Miramar Hope Bay Ltd

Standard Operating Procedure

Spill Contingency Plan

Update – July 2004

Approved By:

Position	Name	Signature	Date
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Document Control Record

The re-issues of this document, listed below, have been reviewed and approved by Quality Assurance and Management and are authorised for use within the Miramar Hope Bay Ltd organisation.

DOCUMENT CONTROL REVISION HISTORY

Rev No	Page No	Details of Issue	Authorisation		
			Name	Initial	Date
0	All	Original Document	Hugh Wilson		Feb 2002
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1	All	Review	Hugh Wilson		Mar 2004
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**Conditional Approval subject to revisions to the original document to include specific concerns raised by Nunavut Water Board*

Distribution List

Date	Copy #	Name	Department/Location	Type
Original copy	0	Hugh Wilson	Manager, Environmental Affairs	Electronic, pfd & doc
			Boston Camp	
			Windy Lake Camp	
			Patch Lake (Major)	
			Doris	
			Goose Lake	

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1 Introduction

1.1 General Description of Property

Miramar Hope Bay Ltd (MHBL) is a 100% owner of the Hope Bay Belt. Extensive advanced exploration programs have been carried out on the belt from 2000 through the 2003 operating seasons. Similar activities are anticipated in 2004 and beyond as MHBL continues to advance the project to eventual production.

The project area is located approximately 175 km southwest of Cambridge Bay, 450 km west southwest of Gjoa Haven, and 60 km east of Umingmaktok, the closet community to the project area.

2 Purpose and Scope

This document is a review and analysis of the preparedness for events, which may occur due to unforeseen circumstances. The plans and predetermined lines of response detail actions to be taken in the event of unintentional materials release during the ongoing exploration programs MHBL plans to carry out on the belt and includes wastewater, sewage treatment, fuel or chemical storage areas. This Spill Contingency Plan addresses all project areas within the Hope Bay Belt including camps at Boston and Windy Lake. The campsite on Wolverine Lake was fully decommissioned in 2001 and KIA has given full clearance at this site. The plan will be updated periodically and would address any significant changes in operating plans, should they occur.

This contingency plan is a living document, and would be amended as required, to accommodate change. It first describes the main facilities to be operated as a component of the ongoing exploration drilling programs, followed by contingency measures to support them. On site activity is planned to run from approximately January to September of each year, due mainly to access limitations. Should operations extend beyond these times, and if operational scenarios change, this plan will continue to apply and notification will be made to the appropriate agency(s).

An abbreviated version of the plan will be posted for all exploration staff and visitors to the MHBL's project site as part of MHBL's field orientation program. The new employee, visitor or contractor is inducted within 24 hours on his/her arrival to site.

2.1 MHBL Policy on Initiating Cleanup Activities

It is the policy of MHBL to initiate clean up activity when, in the opinion of management, MHBL is clearly associated, or likely associated with the spilled product. The guiding principles of MHBL's Spill Contingency Plan is to comply with existing regulations to ensure protection of the environment, and to keep employees, government officials and the stakeholders aware of our plans.

2.2 Environmental Policy

Miramar Hope Bay Limited is committed to maintaining sound environmental practices in all of its activities from exploration through to closure and land relinquishment.

To achieve this, MHBL in 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 all activities are in compliance will all environmental legislation and regulations.
- On a continuous basis, determine the MHBL impact to the environment and through continuous improvement, strive to attain higher level of environmental performance.
- Maintain a high level of environmental protection by applying practices and technologies that minimise 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 area, develop closure plans that can be continually 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.

3 Project Facility Description

3.1 Existing Facilities and Previous Work

MHBL operates the existing camps initially constructed by BHP at Boston (Aimaogaktak Lake) and Windy Lake. There are caches of fuel and other consumables at Windy Lake Camp, and Doris Lake. A drill service area and workshop is located on the western shore of Patch Lake.

3.1.1 Doris North

There are two 75,000 L above ground storage tanks (ASTs). These ASTs are double walled structures and are Underwriter's Laboratory of Canada (ULC) approved. Double walled ULC tanks are commonly known as Enviro-tanks. The ASTs are located on the rocky high ground a short distance south overlooking Doris Lake.

3.1.2 Patch Lake – Major Drilling Maintenance Shop

Major Drilling's maintenance shop is located approximately 2 km east of Windy Lake Camp on Patch Lake. There are two ULC approved 75,000 L double walled ASTs at the site.

3.1.3 Windy Lake Camp

Windy Camp is located on 400-meters of land below a rocky bluff bordering the shore of Windy Lake (see Appendix 15.2). Bulk fuel storage at Windy Lake consists of one 50,000 L double walled, ULC approved tank and two 75,000 L doubled walled, ULC approved tanks. The tanks are located in a natural berm, close proximity to each other south of the main camp.

The main fuel supply for the camp consists of six new 1,200 L doubled walled, ULC approved Tidy tanks, four of which are connected to dedicated fuel distribution lines for the majority of the accommodation and the genset shacks. This reduces the frequency of fuel handling requirements from the previous system, (some still in use), where individual 45 gallon drums are used to supply fuel for each sleeping tent.

3.1.4 Boston Camp

Boston Camp is located on a high ridge overlooking the Spyder Lake 45 km south of Windy Lake camp. A general layout area is provided in Appendix 15.1. There are eight ASTs (2 x 50,000 L and 6 x 70,000 L) bermed in an engineered secondary containment area. South of the main camp and near the Procon shop is a 50,000 L ULC approved enviro-tank.

Tidy tanks are used for fuelling ski doos and the main commendation area. Individual 45 gallon drums are used to supply fuel for the remaining sleeping and core logging tents.

3.2 Environmental Aspects and Impacts

Environmental Aspects are those MHBL activities, products or services that interact with the surrounding environment and may produce either a beneficial or an adverse impact. An Environmental Impact is the change that occurs to the environment as a result of the aspect. Information on the significance of aspects and impacts is important for setting priorities and allocating resources for managing the environmental changes through the use of engineering and other controls. The intent is to ensure that aspects and impacts are systematically identified and assessed, an action plan is implemented for controlling impacts and the effectiveness of controls is measured and reported to provide feedback for continual improvement.

An Issue Management Plan (IMP) shall be developed for each significant environmental aspect and impact associated with MHBL's operations by the end of 2004. The IMPs shall be documented in the Environmental Operating Plan that will include information on the program for addressing significant environmental aspects.

The information summarised in Appendix 15.2 for each camp is based on current knowledge and will vary over time. There are procedures in place at each location for ensuring data reported are current.

3.3 Domestic Greywater Sewage

At Boston, all domestic greywater and sewage are treated in the Rotating Biological Contactor (RBC), which treats and clarifies effluent prior to discharge on the tundra as approved by the Nunavut Water Board.

In 2000, a Rotating Biological Contactor (RBC) sewage treatment system was constructed at Windy Lake camp and was commissioned at the start of the 2001 field program. The previous latrine system remains in place as a back-up system at Windy Lake. All greywater from the camp is also directed to the RBC, which discharges on land well away from Windy Lake. This system has been approved by the Nunavut Water Board and includes a monitoring and sampling program when operating during open water periods.

3.4 Solid Waste

Combustible solid wastes generated from the camp facilities continue to be incinerated on a regular basis. Commercial incinerators are strategically located at each camp. Products such as combustible domestic and office waste are burned. Non combustible waste such as scrap metal, non-reusable barrels, incinerator ash etc., have, as reported previously, been removed from site using backhaul flights to Yellowknife or placed on the barges returning to Hay River. Since the practice of hauling these types of material off site is impractical, MHBL has applied for an on-site Solid Waste Disposal Facility (SWDF), to be located at the Boston camp. Once regulatory authorities grant approvals, all non-hazardous and non-combustible material, including that stored at Windy Lake will be disposed of into this facility.

3.5 Waste Rock Management

The waste rock currently stored at Boston is unlikely to produce any adverse impact to the environment. The waste runoffs would be monitored and waste rock would be disposed of in an approved location and under acceptable practices.

3.6 Fuel Storage

Diesel fuel is required to generate power on-site, heat buildings and to fuel mobile equipment. The diesel fuel storage requirement for the continuing exploration program by MHBL consists of both bulk storage and storage in Jet B drums.

In September 2000, 2001 and 2003, diesel fuel was transported to the Hope Bay belt by Northern Transportation Company Limited (NTCL) using approved fuel storage barges that can remain at site and frozen in the ice at Roberts Bay. The fuel is then pumped off and transported to the various storage facilities (by a contractor) for use in the exploration programs. It is expected that this method of fuel re-supply will continue throughout the advanced exploration phase and could continue into the operations phase, when it occurs. To facilitate this increase in fuel requirements, the following storage is available:

As previously reported, an engineered and lined tank farm was constructed at Boston in 2001. This facility consists of six (6) by 70,000 L and two (2) by 41,000 L tanks. These tanks are filled annually during the winter program. The engineers report was previously filed with the Nunavut Water Board in 2001 and is not included with this plan.

- As of September 2001, there were eight (8) self berming enviro-tanks strategically located in the belt, two (2) of which are 75,000 Litres, four (4) are 70,000 Litres and two (2) are 50,000 litres. There are also three (3) contractor owned portable tanker/sloops, strategically located within the Hope Bay Belt, which are empty and are used in winter to transport fuel to the various storage tanks as operations dictate.

- As previously reported, the construction of the tank farm and the increased number of self-berming tanks has minimized the need to store diesel fuel in 205 litre barrels. As such, this has decreased the number of used barrels on the belt and the barrels remaining are used for camp tent heating, remote drill operations or as markers for the ice strip. All bulk tanks and barrels are stored at least 30 metres above the high water mark of any water body.

In addition to diesel fuel mentioned above, Jet-B fuel and gasoline are stockpiled in 205 litre barrels at Boston and Windy Camps, and is relocated to activity areas as required. Specialized oils and greases used by the drilling contractors are strategically stored in the appropriate manner. Inventories at each site are dynamic.

The spill contingency plan and associated response equipment will be available on-site to handle potential spill incidents.

3.7 Chemicals and Household detergents

MHBL is committed to the safe and proper handling of waste materials to ensure minimal environmental impact and land disturbance. Waste chemicals that require special attention and handling are waste oil, hydraulic oil, lubricating oils, calcium hypochlorite (CaCl), sodium chloride (NaCl), grease and ethylene glycol.

The waste oil burner installed at the Windy camp continues to operate and the heat generated is used to heat some of the administration tents. Waste oil and oil from filters not used in the waste oil burner mentioned above, will continue to be used as incinerator fuel. This eliminates the need to remove the waste oil from the project area, resulting in considerable cost savings. Drained, spent oil filters will be stored in drums for removal from the site for disposal at an authorized disposal facility or could be cleaned and incinerated. There are no reagents used on site at this time. Calcium Chloride (commonly called Rock

salt) is added to the fresh water to form a brine solution that acts as antifreeze when drilling in permafrost conditions. Calcium Chloride does not require any special treatment and is of minimal environmental concern. Explosive products, when on-site, will be stored in appropriate facilities at designated explosives storage site(s).

3.8 Material Safety Data Sheets (MSDS)

Material Safety Data Sheets (MSDS) will be collected and kept current at the site for all chemicals and fuel products brought on-site. Appropriate storage and handling of these products will be undertaken. The action plans for spills of diesel fuel, lubricating and hydraulic oils and ethylene glycol are also included at the end of this Plan. The MSDS sheet for combustibles and hazardous products can be found in Section15.3 of this Plan.

4 System Failure Scenarios and Preventative Measures

4.1 Domestic Sewage

The domestic sewage treatment systems (RBC's) are designed to carry a hydraulic loading for up to 80 persons at 300 L per person per day.

Failures may occur in the domestic sewage system under the following scenarios:

- Treatment system malfunction due to changes in the design load;
- Power outage;
- Pump failure;
- Pipeline breaks, blockage
- Accidental damage to the pipeline and its components;
- Presence of oil and grease in the effluent;
- Mechanical breakdown;
- Sewage line freezing;
- Improper maintenance; and
- Subsidence of the pipeline supporting structures, where applicable.

Visual inspection of the treatment system and the pipeline will be carried out on a weekly basis. The operations manual protocols for the sewage treatment plant will be followed.

4.2 Solid Waste

Failures may occur in the handling of solid waste in the following modes:

- Incinerator failure;
- Power outage;
- Treatment system malfunction due to overloading against the design capacity;
- Accidental damage to the incinerator and its components;

- Mechanical breakdown; and
- Lack of maintenance.

Visual inspection of the incinerator and its combustion products will be carried out on a regular basis. The operations manual protocols for the incinerator will be followed.

4.3 Fuel

Fuel spills could potentially occur from:

- Fuel storage containment (tanks, barrels) leaks;
- Spills during drum transport from aircraft to fuel storage area; and
- Spills from vehicles or equipment as a result of accidents.
- Spills during fuel transfer from the barges to transport tanks/fuel sloops.

Spills occurring during fuel handling, transfer or storage operations will be minimized by:

- Proper storage of the barrels;
- Regular inspections of the storage facilities and barrels;
- Staff training in proper fuel handling procedures;
- Spill response training for personnel associated with fuel handling;
- Immediate cleanup of minor spills; and
- Maintaining fuel storage cache for emergencies.

The potential for spills affecting surface waters is low, as fuel storage and transfer points are located away from watercourses and lakes. Close inspection of fuel transfer activities at the barge is undertaken during all times fuel is being pumped/transferred.

4.4 Chemicals and Household detergents

Before, any chemical/reagents or any other product that is required for use at any MHBL property be brought to site, an up-to-date copy of the MSDS sheet shall be faxed to the Logistics Coordinator at the respective site.

Any chemicals brought on site shall be stored in manufacturers approved packaging. Leaks may occur, causing minor spills of chemical product either in storage, transit, or during the transfer or from accidental failure of containers.

MHBL provides training to its staff in product handling and inspection procedures, which we believed, will result in reduced occurrences of chemical spills. As required by corporate policy and legislative requirement, employee training records will be kept and file at each respective camp.

5 Responsibilities

5.1 All Employees (First Responders):

- Identify the source of the spill.
- Assess the initial severity of the spill and any safety concerns.
- Report all spills immediately to Supervisor.
- Determine the size of the spill and stop or contain it, if possible.
- Participate in spill response as member of cleanup crew.
- Initiate the in-house accident/incident report form. Records the time of the report, source of information and details on locations, size, type of spill and any other information and details on the spill report form.

5.2 Emergency Response Team (Spill Cleanup Crew):

- Conduct cleanup of spills under direction of Spill Cleanup Supervisor or Senior Environmental Coordinator.
- Deploy booms, absorbent pads and other equipment and materials as required.
- Take appropriate response measures.
- Continue cleanup as directed by Spill Cleanup Supervisor or Senior Environmental Coordinator (or designates) until relieved.

5.3 Spill Cleanup Supervisor /On-Scene Co-ordinator:

- Report spill to Site Supervisor.
- Inform Senior Environmental Coordinator or designates on the progress of the cleanup.
- Obtain GPS coordinates for all spills.
- Obtain photographs of spill site before, during and subsequent to cleanup.
- If spill occurs on snow, stake or otherwise identify the affected area so that it can be evaluated once the snow melts.
- Assist in initial and ongoing response efforts.
- Supervise emergency response team.
- With work crew, take initial action to remove the source and contain spill.
- Continue actions until relieved by other personnel.
- In consultation with the Control Group or Action Director, decide if mobilization of additional equipment from Spill Response Organization or Contractor is warranted.
- Consult with site Senior Environmental Coordinator (or designate).

5.4 Site Supervisor (Action Director):

- Page Control Group members and establish a Control Centre.

- Allocate tasks for each member.
- Reports spill to the NWT 24-Hour Spill Report Line at (867) 920-8130.
- Contacts the Emergency Response Team if the situation requires.
- Ensures Emergency Response Team is adequately trained in spill response.
- Organizes spill response training and exercises agencies.
- Co-ordinate inspections and spill closure by Lead Agency and/or other applicable
- Liaise with NWT Spill Line, Lead Agency (DIAND) and other applicable agencies with regard to on-going cleanup activities.
- Together with the Spill Cleanup Supervisor, and Senior Environmental Coordinator decide if additional equipment and manpower is required to contain and cleanup spills.
- Notifies and provide daily updates to Human Resource Superintendent and the Manager, Environmental Affairs.
- Oversees completion and distribution of spill report within 30 days of the spill to respective regulatory authorities.
- Ensures investigation and identifies measure to prevent similar spills.

5.5 Human Resource Superintendent

- Provide resources and oversees the clean-up operation.
- Inform and provide updates to Mine General Manager.

5.6 Mine General Manager

- Provide resources for clean-up operations
- Based on the information provided, decide whether or not external (specialist) consultants are required for clean-up.
- Informs and update Vice President, Operations.

5.7 Vice President

- Informs CEO of the company.
- Responsible for dealing with external stakeholders and media.

5.8 Senior Environmental Coordinator:

- Notifies the Manager, Environmental Affairs.
- Ensures cleanup is completed to MHBL objectives and standards.
- Provide updates to the Manager, Environmental Affairs.
- Ensures that copies of all spill reports and follow-up reports are submitted to Nunavut Water Board and Kitikmeot Inuit Association within 30 days of the spill.
- Conducts ongoing monitoring of cleanup operations leading too closeout.

- Update, communicate and distribute Spill Contingency Plans to appropriate personnel.

5.9 Manager, Environmental Affairs

- Depending on the seriousness of the spill, notifies CEO of Miramar Mining Corporation.
- Seek advice from Corporate Legal Adviser.
- Review and approve updated Spill Contingency Plans.
- Provides advice when requested to the On-Scene Coordinator, the Spill Cleanup Supervisor and the Site Supervisor.
- Assists in developing effective spill management and prevention practices.
- Provides advice when requested to the On-Scene Coordinator, the Spill Cleanup Supervisor and the Site Supervisor and Senior Environmental Coordinator on storage and disposal options.

5.10 Legal Counsel

Advises the Vice President, Operation and the Manager, Environmental Affairs on matters related to:

- Legislative authority of various government agencies.
- Questions of due diligence.
- Costs/fines and liabilities, including penalties associated with regulations.
- Consults with the corporate insurance authority and advises on matters related to insurance.

6 Initial Response at Spillage Site

Spills of chemicals, fuels and other substances may occur as isolated events or they may occur with other emergencies such as fire, explosion, natural causes or accident. The accuracy and urgency in disseminating information to your immediate supervisor and Site Supervisor is crucial to the success of the prevention or recovery process in any accident/incident.

6.1 First Responders

In the event of any leak, spill or system failure, steps taken by employees at the spill site are as follows:

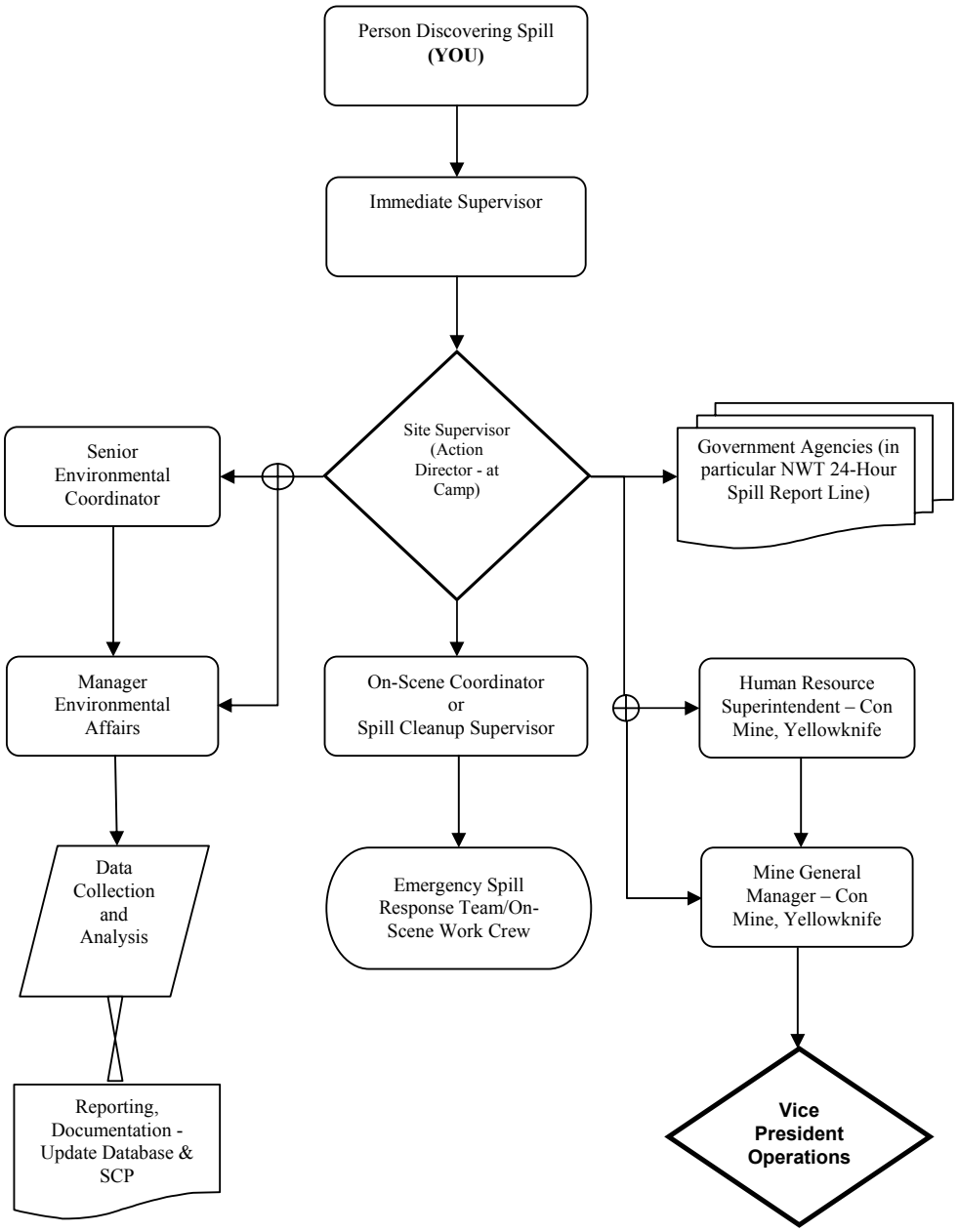
- Be alert, ensure your safety and the safety of others first.
- Assess the hazard to persons in the vicinity of the spill, leak or failure system. If the risk of gas fumes exits or if fire or explosion hazards are perceived, leave the area immediately and warn co-workers to leave also.
- Assess nature and status of the spill, leak or system failure and measures to be taken to bring the situation under control and remove any source of ignition.
- When safe to do so, stop the flow of the spilled material.
- Notify your Supervisor immediately as per Hope Bay Project Employee Handbook (Emergency Procedures – page 24-25) protocols.
- If warranted, notify on-site Medic to administer First Aid as per Hope Bay Project Employee Handbook (Medical Emergency Procedures – page 23) protocols.

- Resume safe, effective actions to contain, stop the flow of spilled product or clean up the incident.
- Record all information on the status of the situation. Take photographs of the site (if possible) before the clean up and subsequent to clean up.

6.2 On Scene Spill 24-hours Notification Process

The key personnel involved during a spill occurrence and the reporting responsibilities are illustrated in the following chart below. The responsibilities of each of these positions are discussed in Section 5 of this Plan. Names and contact numbers are kept current at all times at the project site. Further details can be seen in Section 15.6 of this Plan.

Figure 1: Spill Notification Process within 24-hours of a spill occurrence

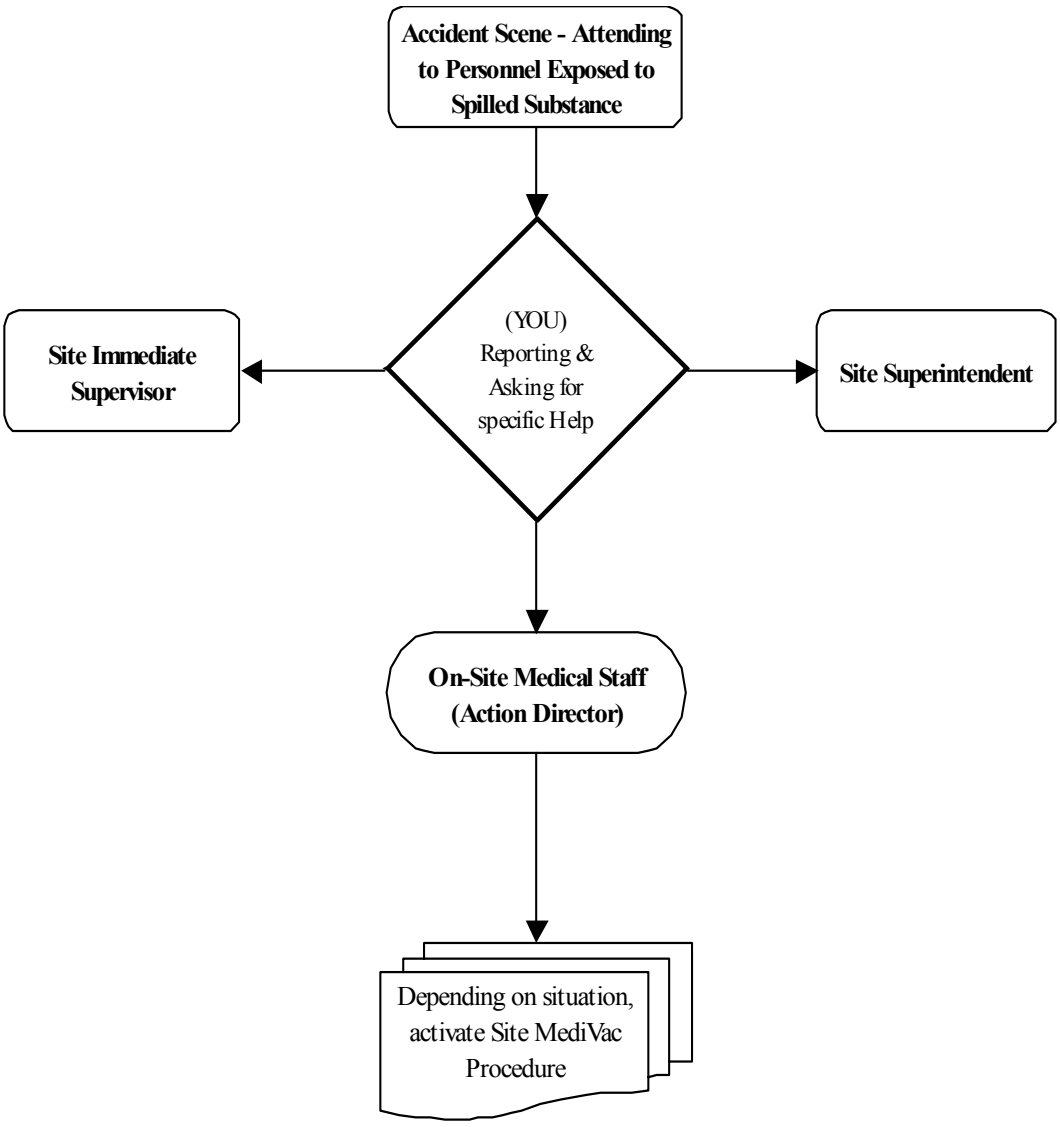


6.3 Person Exposed to Spilled Substance – Medical Notification Process

Any person attending a causality exposed to spilled substances shall as illustrated in Figure 2:

- Notify on-site Medic to administer First Aid, using specific on-site MediVac procedure (e.g. Emergency Information MediVac Protocol, Boston Camp, 2004 or Hope Bay Project Employee Handbook (Medical Emergency Procedures – page 23) protocols).
- Notify his/her Supervisor immediately.
- Notify Site Supervisor immediately.

Figure 2: Medical Notification Protocol when attending to an employee exposed to spilled substances



7 System Abnormal Operation

7.1 Domestic Sewage and Solid Waste

Any problems in the sewage treatment plant, such as improper operation, pipeline rupture, pump/power breakdown etc., will be immediately reported to the On-Scene Coordinator/Site Supervisor. Problems encountered with the incinerator will also be reported to the On-Scene Coordinator/Site Supervisor. The On-Scene Coordinator/Site Supervisor will refer to the Operation and Maintenance Manual and take appropriate action.

In the event of a power failure, the stand-by generator will be put into operation as soon as possible. Similarly, in the case of a pump failure, the back-up pump will be put on-line. Any spillage occurring inside the sewage treatment system will be contained within the facility and if necessary reprocessed. Appropriate safety equipment and personal protective clothing will be available to site personnel.

7.2 Fuel Spill

Fuel spills, leaks at storage facilities or vehicle accidents will be handled by following these steps:

- Identify the source of the leak or spill;
- Contact the On Scene Coordinator/Site Supervisor
- Stop leaks from a tank or barrel by:
    - Turning off valves;
    - Utilizing patching kits to seal leaks;
    - Placing plastic sheeting at the foot of the tank or barrel to prevent seepage into the ground;
- Contain the spill and the source if possible;
- Take photographs of the spill site before and after clean up.

Further information on the handling of fuel spills is detailed in Section 10 of this Plan.

7.2.1 Fuel Spills on Land

Fuel spills on land (gravel, rock, soil, vegetation) can be contained by:

- Constructing temporary berms and deploying absorbents;
- Stains on rock can be soaked up with absorbent mats. The mats should be placed in empty drums for storage prior to incineration; and
- Contaminated soil and vegetation, where appropriate, be disposed of at an approved facility.

7.2.2 Fuel Spills on Snow

Snow can be an effective natural absorbent for spilled fuel;

- Temporary berms can be made from snow by compacting it and spraying with water to create an ice barrier or lining the snow-berm with plastic;
- The snow-fuel mixture can be scraped up and stored in a lined area or in drums for future disposal; and
- Mark or stake the area impacted by the spill so that the site can be revisited and re-evaluated once the snow has melted.

7.2.3 Fuel Spills on Water

It is important to immediately limit the area of the spill on water. Booms can be drawn in to encircle spilled fuel. The absorbent mats are hydrophobic (absorb hydrocarbons and repel water).

- Deploy booms to contain the spill area. Boom effectiveness will be limited by winds, waves and other factors; and
- Use absorbent mats and similar materials to capture small spills on water.

7.2.4 Fuel Spills on Ice

Where a spill occurs on ice, snow can be compacted around the edge of the spill to serve as a berm. The ice provides a good barrier to any seepage of fuel into the water, but the contaminated snow/ice must be scraped up as soon as possible.

- Permission may be given from the government to burn off fuel (contact the NWT 24 Hour Spill Line).
- Remaining contaminated snow can be placed in drums or in a lined berm (on land).

7.3 Chemical Spills

Assess the hazard of the spilled material by referring to the relevant MSDS sheet and applicable action plan:

- If the chemical is hazardous, ensure personal protective equipment is appropriately utilized (latex gloves, eye protection, etc.) before approaching the spill (refer to Section 11 of this report)
- Use absorbent mats to soak up spilled liquids;
- Plastic sheeting can be utilized to prevent solid chemicals from being blown around;
- Neutralize acids or caustics; and
- Place spilled material, absorbents, and rags in an open-top drum for storage and ultimate disposal of at an approved location.

8 Response Equipment

8.1 General Equipment

Heavy equipment used in exploration drilling operations will be available on-site for emergency use and to respond to spill incidents. Helicopters and fixed-wing aircraft could also be available if requested by the Action Director. Presently, the facilities are well equipped to respond to emergencies or spills.

8.2 Locations of Spill Kits

Complete spill kits are located in various potential high-probability spill areas as tabulated in Section 15.4. These kits will be checked on a regular basis to ensure all its contents have not been tempered with. Proper signage will be placed at respectively areas indicating the exact placement of the kit.

8.3 Spill kit House Keeping

Contents of each spill kit will be regularly checked for durability. A checklist will be placed in each kit indicating the date of the last inspection. Equipment found in undesirable condition shall be replaced immediately.

8.4 Mobile Environmental Response Unit

A Mobile Environmental Response Unit is believed to be available to MHBL from a major fuel supplier (Shell) in Yellowknife or Cambridge Bay (for phone number, see Contractors in Section 15.8). This unit can be transported to the site from Cambridge Bay in less than five hours, weather permitting.

However, to be proactive, considerations to purchase portable spill kits that would be stored at respective camps and transported to spill scene outside of property at short notice is ongoing.

9 Training and Spill Exercises

9.1 Spill Training

All members of the Spill Response Team will be trained and be familiar with the spill response equipment, including their location and access, the Spill Contingency Plan and appropriate spill response methodologies. During 2000 the onsite training program for Windy Camp personnel was initiated at the start of the field program. The training program includes the dissemination of information regarding the Spill Contingency Plan, the NT Environmental Protection and Spill Regulations, the viewing of RWED spill response videos, and the field application of suitable techniques.

All MHBL personnel will be familiar with spill reporting requirements.

Fuel handling crews will be fully trained in the safe operation of these facilities; spill prevention techniques and initial spill response. Similarly, the staff involved in wastewater treatment operations will be trained in the safe and effective operation of these facilities.

9.2 Spill Exercises

MHBL will conduct regular spill exercises to test the response of the Spill Response Team to manage fuel

and other system failure spills.

Reports will be made by the Site Supervisor or designate, noting the response time, personnel, and problems or deficiencies encountered. These reports will be used to evaluate the ability to respond to spills and determine areas necessary for improvement.

10 Action Plan for Spill of diesel fuel

10.1 Identify Hazards

- Flammable
- Slightly toxic by ingestion, highly toxic if aspirated

10.2 Initial Spill Response

- STOP the flow if possible
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earth-moving equipment if practical.
- ELIMINATE, open flame ignition sources
- If flow has reached any natural stream, mobilize team to
- Deploy river boom, and sorbent booms
- If possible, pump fuel into other appropriate containers.

10.3 Action for fire:

- Use carbon dioxide, dry chemical, foam, or water spray (fog), although water may spread the fire
- Use fog streams to protect rescue teams and trapped people
- Use water to cool surface of tanks
- Divert the diesel fuel to an open area and let it burn off under controlled conditions.
- If the fire is put out before all diesel fuel is consumed, beware of re-ignition
- Where diesel fuel is running downhill, try to contain it as quickly as possible
- Rubber tires are almost impossible to extinguish, have affected vehicles removed from the danger area.

10.4 Recovery:

- Unburned diesel fuel can be soaked up by sand and peat mass, or by chemical sorbents such as Graboil or Conwed.
- If practical, contaminated soil should be excavated.
- Diesel fuel entering the ground can be recovered by digging sumps or trenches
- Diesel fuel on a water surface should be recovered by using skimmers or sorbent booms (See Section on Recovery of Oil Spills).

10.5 Disposal:

- Incineration under controlled conditions.
- Burial at an approved site.

10.6 Properties:

- Chemical composition mixture of hydrocarbons in the range C9 to C18
- Clear, oily liquid
- Not soluble, floats on water

10.7 Environmental Impacts:

- Moderately toxic to fish and other aquatic organisms
- Harmful to waterfowl
- May create visual film on water

10.8 Containers:

- Transported by appropriate means available to available storage

11 Action for Lubricating and Hydraulic oil spills

11.1 Identify Hazards:

- Slightly toxic by ingestion
- Combustible

11.2 Initial Spill Response:

- STOP the flow is possible
- ELIMINATE, open flame ignition sources
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available.
- Use earth-moving equipment if practical if flow has reached any natural stream; mobilize the team to deploy river boom, skimmer and sorbent booms.

11.3 Action for Fire:

- (Refer to Section 10.3 of this Plan)

11.4 Recovery:

- (Refer to Section 10.4 of this Plan)

11.5 Disposal:

- (Refer to Section 10.5 of this Plan)

11.6 Properties

- Chemical composition: mixture of hydrocarbons and conventional industrial oil additives
- Generally viscous liquids, various colours
- Not soluble, floats on water

11.7 Environmental Impact:

- Moderately toxic to fish and other aquatic organisms
- Harmful to waterfowl
- May create visual film on water and shorelines.

11.8 Containers:

- Transported by appropriate methods to acceptable storage, (typically 205 litre drums.), Bulk transportation and storage as well.

12 Action plan for Ethylene Glycol (Antifreeze) spill

12.1 Identify Hazards:

- Moderately toxic by ingestion and inhalation
- Flammable

12.2 Initial Spill Response:

- STOP the flow at source if possible
- ELIMINATE open flame ignition sources
- CONTAIN flow of liquid by dyking, barricading or blocking flow by any means available
- PREVENT antifreeze from entering any flowing streams

12.3 Action for Fire:

- (Refer to Section 10.3 of this Plan).

12.4 Recovery:

- Ethylene glycol antifreeze can be soaked up by peat moss or by commercial sorbents such as Hasbro
- Access to spilled or recovered ethylene glycol by mammals should be prevented.

12.5 Disposal:

- Incineration under controlled conditions
- Burial at an approved site

13 Emergency Contract Information

Section 15.6 – 15.8 summarizes personnel that must be contacted in case of a spill, fire or injury, as well as additional resources that may be able to provide information or assistance.

14 References

Hope Bay Project Employee Handbook, Miramar Hope Bay Ltd; 2004.

Miramar Hope Bay Limited. Boston MediVac Procedure, 2004.

15 Appendixes

15.1 Boston Camp Site layout See Attached

15.2 Windy Lake Camp Layout Plan See Attached

15.3 Environmental Aspect and Impact Listing

Environmental aspects and impacts allocated by departments

Department	Aspect (MHBL Activities, Products or Services)	Impacts (Beneficiary / Adverse)	Risk Rating						Preventative Measures (Regulatory / Due Diligence)
			Probability			Consequence			
			L	M	H	H	M	L	
Exploration Geology	Waste Rock (ARD) – Metal leaching	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Water contamination – surface runoff and ground water	✓			✓			• Water quality sampling during critical periods (spring run off). • Weekly inspection for seepage.
	Waste Rock Stockpile	Displacement of: • Flora • Fauna Dust emissions: • Air quality • TSS - water quality Surface runoff: • TSS – water quality • Smoothening of flora	✓	✓	✓	✓ ✓		✓	• Better waste management strategic • Regular review of data • Monitoring and sampling • Closure Plan
	Hydrochloric Acid (HCl)	• Gaseous emissions	✓					✓	• Use proper PPE • Work procedures
	Potassium Ferro cyanide	• Gaseous emissions	✓					✓	• Use proper PPE • Work procedure
	Long-term core storage	Displacement of: • Flora • Fauna			✓			✓	• Closure Plan • Waste management
	Core Cuttings – waste	• Smoothening of flora • Bioavailability of trace metals uptake via food web/chain • Water contamination - surface runoff & ground water • Soil contamination			✓		✓		• Waste management • Work procedure
Maintenance	Sewage Sludge	Increase in nutrients: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna Aesthesia - Odour • Health issues	✓			✓			• Waste management • Planned preventive maintenance (PM) • Regular Inspections
	Sewage Grey water – leak in line	Increase in nutrients: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna Aesthesia – Odour • Health issues	✓				✓		• Waste management • Regular monitoring and sampling • Planned PM
	Fuel/Oil – Major spill during transportation	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna	✓			✓			• Adhered to dangerous goods protocols • Proper inspection

		• Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Depletion of oxygen • Water concatenation – surface runoff and groundwater							of equipment • Adhered to Standard work Procedure
	Fuel/Oil – Major spill at storage – leak or burst lines	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Water contamination - surface runoff & ground water • Air contamination	✓			✓			• Regular inspection • Planned PM • Monthly Audit
	Fuel/Oil – Major spill at storage – leak or burst connector	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Water contamination - surface runoff & ground water • Air contamination	✓			✓			• Regular inspection • Planned PM • Monthly Audit
	Fuel/Oil – Major spill at storage – Use of substandard materials or manufactured parts	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Water contamination - surface runoff & ground water • Air contamination	✓			✓			• Planned PM • Regular inspection • Use recommended / certified parts • Identification of critical parts and stock sufficient items. • Monthly Audit
	Used Oil Filters – waste oil	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna		✓		✓			• Waste management • Planned PM • Monthly Audit
	Used Fuel Filers – waste fuel	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna		✓		✓			• Waste management • Planned PM • Monthly Audit
	Jet B	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Air contamination • Water contamination – surface runoff and ground water			✓		✓		• Waste management • Monthly Audit

	Incineration of burnable refuse	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna			✓			✓	• Waste management • Monthly Audit • Regular Inspections
	Incinerator ash	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Water contamination – surface runoff and groundwater			✓			✓	• Waste management • Regular inspection • Monthly Audit
	Used Batteries	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Water contamination – surface runoff and groundwater	✓					✓	• Waste management • Planned PM • Monthly Audit
	Metal drums – Rusting causing contents to leak	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Soil contamination • Water contamination – surface runoff and ground water		✓			✓		• Waste management • Storage plan • Regular Inspection
Camp Services	Detergents	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial fauna • Aquatic flora • Aquatic fauna • Increase nutrients			✓			✓	• Waste management • Use alternative products, e.g. ISO 14001 certified products
	Cooking Grease & Oil	• Soil contamination • Water contamination – surface runoff and groundwater			✓			✓	• Waste management
	Packing boxes	• Landfill – space • Air contamination • Soil contamination – ash • Water contamination - ash			✓			✓	• Waste management
	Wrapping packages	• Landfill – space • Air contamination – hydrocarbon • Soil contamination – hydrocarbon • Water contamination - hydrocarbon			✓			✓	• Waste management
Contractor Drilling	Sodium Chlorite (NaCl)	• Soil contamination • Water contamination – surface runoff and ground water • Air contamination – incinerated bags • Soil contamination – incinerated bags – ash • Water contamination – ash			✓	✓		✓	• Contract management

	Calcium Chloride (CaCl)	• Soil contamination • Water contamination – surface runoff and ground water • Air contamination – incinerated bags • Soil contamination – incinerated bags – ash • Water contamination – ash			✓	✓		✓	• Contract management
	Cement	• Soil contamination - smoothening • Water contamination – surface runoff and ground water • Air contamination – dust powder • Soil contamination – incinerated bags – ash • Water contamination – ash		✓				✓	• Contract management • Waste management
	Propane	• Air contamination • Landfill – damaged cylinders • Explosion • Fire		✓				✓	• Contract management • Monthly Audits • Waste management
	Sludge/Cuttings	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Soil contamination • Smoothening of flora			✓	✓			• Contract management • Waste management • Work procedure
	Fuel	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna			✓	✓			• Contract management • Waste management
	Oil	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna			✓	✓			• Contract management • Waste management
	Grease	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna			✓		✓		• Contract management • Waste management plan
	Used oil filters	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora • Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Landfill – space • Soil contamination • Water contamination – surface run off and ground water		✓			✓		• Waste management plan • Contract management • Planned PM
	Used fuel filters	Bioavailability of trace metals uptake via the food web/chain: • Terrestrial flora		✓			✓		• Waste management plan • Contract

		• Terrestrial fauna • Aquatic flora • Aquatic fauna • Avifauna • Landfill – space • Water contamination – surface runoff and ground water							management • Planned PM

Note: Probability of the likelihood of an accidence/incidence to occur - (L=low, M=moderate, H=high); Consequences – severity or the outcome of an incidence/incidence.

15.4 Material Data Sheets See Attached

15.5 Locations of spill kits

Camp Site	Location	Full Kit
Boston Camp	Generator shack (enviromat only)	No
	Jet-B fuel drum storage area	Yes
	Procon workshop (enviromat only)	No
	Bulk fuel storage and handling area	Yes
	Camp workshop (enviromat only)	No
Windy Lake Camp	Helicopter pad	Yes
	Generator shack	Yes
	Operational drill site caches	Yes
	Drillers workshop and equipment area (Patch Lake)	Yes
	Camp workshop (enviromat only)	No
	Operating drill rigs	Yes
	Fuel storage area	Yes

15.6 Spill kits contents

Stocked Response Equipment	Quantity
45 gal, 16-Gauge Open Top Drum, c/w Bolting Ring & Gasket	1
Short Pig Putty Epoxy Sticks	20
PVC Oil Resistant Gloves	2
Shovel (Spark Proof)	1
Universal Absorbent Mats, 161/2 " x 20", 100 Mats per Package	1 Pkg
48" x 48' x 1/1 6" Neoprene Pad (Drain Stop)	1
Splash Protection Goggles	
Polyethylene Disposable Bags (5 ml) 10 per Package	1
Case T- 1 2 3" x 1 O' Absorbent Boom, 4 Booms/Case	1 Pkg
Roll, Oil Only Absorbent Mats, 150'x 33"	1

15.7 List of MHBL personnel Emergency Contact Information

Responsible Personal /Agency	Personnel	Location	Information
On site Contacts			
Site Supervisor	Jim	Boston	Tel: 604-677-4675; Fax: 604-677-0666 Radio Channel: 4
Senior Environmental Coordinator	Matthew Kawei	Boston	Tel: 604-677-0675; Fax: 604-677-0666; Email: mkawei@miramarmining.com; Radio Channel: 4
Site Medic	Dean Constantini	Boston	Tel: 604-677-0675; Fax: 604-677-0666; Radio Channel: 4
Site Supervisor	Mike Cripp	Windy Lake	Tel: 604-677-0636; Fax: 604-677-0713 Radio Channel:
Senior Environmental Coordinator	Matthew Kawei	Boston	See above details
Site Medic	Dan Newport	Windy Lake	Tel: 604-677-0633; Fax: 604-677-0713; Email: Radio Channel: 7
Miramar Mining Corporation Head Office Contracts			
Vice President, Operation	Brian Labadie	Vancouver	Tel: (604) 985-2572; Fax: (604) 980-0731; E-mail: blabadie@miramarmining.com
Manager, Environmental Affairs	Hugh Wilson	Vancouver	Tel: (604) 985-2572; Cell: (780) 975-2550; Fax: (604) 980-0731; Fax:(780) 988-2186 (home) Email: hwilson@miramarmining.com; hugh_r_wilson@hotmail.com
Human Resources Manager	Scott Stringer	Yellowknife	Tel: (867) 766-5311

15.8 List of relevant Government department emergency contact information

Responsible Personal /Agency	Personnel	Location	Information
Government Agencies			
Northwest Territories 24-Hour Spill Report Line		Yellowknife	Tel: (867) 920-8130; Fax: (867) 873-6924
Executive Director, NWB	Philippe di Pizzo,	Nunavut	Tel: (867) 360-6338; Fax: (867) 360-3669
Water Resources Inspector		Iqaluit	Tel: (867) 975-4298
RCMP		Yellowknife	Tel: (867) 669-1111: Fax (867) 669-2224
RCMP		Cambridge Bay	Tel: (867) 983-2111; Fax: (867) 983-2498
Resource Management Officer		Cambridge Bay	Tel: (867) 983 7314
Indian & Northern Affairs Canada	(DIAND)	Iqaluit	Tel: (867) 975-4546
Environment Canada	Colette Meloche	Iqaluit	Tel: (867) 975-4639
Fisheries and Oceans	Tania Gordanier	Iqaluit	Tel: (867) 979-8007; Fax:(867) 989-8039
Resources, Wildlife & Economic Development (RWED)	Environmental Protection Services	Nunavut	Tel: (867) 873-7654
RWED Regional Superintendent	Larry Adamson	Yellowknife	Tel: (867) 920-6134
RWED	Grant Corey	Cambridge Bay	Tel: (867) 983-7315; Fax: (867) 983-2802
RWED		Kugluktuk	Tel: (867) 982-7251, Fax: (867) 982-3701
Dept Sustainable Development	Gord MacKay	Iqaluit	Tel: (867) 979-5715
Workers Compensation Board		Yellowknife	Tel: (867) 920 3888
Director Prevention Services	Sylvester Wong	Yellowknife	Tel: (867) 669-4408
Mine Safety	Peter Bengts	Yellowknife	Tel: (867) 669-4408
Kitikmeot Inuit Association (KIA), Lands Manager	Jack Kaniak	Kugluktuk	Tel: (867) 982-3310; Fax: (867) 982-3311
Municipal and Community Affairs, Office of Fire Marshall	Bruce Stebbing	Yellowknife	Tel: (867) 873-7030

15.9 List of relevant Additional assistance emergency contact information

Responsible Personal /Agency	Personnel	Location	Information
Additional assistance may be obtained as necessary from the following organisations			
Discovery Mining Services	Rod Brown	Yellowknife	Tel: (867) 920-4600
Shell Canada, Mobile Environmental Response	Steve Bassett		Tel: (867) 874-2562
Major Midwest Drilling	Gordon Cyr		Tel: (204) 885-7532
Kinuna	Wilf Wilcox		Tel: (867) 983-2331
Nuna Logistics Ltd	Court Smith/John Zigarlick		Tel: (604) 682-4667
Local Air Charter			
Air Tindi, Dispatch			Tel: (867) 669-8218
NWT Air (First Air), Dispatch			Tel: (867) 669-6645
First Air, Dispatch			Tel: (867) 669-6682
Nunasi Helicopters	Martin Knutsen		Tel: (867) 873-3306
Kitikmeot-Great Slave Helicopters			Tel: (867) 873-2081
Summit Air	Jamie Tate		Tel: (867) 667-7327; Cel: (867) 333-1503
Equipment and Material Supply			
Dupont (Fuel Dye)	Ray Buckland	Toronto	Tel: (905) 821-5660
Frontier Mining (Sorbents)			Tel: (867) 920-7617
Acklands (Sorbents)			Tel: (867) 873-4100