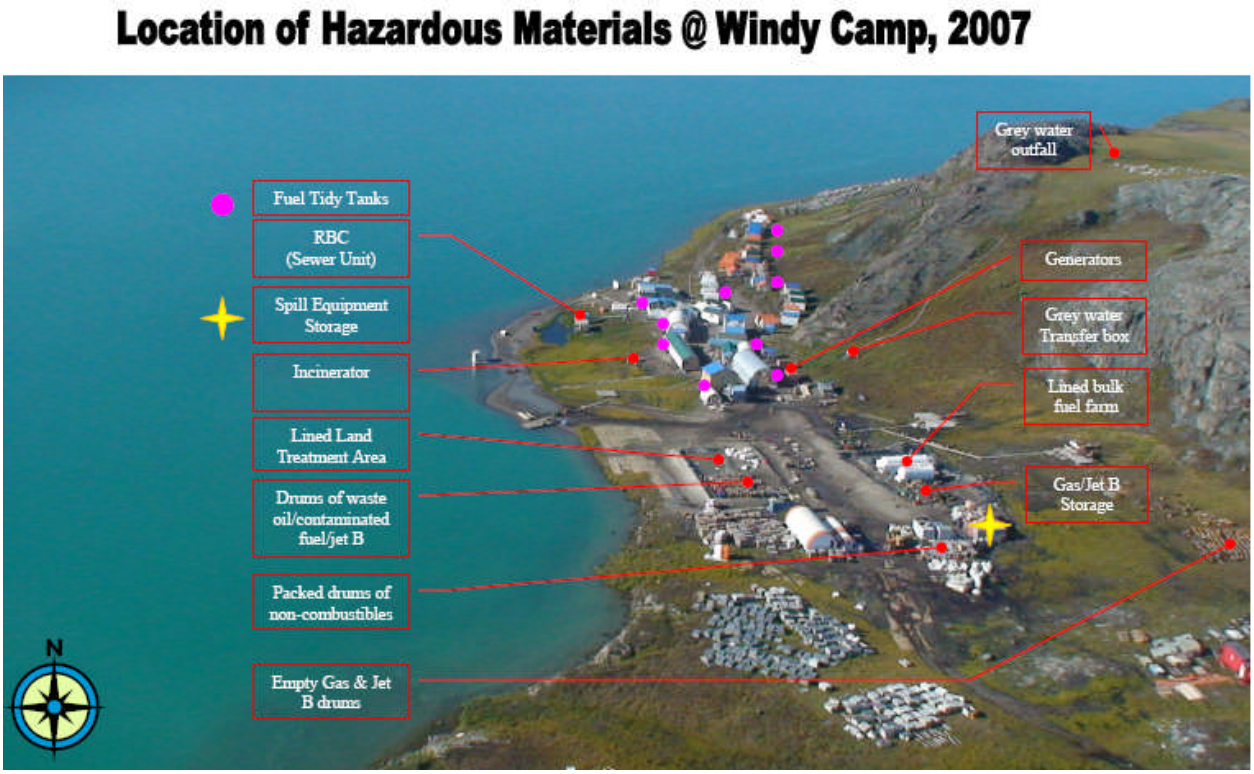


Table 1: List of hazardous materials at Windy Lake Camp

Storage Facility	Product Type	Vessel Type	Volume @ 85%	Concern - Critical Period
Bulk Fuel Farm	P50 Fuel	AST 50,000 L	42,500 L	Bulk fuel transfer during winter
Bulk Fuel Farm	P50 Fuel	AST 70,000 L	59,500 L	Snow melts & heavy downpour
Bulk Fuel Farm	Jet B	45 gallon drums	164,000 L	Berm failure & holes in liner
Bulk Fuel Farm	Gasoline	45 gallon drums	41,000 L	Berm failure & holes in liner
Bulk Fuel Farm	Gasoline	EnviroTank	888.25 L	Berm failure & holes in liner
Land Treatment	Waste Oil	45 gallon drums	20,500 L	Snow melts & spring runoffs
Land Treatment	Contaminated Soil		100 m^3	Snow melts & heavy downpour
Land Treatment	Contaminated Water		10 m^3	Berm failure & holes in liner
RBC Sewer	Sludge	RBC Unit	-	Overflow & frozen lines
Discharge Lines	Grey Water	Heat trace HDP	10 m^3	Backflow & frozen lines
Buildings	P50	EnviroTank	8,882.5 L	Fuel transfer & damage fittings
Generators	P50	EnviroTank	888.25 L	Fuel transfer & damage fittings

Hazardous Materials at Patch Lake Shop

Figure 4: Patch Lake Shop Facilities

Table 2: List of hazardous materials at Patch Lake Shop

Storage Facility	Product Type	Vessel Type	Volume @ 85%	Concern - Critical Period
Bulk Fuel Farm	P50 Fuel	AST 75,000 L	127,500 L	Bulk fuel transfer during winter
Bulk Fuel Farm	P50 Fuel	AST 70,000 L	175,500 L	Snow melts & heavy downpour
Bulk Fuel Farm	P50 Fuel	AST 50,000 L	42,500 L	Same as above
Buildings	P50 Fuel	EnviroTank	2,664.75 L	Fuel transfer & damage fittings
Generators	P50 Fuel	EnviroTank	888.25 L	Fuel transfer & damage fittings
Incinerator	P50 Fuel	EnviroTank	888.25 L	Fuel transfer & damage fittings

Hazardous Materials at Roberts Bay Beach Front

Figure 5: Roberts Bay Beach Front

Table3: List of hazardous materials at Roberts Bay Beach Front

Storage Facility	Product Type	Vessel Type	Volume @ 85%	Concern - Critical Period
Bulk Fuel Farm	P50 Fuel	AST 70,000 L	Empty	Snow melts & heavy downpour
Bulk Fuel Farm	P50 Fuel	AST 100,000 L	85,000 L	Snow melts & heavy downpour
Buildings	P50	EnviroTank	888.25 L	Fuel transfer & damage fittings
Generators	P50	EnviroTank	888.25 L	Fuel transfer & damage fittings
Incinerator	P50	EnviroTank	888.25 L	Fuel transfer & damage fittings

6 SPILL RESPONSE

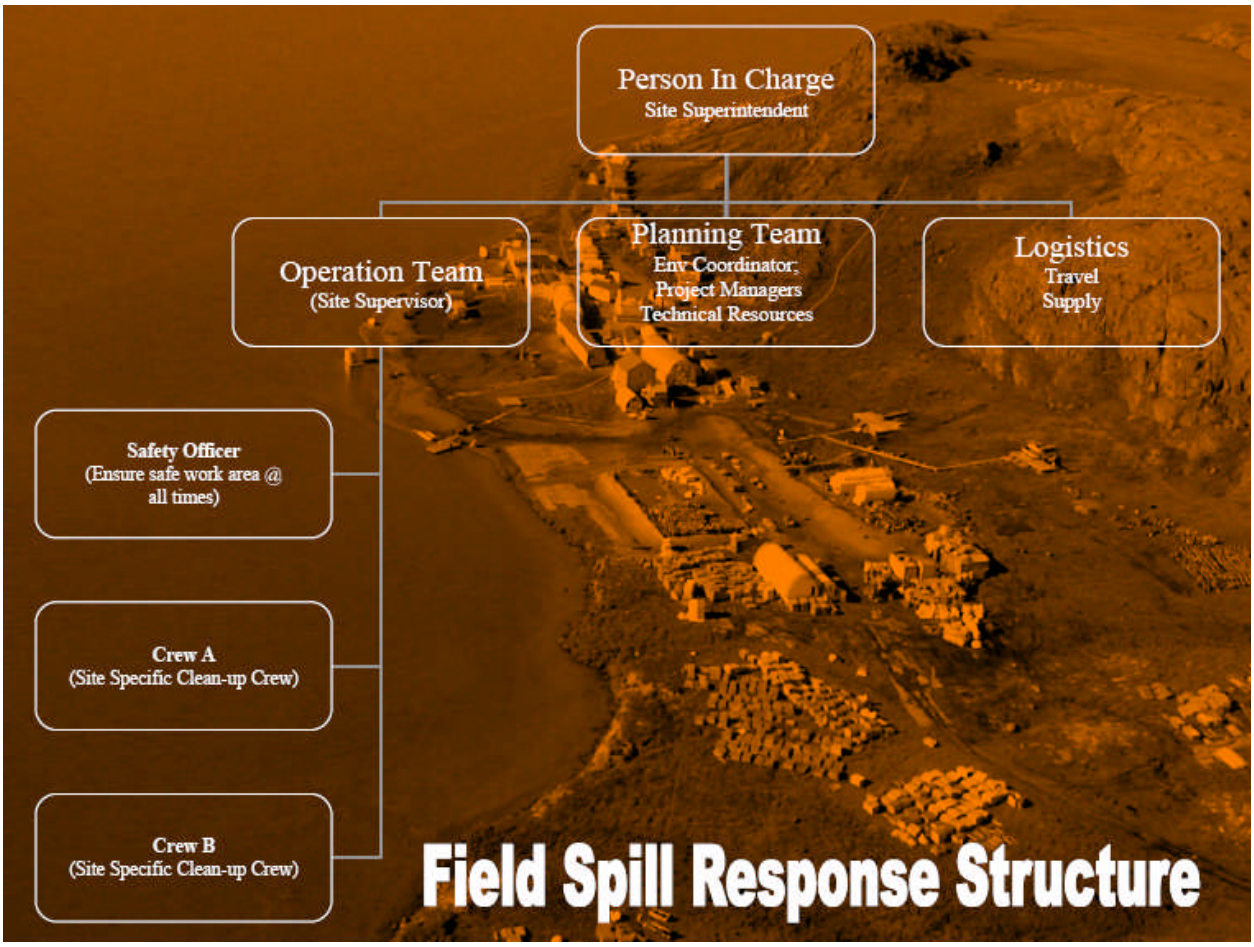
6.1 Responsibilities

During the training (see section 9) site personnel will learn their roles in a spill incident. The following are the roles for the Hope Bay Exploration and On-site Contractor Personnel.

6.2 Onsite Personnel

The success of any spill clean-up operation is very depended on how well MHBL personnel onsite are able to: master of their respective roles; ability to work as a team; know their strength; and limitations. The field chain of command relating to a significant petroleum product spill is show in Figure 6. The Person-In-Charge will change depending on the where the spill occurred, e.g. if there was a spill at Roberts Bay Beach front, the person-in-charge of the operation there will be in-charge initial until the Site Supervisor arrives at incident area and sets a command post.

Figure 6: Field Chain of Command for a significant Petroleum Product Spill



6.3 Discovery of a Significant Spill

- Any employee noticing an environmentally hazardous spill is required to notify immediately their supervisor or the onsite Resource Project Manager or the Site Supervisor on handheld Radio Channel #1;
- Assess the initial severity of the spill and note any safety concerns; and
- Determine the source of the spill and stop or contain it, ONLY if SAFE to do so.

6.3.1 Initial Response

- The Site Supervisor and or the Senior Environmental Coordinator shall proceed immediately to the scene to make an assessment of:
    - Specific hazards of an imminent nature that may endanger health and safety of humans, damage to property or adverse impact to the physical environment;
    - The type of material spilled;
    - The estimated quantity;
    - The potential for further spillage; and
    - Criteria and equipment required to contain and clean up the spill.
- Advice Site Superintendent and the Resource Project Managers of any additional notifications that is required depending on the spill product quantity (see Appendix C).

6.4 Mobilizing Resources and Support to a Spill Site

6.4.1 Person-In-Charge (Site Superintendent)

- Forms a command post immediate and assign roles based on chart in Figure 4;
- Access the type of technical expertise onsite immediately;
- Appoint a note taker (Log of Activities) immediately;
- Appoint a Safety Office immediately;
- Informs the General Manager, Northern Operations on the status of the incident and updates the information on a regular bases;
- Makes every decision on site based on information provided by the Planning Team;
- Ensures that the operation goes smoothly in the order of protecting the safety of humans, properties and the physical environment; and
- Makes the call to end the clean-up operation.

6.4.2 Planning Team

- The Planning Team comprises of Resource Project Managers, Senior Environmental Coordinator, and Technical Resources onsite (invited by the Person-In-Charge);
- The primary role of this Team is to plan **what** needs to be done, **when** it has to be done, **who** needs to implement the directive, **how** the directive is carried out, and **why** such direct has to be undertaken. This information is then passed onto the Person-In-Charge to issue

the directives to the Operation Team and or Logistics Team for action;

- The Planning Team are responsible for reviewing information and requests as they come in on a regular bases and informs the Person-In-Charge of any changes to the Plan; and
- Keeps the information current on all aspects of the clean-up process.

6.4.3 Operation Team

- The Operation Team is lead by the Site Supervisor. The main objective of this team is implement directives from the Person-In-Charge of the Spill Operation;
- Informs the Crew Team Leader of what clean-up equipment are required and where each crew will be operating;
- Provide feed back to the Site Superintendent when situations changes. This could mean changes in weather, tides, snow cover, additional resources required, additional personnel required; and
- Determine if resources available to Clean-up Crew are adequate and sufficient for the tasks at hand.

6.4.4 Safety Officer

- The primary role of the Safety Officer is to report to the Person-In-Charge any situations or conditions that are likely to have adverse impact to the health and safety of personnel at the spill site;
- Stop recovery operations when he/she believe an activity undertaken is unsafe; and
- Only answerable to the Person-In-Charge. This means, the Person-In-Charge can override a recommendation and or stop-activity from the Safety Officer.

6.4.5 Clean-up Crew

- Depending on the nature, seriousness of the spill, and the type of habitat; the Clean-up Crew will be divided into two teams or more;
- A Clean-up Crew will have a Team Leader that will be in contact with the Site Supervisor at all times; and
- All flow of information is through the Site Supervisor.

6.4.6 Logistics

- To ensure that additional equipment or personnel arrive on site without further delay;
- Receive list of requests from the Person-In-Charge and reports back to the Person-In-Charge on the outcome in a timely manner;
- Organize and keep an up-to-date stock take of new materials and personnel arriving to site.

6.5 Offsite Personnel

Corporate support in terms of financial resources and external specialist are required with spills that can not be managed in-house with the available resources on hand. This support will be requested via the Person-In-Charge after careful consideration by the onsite Planning Team. Corporate personnel will deal with Government Agencies, stakeholders and media.

6.5.1 General Manager, Northern Operations

- Reports the spill to Nunavut 24-Hour Spill Report Line at **(867) 920-8130**;
- Records the time of the report, source of information and details on location, size, type of pill as well as any other information available on the spill report form;
- Notifies government agencies and Miramar Corporate Personnel (see Table 4);
- Oversees completion and distribution of Spill Report;
- Responsible for all communication with the media;
- Ensures that all press releases are accurate and in accordance with company policy;
- Ensures all reporting requirement are met to MHBL standard and regulative requirements;
- Initiates Mutual Aid Agreements if response requires outside assistance; and

6.6 Emergency Contacts

- The General Manager, Northern Operations or his designate is responsible to:
    - By phone, contact the regulatory authorities within 24 hours of a reported major spill; and
    - Fax in the Nunavut/NWT Spill Report Form.
- If the volume spilled required by mandatory reporting as specified in Schedule B from the Regulation R-068-93 Spill Contingency Planning And Reporting Regulations (July 22 1993) Consolidation Issued July 15 1998 (see Appendix C), the General Manager, Northern Operations (using the Nunavut Spill Report Form) is responsible to notify the Nunavut Spill Report line **(867 920 8130)** and the Kitikmeot Inuit Association Lands Manager **(867 982 3310)**.

Table 4 Notification Telephone List

Organization/Personnel	Contact Information
Nunavut/NWT 24 hour Spill Report Line	867 920 8130
Environment Canada – Environmental Protection Emergency 24 Hrs.	867 920 6060
RCMP	867 983 1111
Emergency Measures Organization Nunavut	867 979 6262: AH 1-800 693 1666
Department of Fisheries and Oceans	867 979 6274
Miramar Mining Corporation Head Office North Vancouver B.C.	1 604 985 2572
Kitikmeot Inuit Association Lands Manager	867 982 3310

6.7 Log of Contacts or Activities

- The Person-In-Charge will nominate a competent person to maintain a log of all activities and contacts made which will include the date, time and organization contacted, essence of the notice or information transmitted/received, whenever possible the name and title of individuals receiving or issuing notification or instructions.

6.8 Communications

- The Person-In-Charge onsite is the only person communicating with the General Manager, Northern Operations relating to activities relating to the spill clean-up operation; and
- The General Manager, Northern Operations will liaise with MHBL CEO, Vice Presidents – Operations, Exploration and General Manager Environment, Regulatory Agencies and the KIA to keep them informed as to the status of the ongoing operations.

6.9 Disposal

- The disposal of spilled material and/or contaminated soil is governed under the Waste Management Act and its regulations. A copy of the Act and the Special Waste Regulation and the Contaminated Sites Regulation will be maintained on site for reference.
- Clarifications and information regarding waste management and disposal issues can be obtained from the Nunavut government and DIAND. Two approved Land Treatment Area (LTA) are currently in operation on the Belt. One is located at Windy Camp and the other is located at Windy Lake camp. Petroleum contaminated top soil will be removed and placed in these LTA for treatment. In situations where these facilities are have reached maximum capacity, contaminated top-soil will sealed in 45-gallon drums and transported offsite to approve facilities in Yellowknife for disposal purposes.
- The Site Superintendent and the Planning Team in consultation with the Senior Environmental Coordinator shall investigate the most appropriate disposal options for the spilled material. Disposal may include burning, disposal in waste areas or recycling.

6.10 Documentation and Reporting

- The Site Superintendent or a designate will be responsible to attend the scene of any spilled materials or contaminated soils to photograph and measure the affected area. They shall be responsible to engage properly qualified personnel to collect samples of the materials or soils. No person should sample or handle spilled hazardous materials unless the person has received adequate training in safe sampling procedures, use/selections of protective clothing and identification of the hazards associated with the respective spilled material.
- The General Manager, Northern Operations will submit a detailed report to the appropriate agencies within thirty (30) days starting from the day of the reported spill. Progressive reports are submitted regularly until the completion of remedial activities. The report will include but not be limited to:
    - Reporting person's name and telephone number;

- Name and telephone number of the person/company who caused the spill;
- Location and time of the spill;
- Type and quantity of the substance spilled;
- Cause and effect of the spill;
- Details of action taken or proposed;
- Description of the spill location and of the area surrounding the spill;
- Details of further action contemplated or required;
- Names of agencies on the scene;
- Names of other persons or agencies advised concerning the spill;
- Chronological sequence of events including internal and external notifications;
- Copies of analytical results from external laboratories; and
- Analysis of the events leading up to the spill, and a critique of the internal response and handling of the incident.

6.11 Spill Equipment

- Spill kits will be placed in the following locations:
  - Tank Farm;
  - Refueling Station;
  - Incinerator;
  - Power House;
  - Reagent Storage area;
  - Landing Dock;
  - Fuel Delivery truck;
  - Jetty;
  - Workshop;
  - Ice landing strip, Helipad; and
  - Drill sites.
- Each spill kit will contain a minimum of:
  - 1 roll absorbent;
  - 2 plug and dyke kits;
  - 1 3mx 4m tarpaulin;
  - 2 Tyvek suits;
  - 4 mini booms;
  - 25 spill pads;
  - 2 pr of neoprene gloves;
  - 2 splash proof goggles.
- If spill happens at Roberts Bays, the earth moving equipment such, loaders, and backhoes are also available for constructing dykes and moving contaminated material. The fuel delivery truck will carry a spill response kit containing absorbent pads and material as well as large disposal bags for small spills. If spill happens at Patch Lake Shop, a helicopter will be used to move additional personnel and equipment to the spill site.

7 NEAR MISS EMERGENCY RESPONSE

7.1 Natural Incidents

Continuously higher air temperatures can have significant effect on exposed or disturbed tundra. This in turn will impact the permafrost allowing it melt, thus causing cave-ins at worksites or areas used for long-term petroleum product storage. If such incident is observed to occur, do the following:

- Immediately inform your supervisor on Radio Channel # 2 if in camp; Channel # 1 out of camp; and Channel #5 for Major Drilling personnel; and
- Follow procedures outline in Section 6.3 of this Plan.

7.2 Equipment Falling Through Ice or Open Water

Travel and equipment over frozen lake or ocean will occur rarely at the site however, if accidents happen the following procedure will be the guide to response.

- First, ensure the safety and well being of personnel involved; and
- Follow procedures outline in Section 6.3 of this Plan.
- Where equipment had fallen through the ice, if it is still accessible;
    - Arrange for it to be lifted or towed out as soon as possible; and
    - Ensure that leaks of fuel or engine oils are minimized wherever possible by pumping the fuel from tanks into other containers where this can be safely done without danger of a spill.
- Where a vehicle has gone completely through the ice and is submerged;
    - Contact the appropriate government spills hot line and ask for advice. Where possible, also contact a specialist contractor to assist or to undertake the recovery of the submerged vehicle.

8 SPILL RESPONSE IN ROBERTS BAY

8.1 Introduction

This section was developed to provide MHBL personnel with petroleum product spill response guidance specific to the unique climatic and physiographic features of the Arctic environment. It provides general information on typical approaches to dealing with hydrocarbon spills in the marine environment.

All bulk fuels and the majority of hydrocarbon products will be shipped to Doris North Project site by barges and tugs under the operational control of the shipping company. MHBL will ensure that the selected shipping company has an appropriate spill response plan in place with trained responders and appropriate stores of spill response equipment and materials. At the current time, this shipping contractor is Northern Transportation Company Limited (NTCL – www.ntcl.com). MHBL will rely upon NTCL for spill response while bulk fuel and containerized shipments of hydrocarbon-based products are in transit from Hay River to the Doris North site. NTCL have many years of experience with such shipping operations in the Arctic.

MHBL will maintain marine spill response equipment at the Roberts Bay jetty site stored within a Seacan for use while barges are being off loaded. This equipment will include floating containment booms and a small skimmer unit designed to address potential spills during the off-loading process at the Doris North Project site.

Consideration has to be given to the key features of the Arctic Region. Table 9 highlights such factors and considerations. The photographs of the various shoreline types along the southwest and southeast of the jetty at Roberts Bay are presented in Section 15, Appendix D of this document.

Table 5 Key features of Arctic regions

Environmental Factors
• high density of habitat use during summer seasons
• extreme seasonal ecological sensitivity variations
• unique shores types (ice shelves, glacier margins, ice foot features, tundra coasts)
• unique oceanographic and shoreline seasonal changes (open water, freeze-up, breakup, frozen conditions)
• slow weathering and longer persistence of spilled product
Operational Considerations
• remote logistical support
• need to improvise response using available means until support equipment arrives
• safety in cold, remote areas
• cold temperature effects on the efficiency of equipment and personnel
• boat operations in ice-infested waters during transition periods, winter dynamic ice conditions
• on-ice operations in winter
• seasonal daylight variation
• minimization of damage to permafrost during land-based staging and cleanup operations
• need of aircraft for logistics, surveillance, and tracking

This section of the document applies to all sizes of petroleum product spills. For simplicity, the wide range of crude and refine oils have been grouped into three types, based primarily on viscosity (Table 6). Table 7 presents definitions for three "sea conditions" (calm water, protected water, and open water) for spills of hydrocarbons in the marine environment that are used in this document.

Table 6 Oil viscosity ranges

Viscosity Ranges		
Light **Free flowing (like water)**	**Medium** **Slowly pouring (like molasses)**	**Heavy** **Barely flowing (like tar)**
• Diesel	• Bunker A	• Bunker B and C
• Gasoline	• Fuel Oil No. 4	• Fuel Oil No. 6
• Heating oil	• Lubricating Oil	• Weathered crudes
• Kerosene	• Medium crudes	• Bitumen

Table 7 Definitions of "Sea Condition" used in this document

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

8.1.1 Objective

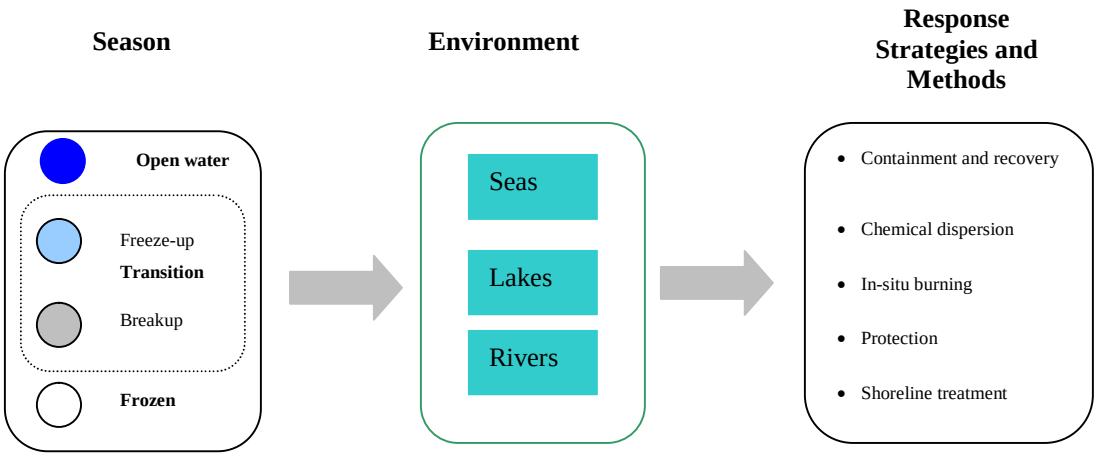
The section focuses on practical spill response strategies and tools for application to open water, ice and snow conditions in remote areas during cold weather. Information is provided relevant to the marine offshore and coastal environments, where bulk petroleum product is transported and where spills pose a threat to the environment and public health.

Marine offshore environments are of great ecological importance in Arctic Regions. MHBL will be moving its petroleum products to support its operation along the Hope Bay Belt using barges during open water season.

8.1.2 Practical Countermeasures

The following practical countermeasures are recommended for first responders, i.e. personnel with a range of technical experience who serve as onsite, trained MHBL employee responders and required to be first at the scene of a spill. Because the responder might receive very limited information when alerted about a spill, this section has been organized on the basis of ***season*** (open water, freeze-up and breakup transition, and frozen conditions as shown in Figure 7. ***Environment*** (seas, lakes and rivers) is a secondary index.

Figure 7 Diagram depicting seasons, environmental conditions and mitigations measures



Seasons are defined as follows:

- Open Water : Water is free of any ice form
- Freeze-up: New ice forming
- Breakup: Old ice melting
- Frozen: Solid, continuous ice is present

The methods of containment and recovery, chemical dispersion, in-situ burning and shoreline treatment are used in the context of the four response strategies:

- Source Control: A spill is controlled at or near its release point to prevent slicks from spreading.
- Control of Free Product: Response operations focus on slicks that have spread some distance from the source.
- Protection: Measures are taken to prevent shoreline and other resources from being contaminated.
- Shoreline Treatment: Product that has come ashore is treated.

8.2 Spill during Open-Water Season

8.2.1 Seas

General Guidelines

- MHBL personnel who respond to spills must be trained in the hazards of exposure to low temperatures, accidental immersion in cold water and other causes of hypothermia.
- The most effective way to minimize environmental damage is to focus on source control and to prevent product from spreading.
- Slick tracking and surveillance should utilize locally available resources to determine optimum response strategies:
    - Locate brown-color slicks to be skimmed, burned and/or dispersed
    - Leave shiny, rainbow sheens to disperse naturally but plan for shoreline protection/treatment, if appropriate
    - In breaking waves higher than 1 m, surveillance and monitoring might be the only practical response options.

Table 8 presents description of countermeasures that are recommended for implementation in an uncontrolled environmental incident.

Table 8 Open-water response at sea or coastal waters

Environment		Responses			
Response	Product Location	Countermeasures			Feasibility
		Contain/recover	Burn	Disperse	
Source Control	On surface	• Mobile floating barriers • Stationary skimmers	Burn on water contained in booms	• Vessel dispersant application • Aerial dispersant application	Recommended
	Underwater	• Subsurface barriers			Not recommended
Control of Free Product	On surface	• Mobile floating barriers • Advancing skimmers	Burn on water contained in booms	• Vessel dispersant application • Aerial dispersant application	Recommended
	Underwater	• Subsurface barriers			Not Recommended
Protection	On surface	• Diversion booming	Burn on water contained in booms	• Vessel dispersant application • Aerial dispersant application	Recommended
	Underwater	• Subsurface barriers			Not Recommended

8.3 Response Strategies and Methods

Responding to spills from vessels and barges can involve controlling slick at source and removing product that escapes initial containment. The objective of both operations is to minimize the spreading of spilled product and subsequent environmental impacts. Control methods use similar approaches at source and to deal with remote slicks.

8.3.1 Containment and Recovery

Containment

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

Recovery

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

8.4 Dispersion

- Within mobile floating barriers, spills must be assessed to determine if dispersants will be effective and then treated quickly by trained personnel:
    - The oil should have a viscosity less than 10000 cSt, i.e. it should be less viscous than molasses;
    - The temperature of the water should be above the pour point of the oil, i.e., the oil should be freely flowing;
    - Slick thickness should be no more than 0.1 mm thick; and
    - Spraying operations should be conducted within 2 -5 days of a spill occurring when the oil is un-weathered and can be dispersed.
- Within mobile floating and stationary barriers, both vessels and aircraft can be used to apply dispersants. Operations should be directed from aerial vintage points:
    - Use stock piles of chemicals located strategically to the spill site at dispersant-to-oil ratios of 1:10 to 1:100;
    - Use fix-wing planes and helicopters on offshore spills;
    - Vessels are more practical for near-shore coastal waters; and
    - Record information on dosage rates, areas treated and apparent effectiveness so that the data can be transferred to subsequent responders.

8.5 In-situ Burning

- In-situ burning must be quickly implemented, usually by trained personnel. In a remote area, the decision to burn should be based on the following factors:
    - Emulsion should be at least approximately 75% oil;

  - Slick thickness should be greater than 2-3 mm;
  - Waves should be less than 2 m high and not breaking;
  - Wind speed should be less than 35 km/h (20 knots); and
  - Crude oil should be burned within 2-5 days of the spill.
- An ignition system is needed; fire-resistant boom and spotter aircraft should be used, if available.
- A safety plan for response workers is required that addresses the location of ignition, burning and areas that would be affected by the smoke plume.
- Crude oil high sulphur content would likely present health and safety concerns either in an unburned state or upon ignition.
- A 10 km (6 mile) downwind exclusion zone provides adequate protection for response workers, the public and wildlife.
- Ensure that the risk of secondary fires is minimized or have the means to extinguish the burn.
- No burning should take place until KIA and/or regulatory authorities give approval.

8.6 Protection

Protecting resources in the spill path usually involves the deployment of mechanical equipment but may be accomplished by chemical dispersion or burning. The objective of protection is to prevent or minimize contact between the spilled oil and the resource at risk.

- Initially, estimate the direction and speed of movement of the oil. Then identify the resources at risk from the spill and evaluate whether protection operations actions are likely to be successful, and then take the following actions for mechanical containment and removal strategies:
  - Deploy diversion boom with both top and bottom tension members and high reserve buoyancy to exclude or divert oil; and
  - Secure and then regularly monitor anchor systems.
- Using stationary skimmer such as smaller oleophilic skimmers, e.g., disc, drum and rope mops units, to remove light and medium viscosity oils for storage in either water – or land-based storage systems.
- In storm surges, protection strategies might not work if oil mixes in the surf zone and if booms fail.
- In-situ burning is a possible protection option in nearshore waters, using an ignition device (s) in concentrated oil; fire-resistant booms and spotter aircraft should be used, if available.
- A safety plan for the burn operation must be prepared that considers the potential impacts of the burn, amenities at risk and the possible health effects of the smoke plume, e.g., 10 km (6 miles) downwind exclusion zone, sulphur content of crude and the means to extinguish the fire.

- Chemical dispersion is a possible protection technique in coastal waters characterized by:
    - Good flushing; and
    - Water depth greater than 10 – 20 m.
- For effective dispersion, oil must meet the following criteria:
    - Viscosity is less than 10 000 cSt, i.e., less viscous than molasses;
    - The temperature of the water is above the pour point of the oil, i.e., the oil is freely flowing; and
    - Slick thickness is more than 0.1 mm thick.
- Vessel application is likely to be as, or more effective than, aerial methods if:
    - Dispersant is applied within 2 – 5 days of spill;
    - The spill covers a relatively small coastal area that can be readily treated with dispersants from vessel;
    - Dispersant supplies and fuel are positioned on vessels and at selected sites onshore so that downtime is minimized; and
    - Good access to, and visibility of, slicks exists.
- Information on dosage rates, areas treated and apparent effectiveness should be recorded so that the data can be transferred to subsequent responders.

8.7 Shoreline Treatment

- First response activities usually take places on a shoreline only if available resources are not required for source control, recovery of free oil or protection. This might be the case for a land-based spill, e.g., a tank farm, or if all or most of the oil has washed ashore.
- Low pressure, cold-water wash is generally practical and effective before the oil has weathered, i.e., in the early stages of a spill, on:
    - Impermeable (bedrock, man-made) shore types;
    - Fine sediment beaches or flats (sand, mud); and
    - Vegetated shores (marshes, peat, low-lying tundra).
- On sheltered, low wave-energy shores with fine sediment, trenching can be rapid and effective method for containing stranded oil and preventing further redistribution. Oil in the trench can be removed by vacuum trucks. If such system is not available in remote areas, sufficient bags of corn-cobs should be used to absorb the remaining oil in the trench.
- Use manual and/or mechanical removal to recover oil on open beaches with wave action. Often it is important to remove oil that is on surface before the oil, sediments are reworked by wave action, and the oil is possibly buried.
- If oily waste generation and its disposal are issues (which is common in Arctic and many remote areas), mixing and sediment relocation on beaches are likely to be practical and highly effective since the oil would be relatively un-weathered. Mixing (also known as tilling) and sediment reworking (surf washing) involve the use of earthmoving equipment to move oiled sediments so that they are exposed to weathering processes, such as evaporation or wave action, to accelerate natural cleaning of an oiled beached. The techniques do not

involve mechanical removal of oiled sediments from beach for disposal.

- Land-based operations should avoid disturbances to the permafrost and the active layer above it, e.g., digging, the use of tracked vehicles and uncontrolled burns.

Table 9 list recommended initial treatment methods according to various shore type in an even of an uncontrolled environmental incident.

Table 9 Recommended initial treatment methods of an uncontrolled environmental incident.

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

Peat shores	• Flooding • Low-pressure, cold-water wash • Manual removal • Vacuum systems • Mechanical removal
Inundated low-lying tundra shores	• Flooding • Low-pressure, cold-water wash • Manual removal • Vacuum systems
Tundra cliff shores	• Low-pressure, cold-water wash • Manual removal • Vacuum systems • Mixing • Sediment relocation
Shorelines with snow	• Vacuum systems • Manual removal • Mechanical removal • Burning

9 TRAINING

9.1 Orientation and Training

All employees, contractors and visitors will be introduced and instructed on the policies and procedures established with this Plan. Area specific inductions will be given to individuals working in high activity areas such as the drill sites and core shack.

Safety and Environmental concerns and awareness will also be discussed at every safety meetings and at the start up of any new operations that may affect the environment. If an incident happens all employees will be informed and re-instructed and retrained as deemed necessary.

The training for spill response will be part of the worker orientation at all Hope Bay Explorations Caps and Regional worksites. All personnel will be made aware of the products present on site through the orientation program and the availability of Material Safety Data Sheets (MSDS) in prominent locations. All employees on site will have valid WHIMS certificates and will be familiar with MSDS.

Each employee will be made aware of the locations of storage facilities and the locations of spill containment and recovery equipment.

9.2 Responsibilities

The ultimate responsibility for up-to-date Emergency training plans and Orientation program is with the Senior Safety Coordinator. The Senior Safety Coordinator and the Senior Environmental Coordinator, in consultation with the Site Superintendent and the Exploration Manager or designates will review the emergency preparedness and response procedures on an annual basis or as required. Review of the emergency response procedures will include the periodic verification of any telephone number contacts for the various organizations that may be needed. Such verification shall be undertaken at a minimum of once per year. Revisions will be made to the procedures where necessary to comply with changing site conditions and any new relevant legislation. Personnel will be notified on any changes and if necessary retraining will take place. In the case that someone other than the Senior Safety Coordinator and the Senior Environmental Coordinator conducts these reviews, findings of these reviews be made available to the Senior Safety Coordinator and the Senior Environmental Coordinator for review, and for possible improvements in the procedures.

9.3 Drills and Practices

The responsibility for carrying out annual drill is the responsibility of the Site Superintendent and the Site Supervisors. Personnel at all MHBL camps will undertake periodic testing of the emergency response procedures. These tests will be undertaken on a twice-yearly basis. These intervals shall be more frequent if there is a high turnover of employees at the site. The outcome of each exercise is to be recorded, and reviewed for areas of improvement by the Responsible Person for the respective area. The findings will be forwarded to the Senior Safety Coordinator

and the Senior Environmental Coordinator.

9.3.1 Areas Covered

Emergency preparedness training must, at a minimum, address the following:

- Fuel spill or effluent spill or leak;
- Fire;
- Equipment falling through ice or in open water; and
- Winter survival training.

10 EMPLOYEE SAFETY HANDBOOK

MHBL believes that all incidents and near misses are preventable. An employee safety handbook has been developed and will be given to each employee upon completion of the Site Induction process. The handbook will be updated from time to time as new information or experience comes available.

The Senior Safety Coordinator is responsible for keeping the Employee Safety Handbook current. The Site Superintendent and Site Supervisors will ensure the Employee Safety Handbook is made available to each new employee upon arrival at any MHBL property along the Belt.

11 REFERENCES

Contingency Planning and Spill Reporting in Nunavut A Guide to the new Regulations, Department of Environment, Iqualuit, Nunavut.

Consolidation of Regulation R-068-93 *Spill Contingency Planning and Reporting Regulations* (Dated 22 July, 1993); Department of Environment, Iqualuit, Nunavut.

Mine Health and Safety Regulations, Government of Nunavut.

MHBL Exploration Environmental Protection Plan, March 16 2006

12 APPENDIX A

DIESEL / P40 / P50, HYDRAULIC, LUBE and WASTE OIL

CONSIDER ACTION ONLY IF SAFETY PERMITS! ELIMINATE IGNITION SOURCES. If safe, stop the source of spill

On Land	• Block entry into waterways; • Do not flush into sewer/drainage system; • Contain spill by dyking with earth or other barrier; • If liquid, remove minor spills with sorbent, large spills with pumps or vacuum equipment; and • Prills /granules can be shoveled or removed mechanically.
On Snow and Ice	• Block entry into waterways and contain with snow or other barrier; • Remove minor spills with sorbent pads and/or snow; • Use ice augers and pump to recover diesel under ice; • Slots in ice can be cut over slow moving water to contain oil; and • Burn accumulated diesel from the surface using Tiger Torches if feasible and safe to do so.
On Tundra	• Do not flush into ditches or drainage systems; • Block entry into waterways and contain with earth, snow or other barrier; • Remove small spills with sorbent pads; • On tundra use peat moss and leave in place to degrade, if practical; • Do not deploy personnel and equipment on marsh or vegetation; • Remove pooled diesel with pumps and skimmers; • Flush with low pressure water to herd diesel to collection point; • Burn only in localized areas, e.g., trenches, piles or windrows; • Do not burn if root systems can be damaged (low water table); and • Minimize damage caused by equipment and excavation.
On Water	• Contain spill as close to release point as possible; • Use spill containment boom to concentrate slicks for recovery; • On small spills, use sorbent pads to pick up contained oil; • On larger spills, use skimmer on contained slicks; and • Do not deploy personnel and equipment onto mudflats or into wetlands.
Streams	• Prevent entry into water, if possible, by building berm or trench; • Intercept moving slicks in quiet areas using (sorbent) booms; and • Do not use sorbent booms/pads in fast currents and turbulent water.
Storage and Transfer	• Store closed labelled containers outside away from flammable sources; and • Electrically ground containers and vehicles during transfer.
Disposal	• Segregate waste types; • Place contaminated materials into marked containers; and • Consult Site Services Manager on disposal procedures.

JET B & Gasoline

CONSIDER ACTION ONLY IF SAFETY PERMITS! ELIMINATE IGNITION SOURCES. If safe, stop the source of spill immediately.

On Land	• Block entry into waterways; • Do not flush into ditches sewer/drainage system; • Contain spill by dyking with earth or other barrier; • If liquid, remove minor spills with sorbent, large spills with pumps or vacuum equipment; and • Prills /granules can be shoveled or removed mechanically.
On Snow and Ice	• Block entry into waterways by dyking with snow or other barrier; • Do not contain spill if there is any chance of igniting vapours; and • In work/depot yards, apply particulate sorbents.
On Tundra	• Block entry into waterways by dyking with earth, snow or other barrier(s); • Do not contain spill if there is any chance of igniting vapours; • On shop floors and in work/depot yards, apply particulate sorbents; • On tundra use peat moss and leave to degrade if feasible to do so; • Remove pooled liquid with pumps, if safe to do so; • Do not deploy personnel and equipment on marsh or vegetation; • Low pressure flushing can be tried to disperse small spills; • Burn CAREFULLY only in localized areas, e.g., trenches, piles or windrows; • Do not burn if root systems can be damaged (low water table); and • Minimize damage caused by equipment and digging.
On Water	• Contain or remove spills ONLY AFTER VAPORS DISSIPATE; • Use booms to protect water intakes; and • Skimming can be tried once light ends evaporate.
On Streams	• Prevent entry into water, if possible, by building berm or trench; • Intercept moving slicks in quiet areas using (sorbent) booms; and • Do not use sorbent booms/pads in fast currents and turbulent water.
Storage and Transfer	• Store closed, labeled containers in cool, ventilated areas away from incompatible materials; and • Electrically ground containers and vehicles during transfer.
Disposal	• Segregate waste types; • Place contaminated materials into marked containers; and • Consult Site Services Manager on disposal procedures.

ANTIFREEZE (ETHYLENE GLYCOL)

CONSIDER ACTION ONLY IF SAFETY PERMITS! If safe, stop the source of spill

On Land	• Block entry into waterways; • Do not flush into ditch/drainage system; • Contain spill by dyking with earth, snow or other barrier;; • Remove minor spills with peat moss and/or sorbent pads; and • Remove large spills with pumps or vacuum equipment.
On Snow and Ice	• Block entry into waterways by dyking with snow or other barrier; • Do not contain spill if there is any chance of igniting vapours; • In work/depot yards, apply particulate sorbents; and • Remove contaminated snow with shovels or mechanical equipment.
On Tundra	• Do not deploy personnel and equipment on marsh or vegetation; • Block entry into waterways by dyking with earth, snow or other barrier(s); • On shop floors and in work/depot yards, apply particulate sorbents; • Low pressure flushing can be tried to disperse small spills; • Burning is not feasible; and • Minimize damage caused by equipment and digging.
On Water	• Ethylene glycol sinks and mixes with water; • Contain spill by isolating contaminated water through damming or diversion; and • Use spill containment boom to protect water intakes and sensitive areas.
On Streams	• Prevent entry into water, if possible, by building berm or trench; • Intercept moving slicks in quiet areas using (sorbent) booms; and • Do not use sorbent booms/pads in fast currents and turbulent water.
Storage and Transfer	• Store closed labelled containers in cool, ventilated areas away from incompatible materials, e.g., oxidizable materials, finely divided metals and organics.
Disposal	• Segregate waste types; • Place contaminated materials into marked containers; and • Consult with environmental authorities during final disposal

RAW SEWAGE

CONSIDER ACTION ONLY IF SAFETY PERMITS! Avoid direct contact with raw sewage. If safe, stop the source of spill

On Land	• Block entry into waterways; • Do not flush into ditch/drain systems; • Contain spill by dyking with earth or other barrier; • Remove spill with pumps or vacuum equipment; and • On tundra use peat moss and leave in place to degrade, if feasible.
On Snow and Ice	• Block entry into waterways; • Contain spill by dyking with snow or other barrier; • Do not flush into ditch/drain systems; and • Remove contaminated snow with shovels or other mechanical means.
On Tundra	• Do not deploy personnel and equipment on marsh or vegetation; • Remove pooled sewage with pump or vacuum equipment; and • Minimize damage caused by equipment and excavation.
On Water	• Isolate/confine spill by damming or diversion if feasible; and • If not possible to confine and pump, disperse using water flushing
Storage and Transfer	• Store closed, labelled containers in cool, ventilated areas; and • Avoid contact with collected material.
Disposal	• Place contaminated materials into marked containers; • Transport to sewage treatment plant; • Dispose of in accordance with local, provincial and federal environmental regulations; and • Consult with environmental authorities during final disposal.

ACETYLENE and PROPANE

CONSIDER ACTION ONLY IF SAFETY PERMITS! ELIMINATE IGNITION SOURCES, Keep vehicles away from accident area. If safe, stop the source of spill.

- Vaporous cannot be contained when released
- Water spray can be used to knock down vaporous if there is NO chance of ignition
- Personnel should withdraw immediately from area unless it is a small leak that has been stopped immediately after detection
- If tanks are damaged, gas should be allowed top disperse and no attempted recovery made
- Personnel should avoid touching release point on container since frost quickly forms
- Keep away from tank ends.

13 APPENDIX B1

Figure 13.1 Nunavut/NWT Spill Report Form

Northwest Territories Nunavut Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR	REPORT NUMBER	
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME	☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	____-_____	
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)			
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN			
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS			
F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION			
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER		
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER		
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES		
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT		
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS				
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

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

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

PAGE 1 OF _____

Schedule B2[1]

Reportable Spill Quantities

Item No.	TDGA Class	Description of Contaminant	Amount Spilled
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100[1].
3.	2.2	Compressed gas (no corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100[1].
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 l
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 l or 50 kg
11.	5.2	Organic Peroxides	1 l or 1 kg
12.	6.1	Poisonous substances	5 l or 5 kg
13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 l or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 l or 5 kg
17.	9.2	Environmentally hazardous	1 l or 1 kg
18.	9.3	Dangerous wastes	5 l or 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 l or 0.5 kg
20.	None	Other contaminants	100 l or 100 kg

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From: Consolidation of Regulation R-068-93 Spill Contingency Planning And Reporting Regulations (July 22 1993) Consolidation Issued July 15 1998

14 APPENDIX C

Contact Numbers (Note: key list of MHBL, KIA, government agencies, enforcement etc.)

Key Miramar Hope Bay Limited personnel responsible for the Implementation of this EPP			
Name	**Position**	**Address**	**Contact**
Jim Currie	Vice President, Operation	Suite 300- 889 Harbourside Drive North Vancouver, BC V7P 3S1	Tel: 604-985-2572 Fax: 604-980-0731 Email:jcurrie@miramarmining.com
John Wakeford	Vice President, Exploration		Tel:604-985- 2572 Fax:604-980-0731 Email:jwakeford@miramarmining.com
Larry Connell	General Manager, Environment		Tel:604-985- 2572 Fax:604-980-0731 Email:lconnell@miramarmining.com
Terry Maloof	Manager, Environmental Audit & Permitting		Tel:604-985- 2572 Fax:604-980-0731 Email:tmaloof@miramarmining.com
Scott Stringer	General Manager, Northern Operations	Miramar Hope Bay Limited *(Contact during height of exploration programs. Email is the preferred method for external communication due communication difficulties experienced at times out in field).*	Tel:867-766-5311 Fax:867-873-6357 Email:sstringer@miramaryk.com
Matthew Kawei	Snr Environmental Coord; - MHBL		Tel:1-800-663-8780 Fax: Email:mkawei@miramarmining.com
Darren Lindsay	Exploration Manager - Hope Bay Belt		Tel:1-800-663-8780 Fax: Radio Channel: 1 & Channel Email:dlindsay@miramarmining.com
Ross Sherlock	Snr Research Geologist - Regional Exploration		Tel:1-604-677-0617 Fax: Radio Channel: 1 & Channel 2 Email:rsherlock@miramarmining.com
Fred Penner	Site Superintendent		Tel:1-800-663-8780 Fax: Radio Channel: 1 & Channel 2 Email:fpenner@miramarmining.com

Key Government personnel responsible for activities relating MHBL Exploration programs			
Name	**Position**	**Address**	**Contact**
Spill Center	NWT 24 hours Spill Report Line	Yellowknife, NT	Tel:867-920-8130 Fax:867-873-6924
Philippe di Pizzo	Executive Director, Nunavut Water Board (NWB)	Iqualuit, Nunavut	Tel:867-360-6338 Fax:867-360-3669 Email:
DIAND	Water Resource Inspector	Iqualuit, Nunavut	Tel:867-975-4546 Fax: Email:
Stanley	Lands Manager, Kitikmeot Inuit Association (KIA)	Kugluktuk, Nunavut	Tel:867-928-3310 Fax:867-982-3311 Email:
Colette Meloche	Environment Canada (EC)	Iqualuit, Nunavut	Tel:867-975-4639 Fax: Email:Colette.meloche@ec.gc.ca
Tania Gordanier	Department of Fisheries & Oceans (DFO)	Iqualuit, Nunavut	Tel:867-979-8007 Fax:867-989-8039 Email:gordaniert@dfo-mpo.gc.ca

15 APPENDIX D – ROBERTS BAY SHORELINE TYPES

Photo: E1- Sandy beach; toward northeast of beach; peat with cobble beach

Photo: E2 – Pebble-cobble beach with peat in the upper intertidal zone

Photo: E3 – Mix Pebble-cobble beach

Photo: E4 – Mix Pebble-cobble beach with peat in the upper intertidal zone

Photo: E5 – Sandy beach

Photo: E6 – Pebble-cobble beach

Photo: W1 – Mix Sand-Pebble-cobble beach with peat in the upper intertidal zone

Photo: W2 – Mix Pebble-cobble beach with peat in the upper intertidal zone

Photo: W3 – Mix Pebble-cobble beach with peat in the upper intertidal zone

Photo: W4 – Mix Pebble-cobble beach with peat in the upper intertidal zone