SPILL CONTINGENCY PLAN

AGNICO-EAGLE MEADOWBANK PROJECT

EXPLORATION CAMP

LICENSE 2BE-MEA0507

Prepared by:

Louise Grondin, P. Eng.
Vice-president Environment
Agnico-Eagle Mines Limited

Revision 0
October 24, 2007

Distribution List:

Nunavut Water Board

Denis Contré, Agnico-Eagle, Meadowbank Camp
Darren Determan, Agnico-Eagle, Meadowbank Camp
Darryl Gordon, Agnico-Eagle, Vancouver Office
Denis Vaillancourt, Agnico-Eagle, Exploration Office Vald'Or
Jean-François Lagueux, Agnico-Eagle, Technical Services, Cadillac
Jeannot Harvie, Agnico-Eagle, Baker Lake Office
Michael Hapqi, Agnico-Eagle Baker Lake Office
Nicolas Saucier, Agnico-Eagle, Baker Lake Office
Stéphane Robert, Agnico-Eagle, Technical Services
Larry Connell, Agnico-Eagle, Vancouver Office
Martin Bergeron, Agnico-Eagle, Vancouver Office
Daniel Kivari, Agnico-Eagle, Vancouver Office

Table of Contents

List of Tables

List of Figures

List of Appendices

1. INTRODUCTION

1.1 PURPOSE & SCOPE OF THE SPILL CONTINGENCY PLAN

The overall purpose of establishing a spill contingency plan is to minimize the impacts of spills by the establishment of predetermined lines of response and plans of action. More specifically the objectives of this Spill Contingency Plan are to:

- identify roles, responsibilities, and reporting procedures;
- provide readily accessible emergency information to the cleanup crews, management, and government agencies;
- comply with federal and territorial regulations and guidelines pertaining to the preparation of contingency plans and notification requirements;
- promote the safe and effective recovery of spilled materials;
- minimize the environmental impacts of spills to water or land;
- provide site information on the facilities and contingencies in place,

in the event of an emergency or spill.

This plan covers the activities taking place at the Meadowbank Exploration Camp and has been prepared in accordance with the following reference documents:

- Indian and Northern Affairs Canada (INAC) 2007. *Guidelines for Spill Contingency Planning*.
- Government of Nunavut (GN) 2002, *Guideline General Management of Hazardous Wastes in Nunavut.*
- Northwest Territories Resources Wildlife and Economic Development Environmental Protection Service. 1988. *Spill Contingency Planning and Reporting Regulations.*

1.2 CORPORATE STRUCTURE

In early July 2007, Cumberland Resources became a 100% wholly-owned subsidiary of Agnico-Eagle Mines Limited (AEM). Through a series of steps, AEM amalgamated with Cumberland and Meadowbank Mining Corporation (a wholly-owned subsidiary of Cumberland) on August 1, 2007. As a result of this amalgamation, all of the rights, title, interests, liabilities and obligations of Cumberland and AEM are automatically, by law, transferred to and assumed by AEM. Therefore in all the Water License documents, the terms ‘Cumberland’, ‘Meadowbank’, ‘AEM’ and ‘AEM’ are to mean the same entity: ‘Agnico-Eagle Mines Limited.

Agnico-Eagle Mines (AEM) Limited has its head office in Toronto at the following address:

Agnico-Eagle Mines Limited
145 King Street East, Suite 400
Toronto, Ontario,
M5C 2Y7
Tel: 416-947-1212
Website: www.agnico-eagle.com

The Meadowbank project is managed out of the Vancouver office at the following address:

Agnico-Eagle Mines Limited
Suite 375, 555 Burrard Street, Box 209
Two Bentall Centre
Vancouver British Columbia, V7X 1M8
Tel: 604-608-2557

The exploration activities are managed out of the Vald'Or exploration office at the following address:

Agnico-Eagle Exploration Division
761 chemin de la mine Goldex
Val d'Or, Qc
J9P 4N9
Tel: 819-874-5980

The contact telephone numbers at the exploration camp are:
Tel: 604-677-0689
Email: dcontre@agnico-eagle.com
ddeterman@agnico-eagle.com

1.3 ENVIRONMENTAL POLICY

The present SCP has been prepared in accordance with the commitments made in Agnico-Eagle's environmental policy, which are to:

- Assess the potential environmental impacts of any new undertaking with an objective to minimise them.

- Design and operate our facilities to ensure that effective controls are in place to minimise risks to health, safety and the environment.

- Implement an emergency response plan to minimise the impacts of unforeseen events.

- Provide a professional environmental staff to plan and direct environmental compliance programs and to assist in training and education activities.

- Provide training and resources to develop environmentally responsible employees.

- Ensure that environmental factors are included in the purchase of equipment and materials.

- Ensure that contractors operate according to our environmental policy and procedures.

- Comply with all applicable environmental laws and regulations.

- Communicate with employees, the public, government agencies and other stakeholders on activities involving health, safety and the environment.

- Regularly verify environmental performance and implement any required corrective action.

- Minimise the generation of hazardous and non-hazardous waste and ensure proper disposal of all wastes.

- Implement measures to conserve natural resources such as energy and water.

- Rehabilitate sites in accordance with regulatory criteria and within the established time-frame.

2. MEADOWBANK CAMP DESCRIPTION

The Meadowbank project, operated by Agnico-Eagle Limited, is located approximately 70 kilometres north of the Hamlet of Baker Lake, Nunavut.

The exploration camp is located about 70 km north of the Hamlet of Baker Lake in Nunavut (see Figure 2-1). The project is located on Inuit Owned surface lands (IOL BL-14) and has the following coordinates:

- Latitude: 65°01'9.12"N
- Longitude: 96° 04'1.91"W

on NTS map sheet 66H/1.

The general layout of the camp is shown in Figure 2-2.

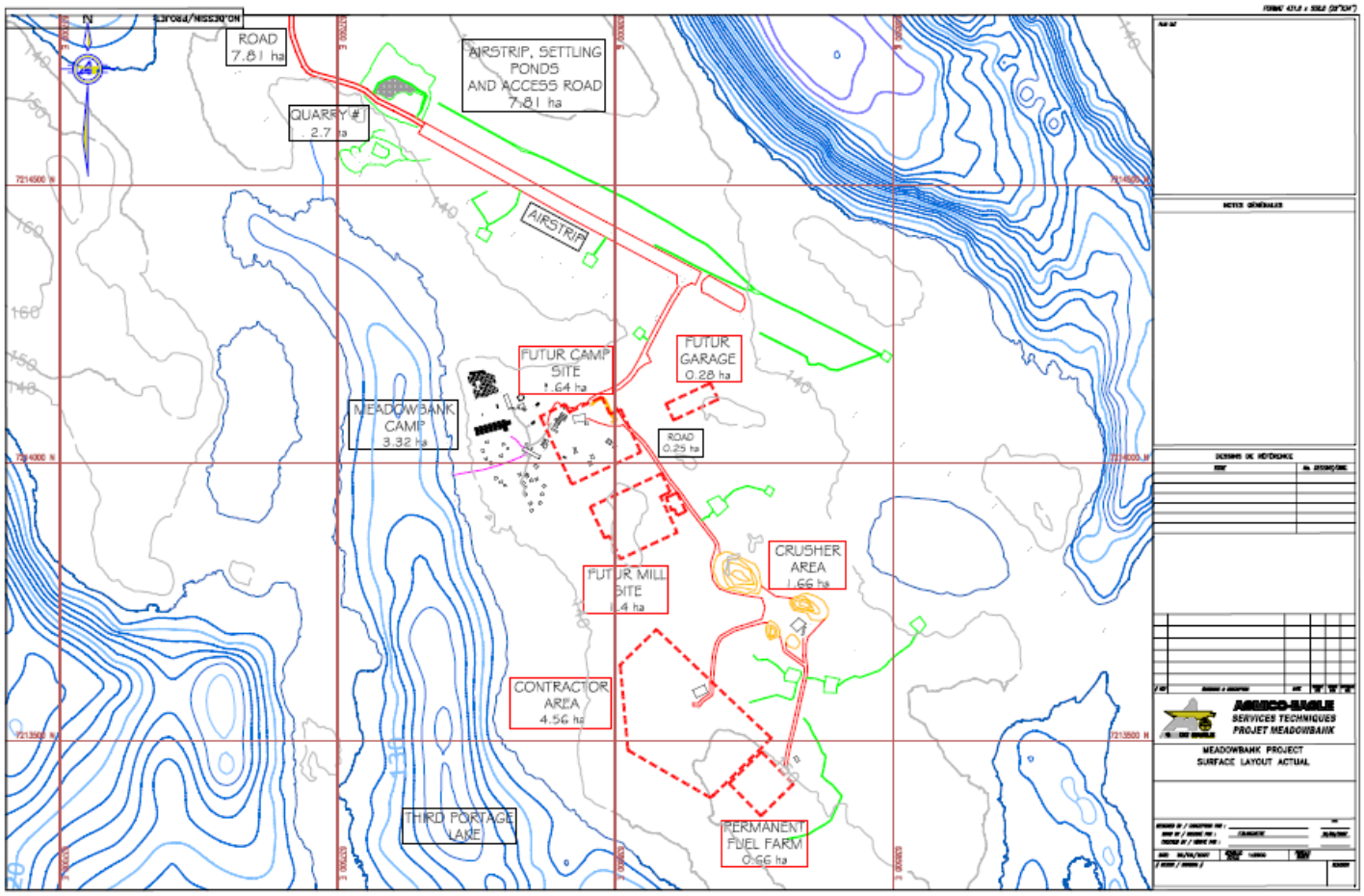
Buildings and Tents

The North Camp (currently under use) consists of the following structures:

- a stick built kitchen/dry structure,
- 4 :14’x16’ Weatherhaven sleeper tents,
- 19: 14’x16’ wooden framed canvas sleeper tents,
- 13: 12’x12’ Weatherhavean sleeper tents,
- a 16’x55’ Weatherhaven shower/toilet,
- a 24’x 84’ Weatherhaven core shack ,
- a 24’ x 32’ Weatherhaven office tent,
- a plywood generator shed and driller’s shop, and
- a 42’ x 70’ temporary Cover-all fabric building.

FIGURE 2.1: Location of the Meadowbank Project

Figure 2.2: General layout of camp



Fuel Storage

The following fuel storage equipment is used on site:

- 5 fuel tanks: 50 000 litres each, double-walled skid-mounted
  - Length 7.34 m (secondary tank)
  - Length 6.48 m (primary tank)
  - Diameter 3.2 m (outside secondary)
  - Maximum fill capacity 47 500 litres
  - Skid assembly – 8.48 m x 2.44 m
  - Used for diesel fuel storage, total capacity: 237 500 litres

- 4 fuel tanks: 75 000 litres double-walled skid-mounted
  - Length 11.71 m (secondary tank)
  - Length 10.59 m (primary tank)
  - Diameter 2.90 m (outside secondary)
  - Maximum fill capacity 71 250 litres
  - Skid assembly: 13.04 m x 2.90 m
  - 3 tanks used for diesel fuel storage, total capacity: 213 750 litres
  - 1 tank used for aviation fuel.

Both sizes of tanks are mounted on steel skids, which are supported by timbers resting on a bed of gravel and sand. All tanks are double-walled, with a secondary internal containment area and interstitial monitoring capability. Filling and pumping sites have additional spill containment capabilities and secondary containment is used under hose connections coming from the fuel tanks. The fuel storage monitoring program is included in Appendix A.

Other fuel supplies such as gasoline is stored in 205 litres metal drums, as the amount presently required at site does not justify the use of fuel tanks.

A 5.6 millions litres fuel tank will be constructed in the fall of 2007. It will be located within a bermed and lined facility (this tank should replace eight of the above mentioned double-walled fuel tanks). It has the following characteristics:

- Diameter 24.2 m
- Height 12.1 m high
- Nominal fill capacity of approximately 5 million litres
- Bermed lined enclosure : 74 m x 63.5 m (110% of tank volume)
- Dispensing unit located within its own bermed and lined area adjacent to the large tank pad, housing the pumps for filling the tank and dispensing fuel as required.

The 5.6 million litres tank will be filled with fuel transported from the Meadowbank Baker Lake Tank Farm when the AWPAR reaches the camp. When the large tank becomes operational the only other remaining fuel tank will be the 75 000 litres tank of aviation fuel.

Other Equipment

The following equipment is also on site:

- Tercon earthworks equipment: dozers, shovels, trucks, drill, pickup truck, etc.,
- 5 drills (one is in Baker Lake and should be brought up when the road is finished) belonging to the drilling company (Boart-Longyear),
- Snowmobiles and four wheelers,
- Two incinerators.

Explosive Storage Facility

A portable explosive storage facility is located on site for use by the earthworks crew, at a distance as required by explosive storage regulations. ANFO is not stored on site, it is fabricated on site with ammonium nitrate and fuel oil. The ammonium nitrate is flown in from Baker Lake on an as needed basis in the form of 2 tonnes bags.

3. HAZARDOUS MATERIALS STORED ON SITE

The hazardous materials stored on site consist of the following substances:

- P-50 Diesel
- Jet A and/or Jet B turbo fuel
- Hydraulic Oil
- Lube Oil
- Waste Oil
- Propane
- Explosives (used in quarries)
- Other materials hazardous to the safety of personnel and the environment

The Material Safety Data Sheets (MSDS) for the hazardous materials stored at the exploration camp can be found in Appendix I.

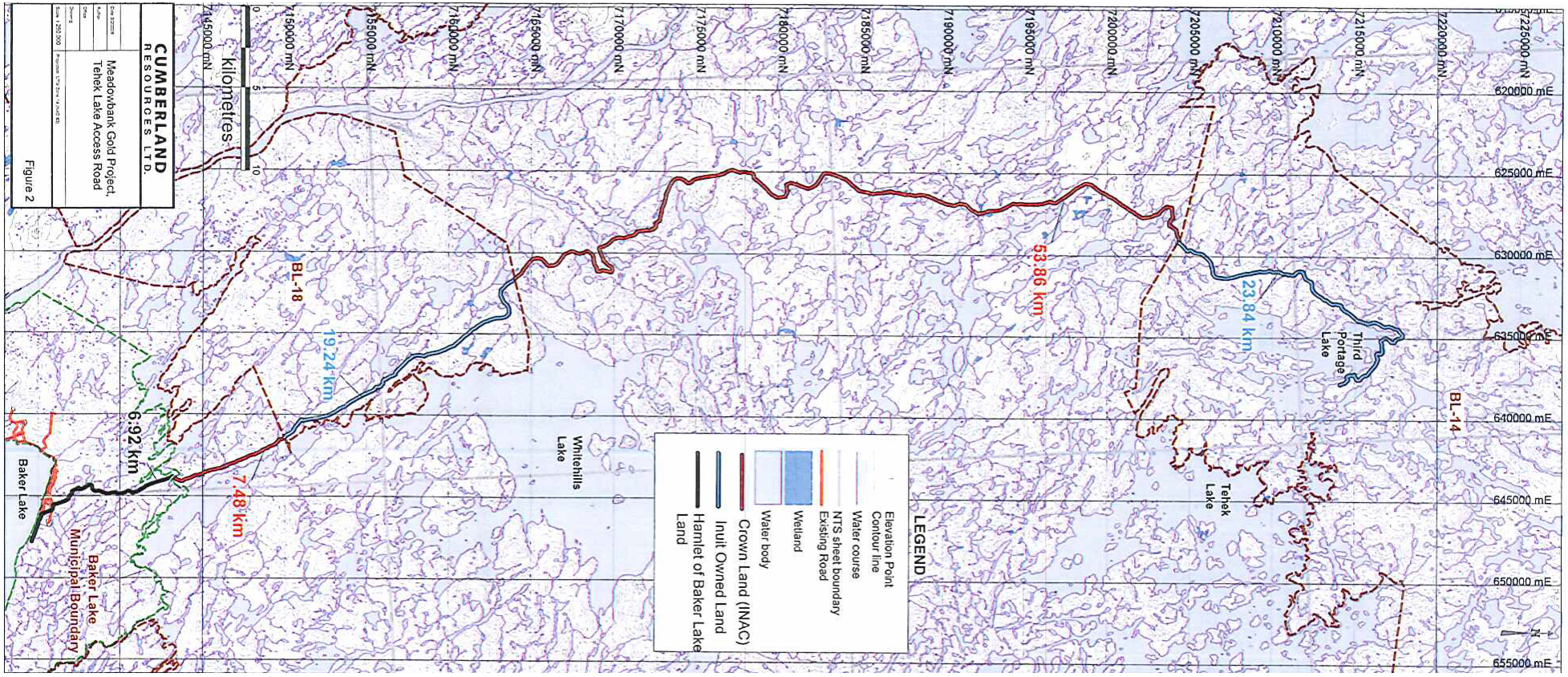
Until now, the transportation of fuel from Baker Lake to the site was accomplished over a winter road. The All Weather Private Access Road (AWPAR) from Baker Lake to the Meadowbank camp is expected to reach the Meadowbank site in late November, early December 2007. This road will be 108 km long and will be used to supply the camp site with fuel and other material as required (see Figure 3-1). A winter road may still be used, if for unforeseen reasons, the AWPAR cannot be completed as planned. The winter road was used by Cumberland for eleven years with negligible environmental impacts.

Inventory of Fuel at the camp site

The inventory of petroleum products, provided below, indicates the amounts stored at the Meadowbank site as of October 24, 2007. It should be noted that as soon as the road is ready, the inventory will be controlled by the filling of the 5.6 million litres fuel tank:

Diesel Fuel: 88 000 litres (double-walled fuel vaults)
Jet-A: 1000 litres (205 litre drums)
Gazoline: 1000 litres Engine Oil : 13 (20 litres pails)

Figure 3.1 All Weather Private Access Road



4. DEFINITIONS

4.1. WHAT IS A SPILL?

For the purposes of this plan, a spill is defined as an accidental release of product into the environment that has the potential for adverse impact. The emergency response team must be notified immediately of any spill or emergency.

4.2. MATERIALS & REPORTABLE SPILLS ON SITE

The GN Department of Environment is responsible for ensuring that spill contingency planning and reporting regulations are enforced as outlined in the *Environmental Protection Act*. According to the Consolidation of Spill Contingency Planning and Reporting Regulations of the *Environmental Protection Act (*1990), where there is a reasonable likelihood of a spill in an amount equal to or greater than the amounts set out in Table 4.1, the spill must be reported to the NT-NU 24-HOUR SPILL REPORT LINE at 867.920.8130.

As a precaution, if there is any doubt as to whether the quantity spilled meets the minimum reportable thresholds listed in Table 4.1, the spill incident shall be reported. Furthermore, AEM will maintain a detailed log of all spills of hazardous materials, including non-reportable spills. As part of AEM's overall environmental management system and in the spirit of a continuous improvement of environmental performance, procedures will be implemented to encourage all employees to communicate non-reportable spill incidents.

To ensure compliance with Section 36(3) of the *Fisheries Act* and Section 35 of the *Migratory Bird Regulations* all spills of fuel or hazardous materials, regardless of quantity, shall be reported immediately to the NT-NU 24-HOUR SPILL REPORT LINE (at 867.920.8130) where the release:

- is near or into a water body (including frozen)
- is near or into designed sensitive wildlife habitat
- is a threat to a listed species at risk or its critical habitat.

Table 4.1:
Spill Quantities that must be Reported to the NT-NU 24-HOUR SPILL REPORT LINE

Transportation Class	***Type of Substance***	***Compulsory Reporting Amount***
1	Explosives	Any amount
2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity exceeding 100 L
2.2	Compressed gas (non-corrosive, non-flammable)	Any amount from containers with a capacity exceeding 100 L
2.3	Compressed gas	Any amount
2.4	Compressed gas (corrosive)	Any amount
3.1, 3.2, 3.3	Flammable liquid	100 L
4.1	Flammable solid	25 kg
4.2	Spontaneously combustible solid	25 kg
4.3	Water reactant solids	25 kg
5.1	Oxidizing substances	50 L or 50 kg
5.2	Organic peroxides	1 L or 1 kg
6.1	Poisonous substances	5 L or 5 kg
7	Radioactive substances	Any amount
8	Corrosive substances	5 L or 5 kg
9.1 (in part)	Miscellaneous substances	50 L or 50 kg
9.2	Environmentally hazardous	1 L or 1 kg
9.3	Dangerous wastes	5L or 5 kg
9.1 (in part)	PCB mixtures of 5 ppm or more	0.5 L or 0.5 kg
None	Other contaminants	100 L or 100 kg

Note: L = litre; kg = kilogram; PCB = polychlorinated biphenyls; ppm = parts per million.

4.3. SPILL PREVENTION MEASURES

General

The first step in spill response is to take actions to prevent the spill from occurring. Regular worksite inspections will be conducted to identify measures to minimize the risk of chemical spills. All personnel will be trained to be aware of the potential hazards associated with the fuel/chemicals with which they are assigned to work. AEM will support the following general principles for spill prevention:

- provide up to date and accessible Material Safety Data Sheets (MSDS) for all hazardous materials
- regularly inspect fuel/chemical storage areas
- train workers in the use of safe work procedures for hazardous materials, and procedures to clean up spills
- encourage workers to take reasonable measures to prevent spills
- keep drums/containers sealed or closed,
- place drums/containers within a suitable form of secondary or spill containment

- keep storage areas secure from unauthorized access
- segregate incompatible materials
- ensure chemical storage areas are adequately protected from weather and physical damage
- provide adequate spill response materials at storage areas

5. RESPONSIBILITES DURING FUEL AND HAZARDOUS MATERIAL TRANSPORTATION TO SITE

The following are the due diligence responsibilities for fuel and other hazardous goods transportation to the site.

- Shipper:
    - Ensures proper loading and containment and documentation, which complies with TDG guidelines
    - Ensures that goods are classified and labelled appropriately. Provide placards if required.
    - Ensures safety at all times.
    - Ensures proper communication with carrier

- Carrier:
    - Supervises and ensures proper loading and containment and documentation which comply with all TDG regulations
    - Ensures correct volumes for transport, attach placards if necessary, maintains or replaces safety marks
    - Checks and delivers TDG manifest to receiver
    - Ensures safety of all personnel and equipment

- Receiver:
    - Supervises unloading procedures
    - Complies with TDG guidelines.
    - Ensures safety of containment facilities.
    - Ensures maintenance of all pumps and loading/unloading equipment on site.
    - Provides on-site emergency communications (telephone, radio).
    - Completes regular site inspections of storages facilities.
    - Records all shipment manifests.
    - Keeps on-site inventory of all dangerous goods
    - Maintains safety procedures at all times.

- On-Site Coordinator:
    - Supervises and organises spill containment equipment and personnel
    - Reports to internal and external resources
    - Ensures proper safety equipment is available
    - Notifies all personnel of current hazards
    - Maintains proper safety procedures at all times
    - Must be compliant with all TDG guidelines.

6. ACTION PLAN

6.1. INITIAL ACTION

Initial actions for spills include ensuring personnel and site safety, identifying and containing spill materials, reporting the spills to the on-site coordinator, alerting AEM personnel and ERT, notifying government agencies, and recording the incident.

This section provides information on the general procedures for reacting to a spill. The response sequence is illustrated in Figure 6.1 and 6.2. Additional information regarding roles and responsibilities of each party is provided in Section 7.

Spills may be the result of any of the following occurrences:

- tanks, drums or containers may develop leaks or rupture
- failure of equipment such as valves, piping or containment structures
- overfilling
- improper storage
- spills during transfer of fuel, chemicals or waste products
- spills resulting from accidents during transportation

In all cases the initial action, by the first responder to the site, will be to ensure the safety of all people at the site. If necessary, people will be immediately evacuated from the area affected by the spill. The second activity will be to notify the On-Scene Coordinator of the occurrence and to provide an initial assessment of the problem. The first responder should not attempt to deal with a spill that represents a potential immediate danger to human health, property or environment.

6.1.1. ENSURING SAFETY

Ensuring personnel and site safety is the responsibility of all parties, particularly the first responder who has the most knowledge of the spill. In the event of a spill, the following general precautions and steps will be taken to ensure site and personnel safety:

• be alert – ensure safety of yourself and others by notifying them of the incident
• assess the hazard to persons in the vicinity of the spill by assessing the dangers of exposure to the spill material
• shut off ignition sources such as vehicles and unplug electrical equipment – NO SMOKING;
• shut off operating equipment
• establish exhaust ventilation
• attend to the injured (refer to the MSDS in Appendix I)
• contact the On-Scene Coordinator, identify the location and request assistance as required
• do not contain compounds (e.g. gasoline, aviation fuel) if vapours might ignite – allow them to evaporate
• keep people away from the spill site using barrier tape and pylons, closing doors and placing warning signage, and limiting access by positioning vehicles to restrict traffic.

The primary form of ensuring safety is by using preventative measures. All personnel who deal with chemicals must have training in first aid and safe materials handling, including the Workplace Hazardous Materials Information System (WHMIS). In addition, regular training updates and site-specific exercises / drills are integral to preventing incidents.

6.1.2. IDENTIFYING, CONTAINING & REPORTING THE SPILL

Identifying the spill material is essential for both ensuring safety and containing the spill. The material properties must be known in order to:

(a) assess first aid measures to injured personnel and potential dangers, and
(b) assess the appropriate containment measure for the spill material.

If necessary, consult the appropriate MSDS at the nearest WHMIS station (see also Appendix I) and determine the principal types of health and safety hazards associated with the product or material.

In the event of a spill, the following steps should be taken to properly contain the spilled material:

- assess the severity of the spill;
- assess whether the spill, leak, or system failure can be readily stopped or brought under control;
- stop product flow or leak if possible and IF IT IS SAFE TO DO SO
- wear appropriate PPE such as impervious clothing, goggles, and gloves when containing the spill
- approach spill from upwind IF IT IS SAFE TO DO SO
- depending on the type of compound spilled and if it is safe to do so, consider the following general spill response procedures:

Solids

- prevent it from contacting water in order to avoid it from further mobilizing or reacting
- protect it from snow, rain or wind by covering the spill area with an appropriate tarp
- evaluate if absorbent materials or earth should be used to create dikes, or whether ditches should be constructed to protect the spill area from surface water runoff

Liquids

- if the spill has occurred on land: use appropriate adsorbent materials, earthen dikes or trenches to prevent it from flowing out of the spill area or towards sewers, surface
- if the spill has occurred on water and the compound is immiscible in water: use floating booms to contain and skimmers to recover.
- IF IT IS SAFE TO DO SO, recover the spill as soon as possible and dispose of it.

Initial responsibilities for spill identification, containment, and reporting are outlined in Figure 6.1. The spill reporting procedure is depicted in Figure 6.2.

6.1.3. CLEANING UP MINOR SPILL

It is acceptable for a first responder to cleanup a spill if it is assessed to be a “minor” or “simple” spill.

A minor spill is defined as any hazardous chemical spill that does not involve highly toxic, highly reactive, or explosive chemicals in a situation that is not life threatening. Furthermore, this type of spill presents a manageable physical or health hazard to personnel who, when wearing proper personal protective equipment, will not be exposed to any chemical at a level that exceeds any recognized action level or permissible exposure limit. Minor or simple spills are still to be reported to the On-Scene Coordinator and the Environmental Advisor but they are not expected to involve emergency responders.

Before cleaning up a minor spill, the first responder will ensure that it can be done safely. The first responder will also wear the right personal protective equipment, including, at a minimum, appropriate eye protection, protective gloves, and protective clothes. Additional protective equipment may be required for spills that present special hazards (such as corrosive or reactive spills or spills that have a splash potential). As a rule of thumb, if a respirator is required, outside assistance will be sought because the spill is no longer a minor spill. Similar response procedures are required to clean up minor or simple spills as are required for those involving the ERT as described in Section 6. Consult the MSDS for specific requirements (see Appendix I)

6.2. INVESTIGATION AND RECOMMENDATIONS

To minimise the probability of reoccurrence, the Environmental Advisor or the Emergency Response and Safety coordinator might decide that for a particular spill, the initial action plan should be followed by an investigation.

In such a case, the General Mine Manager will appoint an investigation team comprised of :

- a senior level manager as team leader
- employees with the relevant expertise to the particular situation
- one employee independent of the operation
- representatives from the environmental and safety departments.

The investigation report, including recommended course of action, should be forwarded to the General Mine Manager within 20 days of the investigation team establishment.

Figure 6.1: AEM Action Plan

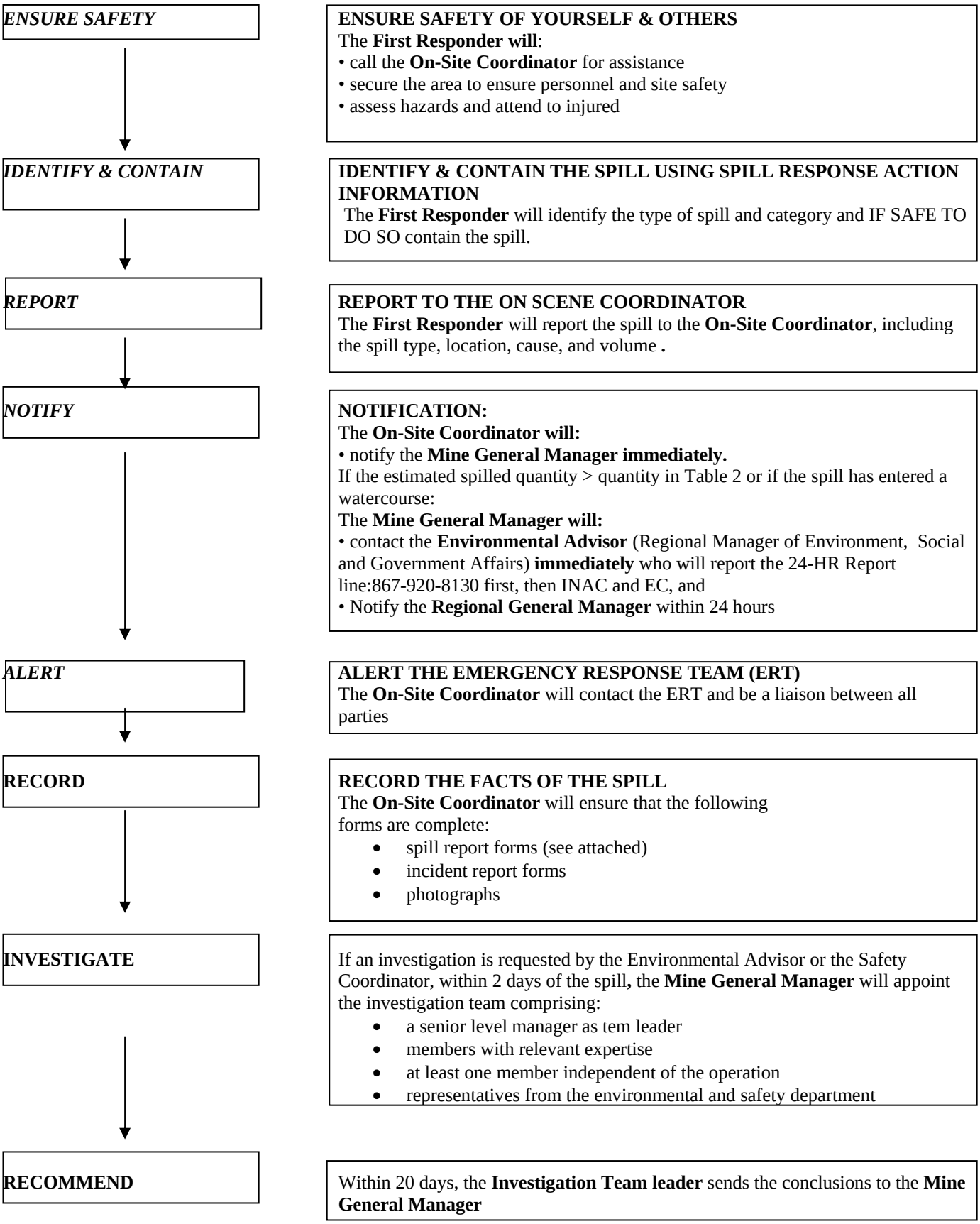
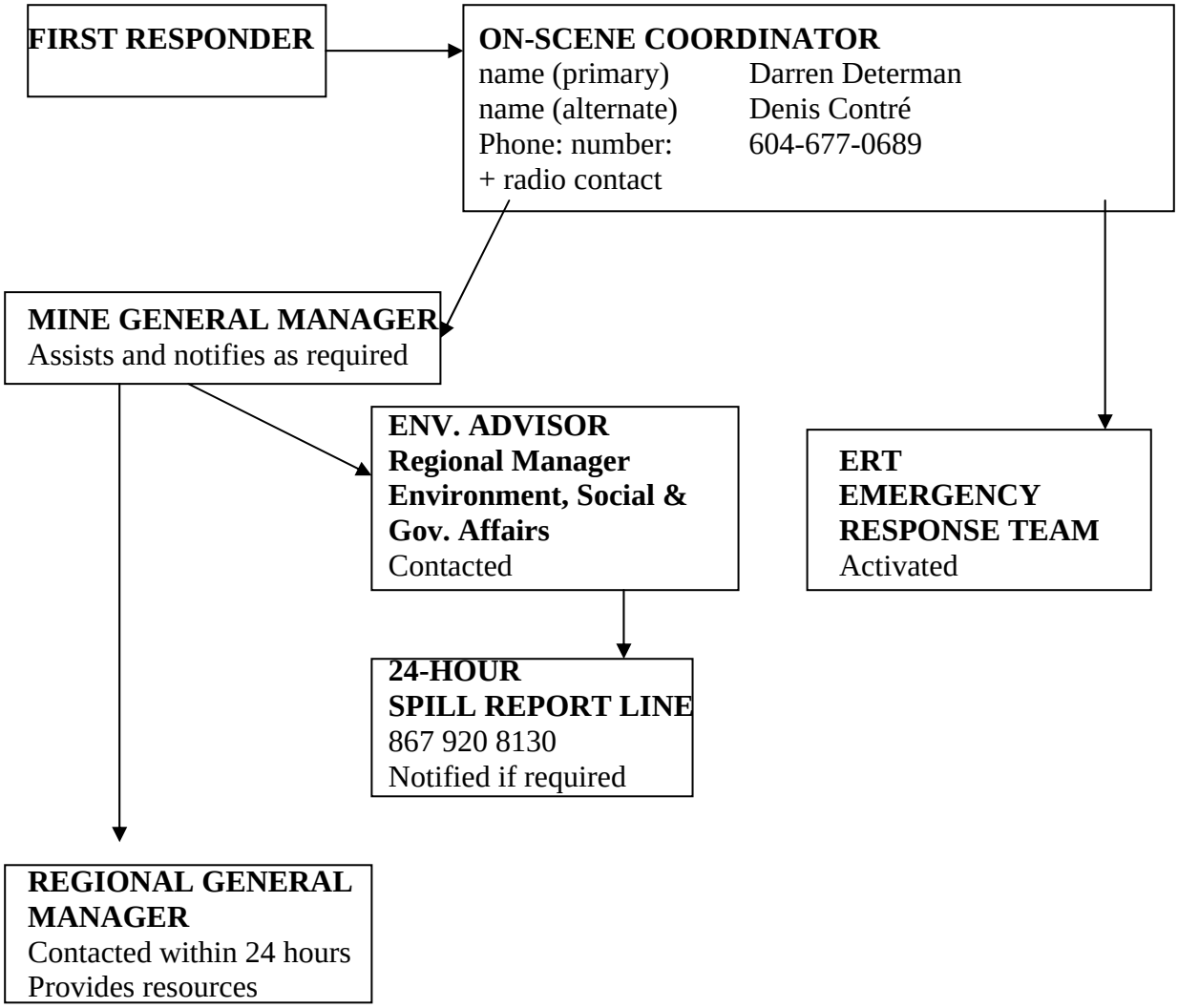


Figure 6.2
Spill Reporting Procedure



7. RESPONSE ORGANIZATION

In accordance with the action plan described in Section 5, the response organization details the roles and responsibilities of each party involved in the spill response. In the event that it is not safe to attempt a cleanup effort internally, the On-Scene Coordinator will contact the Environmental Advisor and General Mine Manager, who will in turn contact the NT-NU 24-HOUR SPILL REPORT LINE to coordinate cleanup using external resources.

7.1. FIRST RESPONDER

The person who has caused a spill or is the first to observe the spill is the first responder. The responsibilities of the first responder are as follows:

- ensure site and personnel safety
- assess the preliminary severity and source of the spill
- identify and contain the spill, IF SAFE TO DO SO
- immediately report to and work with the On-Scene Coordinator
- participate in spill response as a member of the clean up crew.

7.2. ON-SCENE COORDINATOR

The On-Scene Coordinator must be knowledgeable with regard to the exploration camp operations, initial response actions, and spill response equipment and facilities.

Responsibilities of the On-Scene Coordinator are as follows:

- assume complete authority over cleanup personnel and the spill scene, as well as assume responsibility for all mitigation efforts
- evaluate the initial situation and assess the magnitude of the problem
- activate the initial response plan
- alert and assemble key personnel in the response team, as deemed appropriate, to handle the situation
- in consultation with the General Mine Manager develop the overall plan of action for containment and cleanup of the specific incident, as well as direct and implement the plan
- ensure assigned responsibilities are carried out and the activities of team members are coordinated
- assess the requirements for people, equipment, materials, and tools to contain the spill in light of what resources are immediately available; urgency will depend on the nature of the spill
- in consultation with the General Mine Manager mobilize any additional resources that may be required and arrange for the transportation of necessary personnel and/or materials to the site
- with aid of the Emergency Response Team Coordinator, ensuring that the ERT is provided with proper personal protective equipment (PPE)

7.3. EMERGENCY RESPONSE TEAM (ERT)

AEM will have an Emergency Response Team (ERT) that will be trained and responsible for controlling and clean-up of spills, and assisting with medical and other emergencies that may occur at the exploration camp. These team members will attend regular training sessions.

7.4. EMERGENCY RESPONSE TEAM COORDINATOR (ERTC)

The responsibilities of the Emergency Response Team Coordinator (ERTC) are as follows:

- ensure on-site resources for spill response and cleanup are available
- mobilize all ERT personnel, equipment, personal protective equipment and supplies as required to the site of the spill
- assist On-Scene Coordinator in obtaining any additional resources not available on site
- ensure that appropriate PPE is worn properly
- conduct cleanup of spills under the direction of the on-scene coordinator
- liaise with On-Scene Coordinator and keep him/her informed of cleanup activities
- assist in developing and implementing emergency response training programs and exercises
- ensure that all spill response personnel receive adequate training to fulfil their responsibilities as part of the ERT.

7.5. ENVIRONMENTAL ADVISOR

The Environmental Advisor will be part of the AEM organisation and will be responsible for the following:

- liaise with the On-Scene Coordinator
- provide technical advice on the anticipated environmental impacts of the spill
- advise on the effectiveness of various containment, recoveries, and disposal options, and suggest the most appropriate approach
- report the spill to the NT-NU 24-HOUR SPILL REPORT LINE at 867.920.8130 as soon as possible, as required (see table 4.1)
- assist the General Mine Manager with regulatory and licensing reporting requirements, including gathering relevant information and submitting any formal reports (within the required time frame) to the applicable regulatory agencies and AEM management detailing the occurrence of a spill; this includes submitting an incident reporting form (see forms in Appendix J)
- recommend an investigation into the spill, if deemed necessary,
- if authorized by the General Mine Manager, act as a spokesperson with the public, media, and government agencies, as required
- within the context of the exploration camp water management plan, implement a sampling protocol for the collection and analysis of samples to identify and monitor possible contaminant levels resulting from the spill
- monitor the effectiveness of the cleanup operation and recommend further work, if necessary

- complete and fax (867.873.6924) or email (spills@gov.nt.ca) a NT-NU Spill Report Form to the NT-NU 24-HOUR SPILL REPORT LINE.

7.6. GENERAL MINE MANAGER

The General Mine Manager is responsible for implementing and maintaining the SCP. In addition, the General Mine Manager's responsibilities in the case of a spill are to:

- contact the Environmental Advisor to see if official reporting is necessary
- act as a spokesperson on behalf of AEM with the public, media, and government agencies, as required
- prepare and submit any formal reports (within the required time frame) to regulators and AEM management detailing the occurrence of a spill; this includes submitting an incident reporting form
- contact the Regional General Manager within 24 hours for a reportable spill.
- ensure that enough resources are available for all spill response personnel to receive adequate training to fulfil their responsibilities as part of the ERT
- establish an investigation team at the request of the environmental advisor or the safety coordinator..

7.7. PROJECT CONSTRUCTION MANAGER

The Project Construction Manager is potentially required to inform team members of the detailed nature of the operations to be performed in the event of a facility malfunction causing a spill during the construction phase. The responsibilities of the project construction manager are as follows:

- liaise with AEM personnel resources and keep them informed of cleanup activities
- assist the On-Scene Coordinator and ERT as needed, particularly in obtaining any additional resources not available onsite for spill response and cleanup.

7.8. HUMAN RESOURCES SUPERINTENDENT

The following are the responsibilities of the Human Resources (HR) Superintendent:

- maintain emergency and health and safety records
- assist in conducting emergency spill response exercises
- track all emergency and health and safety training that on-site staff have received, and when retraining will be required
- notify the On-Scene Coordinator when retraining is required
- ensure that employees are retrained in appropriate emergency response skills, Workplace Hazardous Materials Information System (WHMIS) training, Hazard Communication (HAZCOM), Occupational Health and Safety Administration (OHSA) training, first aid, and respirator fit-testing prior to expiry of existing training certification
- consult with appropriate organizations regarding retraining requirements and schedules.

7.9. HEALTH PROFESSIONAL

Health Professionals are responsible for the following:

- providing on-site first aid and other medical support
- providing additional training for ERT members

In addition to the health professional on site, the Baker Lake Hamlet health professionals will be first called on the scene. .

8. SPILL RESPONSE TEAM CONTACT INFORMATION

Emergency spill response personnel, their duties, location, and phone numbers are listed in Table 8.1 Important external contacts such as regulatory agencies, health organizations and transportation companies providing evacuation support are listed in Table 8.2. External spill response contractor contact information is listed in Table 8.3. AEM will identify off-site contractors with expertise in spill response. AEM will periodically review their qualifications, response time and equipment.

Table 8.1: Spill Response Team Contact Information Chart

Position	Name/Location	24 hours contact
Nunavut Territorial Government	NT-NU 24-HOUR SPILL REPORT LINE	Ph 867.920.8130
On-Site Coordinator	Darren Determan Denis Contré	
Emergency Response and Safety Coordinator	Jeannot Harvie	Ph: 867-793-4610
Emergency Response Team	Laurier Roy Denis Cormier Marlon Coakley Nuna	Ph: 867-793-4610
General Mine Manager	Martin Bergeron	Ph:604-608-2557 Fax:604-608-2559 Cell:604-613-7773
Construction Manager	Germain Cardinal	Ph:867-793-4610 Ph: 604-608-2557 Cell: 514-910-1909
Health Professional	Paramedic at camp site Baker Lake Nurse	Ph. 604-677-0689 Ph: 867.793.2813
Environmental Advisor (Regional Manager Environment, Social and Government Affairs)	Larry Connell	Ph: 604-608-2557 Fax: 604-608-2559 Home:604-638-6719
Regional General Manager	Daniel Kivari	Ph:604-608-2557 Fax:604-608-2559 Cell:604-760-7733

The hiring of key personnel is still ongoing. This table will be expanded as the information becomes available.

Table 8.2: Other Important Emergency Phone Numbers

Organisation/Authority	Telephone No.	Fax No.
NT-NU 24-HOUR SPILL REPORT LINE	867.920.8130	867.873.6924
Nunavut Water Board	867.360.6338	867.360.6369
Environment Canada, Environmental Protection Branch	867.669.4700	867.873.8185
Environment Canada 24 hours emergency pager monitored by Emergency and Enforcement	867.920.5131	
Manager Pollution Control & Air Quality Environmental Protection, Government of Nunavut	867.975.5907	867.975.5981
Indian and Northern Affairs Canada (INAC) – Manager Nunavut Regional Office	867.975.4550	867.975.4585
Indian and Northern Affairs Canada (INAC) – Land Administration Department – Nunavut Regional Office	867.975.4280	867.975.4286
Indian and Northern Affairs Canada (INAC)– General Enquiries	867.975.4275	
Kivalliq Inuit Association – Reporting Line	867.645.2810 867.646.2800	
Department of Fisheries and Ocean (DFO) – Nunavut Regional Office	867.979.8000	867.979.8039
Keewatin Health Services – Baker Lake (Health Centre) (Donna Brown, Head Nurse)	 867.793.2816 867.793.2813	
Baffin Regional Hospital (Iqaluit)	867.979.7300	
Royal Canadian Mounted Police (RCMP) Baker Lake – emergency number Cambridge Bay RCMP	867.793.0123 867.793.1111 867.983.2111	
Baker Lake Hamlet Office	867.793.2874	
Baker Lake Fire Emergency	867.793.2900	
Baker Lake Fire Marshall Office	867.873.7944	
Baker Lake Radio Station	867.793.2962	
Baker Lake Airport	867.793.2564	
Department of Environment Health	867.983.7328	
Poison Control Centre	867.920.4111	
CANUTEC (Spill Support Information)	613.996.6666	
Charter Aircraft/Helicopter Companies		
Air Tindi	867.669.8200	
First Air	867.873.4464	
Arctic Sun West	867.873.3306	
Ookpik Aviation	867.793.2234	
Kivalliq Air	1.877.855.1500	
Calm Air	867.793.2873	
Nunasi Helicopters	867.873.3306	
Canadian Helicopters	867.669.9604	
Great Slave Helicopters	867.873.2081	
Adlair Aviation	867.983.2569	

Table 8.3: Spill Response Contractor Phone Numbers

Company Name and Contact	Mobilisation Location/Estimated Time	Phone Number	Area of expertise
Local			
Sanavik Co-operative Association (representative of NTCL)		**867.793.2801**	
Baker Lake Contracting & Supplies		**867.793.2831**	**General Contracting and repairs**
Peter's Expediting		**867.793.2703**	**Transportation**
S.K. Construction Ltd		**867.793.2965**	**General Contracting and repairs**
T.& M. Enterprise		**867.793.2319**	**General Contracting and repairs**
NWT Ltd (Arctic Fuel)		**867.793.2311**	**General Contracting and repairs**
Tuuapak		**867.793.2965**	**General Contracting and repairs**
ZDYB Services		**867.793.2918**	**General Contracting and repairs**
External			
Northern Transportation Company Limited	**Halifax Within 24 hours**	**902.482.6825 Emergency: 902.225.2951 902.832.1582**	**Emergency response involving barge or fuel transfer from barge**
NTCL	**7 to 10 days to Baker Lake**		**Ice breaker vessel**

9. ACTION PLANS FOR SPECIFIC MATERIALS AT THE EXPLORATION CAMP

This SCP is designed to introduce the basic requirements for the efficient and safe cleanup of the materials that may be spilled during the operation of the Exploration Camp.

The main hazardous materials found at the exploration camp are:

- Explosives (ANFO)
- Compressed gas (propane, welding tanks, etc.)
- Flammable and combustible liquids (diesel fuel, Jet- A or B fuel, engine oil)

Actions plans for these types of hazardous materials are detailed here.

In the event that small amounts of other hazardous substances are used from time to time for equipment cleaning, welding or other usage, they also included in the action plans.

Copies of the MSDS for these hazardous are provided in Appendix I.

9.1. EXPLOSIVE MATERIALS

Explosive materials that is used at the site is ANFO. Small quantities are used. It is supplied in 1 tonne bags.

Initial actions regarding ANFO explosives spill include the removal of personnel from the immediate area and the elimination of ignition sources and combustible material if possible to ensure site and personnel safety. Personnel handling explosive materials will be fully trained on a regular basis. Untrained personnel must not attempt to contain or remove spills. The Environmental Advisor and the On-Scene Coordinator will contact and coordinate the appropriate measures for explosives cleanup.

Fires involving large quantities of ANFO should not be fought. General action plans for spills of ANFO explosives and explosive materials are outlined in Appendix B. AEM will review this information prior to mine operations to assess the requirement for further site specific details.

9.2. COMPRESSED GASES

Compressed gases such as acetylene are not expected to be stored in large quantities. However, they are flammable gases and can ignite and explode, if exposed to an ignition source. Vapours cannot be contained when released, and it is important that personnel withdraw immediately from any such release. If tanks are damaged, the gas should be allowed to disperse, with no attempt at recovery.

Compressed gas spills/leaks can generally be divided into two categories.

- The first are those leaks which occur away from the gas cylinder in lines, tubing, or apparatus. These types of leaks can generally be stopped by closing the main cylinder valve, if it is otherwise safe to do so.

- The second category of leak occurs at the cylinder itself, and cannot be stopped by closing the cylinder valve.

In some cases it may not be possible to close a cylinder valve due to age or poor condition, and as such, this situation falls into the second category of gas leak. **All leaking gas cylinders are considered an emergency if the leak cannot be stopped by closing the cylinder valve.**

Leaks of oxygen or flammable gas are especially dangerous.

General action plans for spills of compressed gases are outlined in Appendix C. AEM will review this information prior to operations to assess the requirement for chemical-specific spill response plans for compressed gasses. According to the *Environmental Emergency Regulations* (federal) a specific spill response plan for acetylene gas is required if it will be stored in quantities in excess of 4.5 tonnes. AEM will verify expected quantities prior to operations.

9.3. FLAMMABLE AND COMBUSTIBLE LIQUIDS

Flammable liquids have **flash points below 37.8oC**, evaporate quickly, and within a short period of time can reach high vapour concentrations in air. Flammable liquids that will be stored and used at the site. This includes but is not limited to aviation fuel, possibly gasoline and solvents.

Spills of flammable liquids represent an extreme fire and explosion hazard if vapour concentrations exceed the lower explosion limit (LEL). They are generally harmful if inhaled and can also be absorbed through the skin.

Combustible liquids such as diesel fuel have a **flash point above 37.8oC but below 93.3 oC** and are not fire hazards at room temperature. The principal hazard from non-flammable, volatile liquid spills is exposure to the vapour by inhalation or skin absorption.
The most common flammable and combustible materials stored and handled on site are liquids such as aviation fuel, diesel fuel, solvents and waste oils. For the purposes of spill response actions, lubricants and motor oil have been included with the flammable and combustible compounds given their petroleum hydrocarbon based nature. Action plans for spills of flammable and combustible liquids are outlined in Appendix D. AEM will review this information prior to operations to assess the requirement for chemical-specific spill response plans for flammable and combustible liquids.

9.4. OXIDIZING SUBSTANCES

Oxidizing compounds tend to promote combustion and can ignite organic solvents and combustible materials. They may also be harmful if inhaled or absorbed through the skin. Where an oxidizing substance such as ammonium nitrate, sodium nitrate or hydrogen peroxide is spilled, general safety measures include avoiding inhalation (e.g., by using a dust mask or half faced respirator), ingestion, and eye contact. In addition, ignition sources and combustible materials should be removed from the spill area. Spills on land will be contained by diking or barrier using non-combustible materials. Ammonium nitrate in particular mixes with water. Spills near or in water will therefore be dammed or diverted.

Action plans for spills of oxidizing substances are outlined in Appendix E. AEM will review this information prior to operations to assess the requirement for chemical-specific spill response plans for the oxidizing substances that will be used for the Meadowbank Project. According to the *Environmental Emergency Regulations* (federal) a specific spill response plan for hydrogen peroxide is required if it will be stored in quantities in excess of 3.4 tonnes. AEM will verify expected quantities prior to operations.

9.5. POISONOUS & TOXIC SUBSTANCES

Highly toxic chemicals include those with high acute systemic toxicity, and substances with chronic toxic effects such as carcinogens, reproductive or developmental (embryotoxins, teratogens) toxins, and mutagens. Also included in this category are compounds that can easily produce toxic products such as sodium cyanide which reacts with acids, water and weak alkalies to form lethal hydrogen cyanide (HCN) gas. Poisoning can result from breathing cyanide gas, dust or solution; absorption through the skin; and from ingestion. Because of the toxicity of sodium cyanide, all persons working with it must be completely familiar with, and observe the established safety practises.

The Meadowbank Project will use very dilute solutions of sodium cyanide, typically in the range of 0.01% to 0.05% cyanide (100 to 500 ppm) for ore extraction and flotation. Cyanide oxidizes and decomposes when exposed to air or other oxidants, and does not persist in the environment. As such, it does not give rise to chronic health or environmental problems when maintained at low concentrations. The concentration of HCN in water varies with pH. To suppress HCN formation in sodium cyanide make-up solutions, a minimum pH of 12 should normally be used.

The general action plan for spills of sodium cyanide as presented in Appendix F. AEM will review this action plan prior to mine operations to assess the requirement for further site specific details.

9.6. INFECTIOUS SUBSTANCES

Infectious substances are biological wastes from sewage. The Camp sewage is eliminated in the incinerators (some camps use electrical toilets which burn the waste immediately). No infectious substance contamination is expected at the camp site.

9.7. CORROSIVE SUBSTANCES

Corrosive substances include acids, bases and alkali compounds. Some corrosive substances could be used at the camp site in very small quantities for metal cleaning purposes. Dilute acid solutions irritate the skin, while concentrated solutions can result in burns and also react violently with water.

Many acids give off toxic fumes and are harmful if inhaled. Some acids are also flammable or oxidizers and can start a fire if in contact with organic matter. The resulting fire may produce irritating or poisonous gas.

Hydrofluoric acid can penetrate deeply and damage underlying tissue. Like acids, the principal concern with basic or alkali compounds is their corrosive effects. Dilute solutions irritate the skin, while concentrated solutions can result in burns. Concentrated alkali compounds can penetrate deeply and damage underlying tissue. Most bases do not wash off the skin and eyes with cold water. Consequently warm water must be used to wash the effected areas, often for prolonged periods of time up to several hours. They may be in solid form and cause airborne dust which is harmful if inhaled. Fires may produce irritating or poisonous gas.

Personnel dealing with these substances will be limited to selectively trained staff. Personnel will be trained regularly in prevention, storage, and handling and will be drilled regularly with spill exercises. In the event of a spill, safety measures will be implemented immediately. Personnel will be removed from the area of the spill until appropriate spill containment is acquired and protective gear is donned. Before handling corrosive materials, personnel must review safety, storage, and handling measures. The general method of dealing with acid or base/alkali spills is to apply a neutralizing agent that reacts with the original material to form a much less hazardous, often benign neutralized product.

Action plans for spills of corrosive substances are outlined in Appendix G. AEM will review this information prior to operations to assess the requirement for chemical-specific spill response plans for the corrosive substances that will be used at the Meadowbank Project. According to the *Environmental Emergency Regulations* (federal) a specific spill response plan for hydrochloric acid and nitric acid are required if they are stored in quantities in excess of 6.8 tonnes, for sulphuric acid if it is stored in quantities in excess of 4.5 tonnes, and for hydrofluoric acid if it is stored in quantities in excess of 0.45 tonnes. AEM will verify expected quantities prior to operations.

9.8. DISPOSAL METHODS

The wastes produced from response to spills depend on the nature of the spill and the method for responding. In some cases, particularly for solid spills, much of the spilled material can be recovered and re-used for its intended purpose.

In the case of acid or base spills, neutralizing agents may render the recovered liquids suitable for disposal back into the ore extraction process and/or to the sanitary sewer system on site.

In the case of spills of flammable and combustible materials, the recovered wastes may be suitable for on-site incineration (as is currently being proposed for used oil), or for landfarming at a licensed facility. The feasibility of an on-site landfarm facility will be evaluated during the mine design and engineering phase of the Meadowbank Gold Project.

Deteriorated or damaged ANFO should be destroyed or disposed of. Appropriate method of disposal or destruction and subsequent course of action will be determined by authorized personnel or the explosive supplier.

Some materials will not be suitable for reuse, treatment or disposal on site, and they will have to be packaged and sent off-site for recycling, treatment or disposal. AEM intends to use only approved methods, transporters and waste facilities for residual materials resulting from spill cleanup. Each case will have to be assessed on its own merits.

As part of its waste management plan for the Meadowbank Gold Project, AEM will establish acceptable disposal procedures and options for known and anticipated wastes.

9.9. CONTAMINATED SOILS AND WATER

It is possible that some spill events will result in significant, longer-term environmental impact to soil, groundwater or surface water. Each spill incident will be assessed by the On-Scene Coordinator and the Environmental Advisor for additional sampling and testing required to complete cleanup in accordance with the Water Quality and Flow Monitoring Plan, or to assess potential impacts to the environment and allow for additional remediation beyond the initial spill response. If required, the assessment and remediation of contaminated soil will be carried out in accordance with the *Environmental Guideline for Contaminated Site Remediation,* the *Canadian Council for Ministers of Environment - Canadian Environmental Quality Guidelines*, and other relevant environmental quality guidelines.

10. RESPONSE EQUIPMENT

10.1. GENERAL EQUIPMENT

AEM's spill response resource inventory for the Exploration camp is listed in Table 10.1. Fire extinguishers are provided at the tank farm, in all the buildings, at the helicopter pad and in any other area where flammable substances are stored and/or handled. Spill kits will be located at the tank farm, fuelling stations, airstrip, and other locations where spills of hazardous substances could occur.

A checklist of the required items for each spill response kit or equipment storage area will be provided. Spill response supplies will be checked against the lists on a quarterly basis and any deficiencies remedied immediately. The checklists will be reviewed whenever new chemicals are added to on-site activities to ensure that relevant spill cleanup supplies are present. MSDS for all the chemicals present in the vicinity of the spill kit will be kept near the kits, and will be updated as necessary to ensure that all MSDS data are up to date. The expiry dates of the MSDS will be tracked for every chemical present on site to help identify and replace those that are about to expire. MSDS are provided by the chemical suppliers. (See Appendix I for sample MSDS).

Table 10.1
Exploration Camp Spill Response Resource Inventory

24 hour response equipment	Number
Hydraulic Excavator	1
Single Axle truck	1
Front-end Loader	
Tractor dozers/snow plough	1
Spill Equipment Availability	
Fuel detention boom	x
Absorbent booms	x
Absorbent material	x
Portable oil skimmer	x
Portable pumps and hoses	x
Shop vacuum	x
Used drumss (210 L capacity)	x
Ice Auger	x
Tiger torch	x
Chain saw	x
Hand tools (shovels, rakes)	x

Note: This list will be updated as the mine construction activities are proceeding.

10.2. SPILL KITS

The locations and types of spill kits available at the camp site is listed in Table 10.2. The size and contents of the variously spill kits is listed in Tables 10.3 and 10.4.

Table 10.2: Types of Spill Kits at Each Location

Facility	Location	Kit
Tank Farm	Near the fuelling station	5 x 210 L kit Absorbent sheets
Weather Haven Garage		1 shovel Absorbent sheets
Explosive Storage		1 explosives cleanup kit per storage building

Note: L = litre.

Table 10.3: 210 L Spill Kit Contents

Number	Size	Description
5 piece	3'' x 4'	Oil selective boom
50 pieces	18'' x 18''	Universal pads
1piece	36'' x 48''	Polyethylene disposable bag
1pair		Chemical resistant gloves
1		Shovel
1 each	210 L	Metal container drum

Note: L = litre.

Table 10.4: Ammonium Nitrate Storage Spill Kit Contents

Number	Size	Description
2 boxes		Chemical resistant gloves
2 pairs		Uvex safety goggles
2 pairs		Tyvek coveralls
2 pairs		Half mask respirators with organic filters and National Institute for Occupational Safety and Health (NIOSH)/Occupational Safety & Health Association Approved dust respirator
3 each	205 L	Metal container drums
2 each		Shovels
1 box		Plastic garbage bags

Note: L = litre.

10.3. MOBILE ENVIRONMENTAL RESPONSE UNIT

Spill contingency planning for possible incidents during the transportation of fuel from Baker Lake to the Meadowbank site is coordinated by NWT Ltd (Artic Fuel) who operates the overland transportation equipment and is responsible for the operations.

1. Stop the equipment
2. Alert AEM and NWT Ltd (Artic Fuel) (see numbers on Tables 8.1 and 8.3)
3. Contain spill and initiate clean-up (see action plan for appropriate substance)
4. Report as outlined in Figure 6-1 as required.

11. TRAINING & EMERGENCY / SPILL EXERCISE

11.1. EFFECTIVENESS OF THE PLAN

To ensure the effectiveness of the SCP, the General Mine Manager will be responsible for:

- evaluating what training is required by all staff, and ensuring that all staff are given appropriate training and are retrained as needed
- completing an annual detailed review and update of the plan, with particular stress on the objectives and methods of the plan
- ensuring that this SCP remains up-to-date, and that updated versions are distributed to the personnel on site, and external agencies, organizations and selected qualified external responders
- ensuring that updates to new emergency communications information (new phone numbers, changes in reporting structure, etc.) are distributed as soon as the new information becomes available
- keeping a formal record of distribution and amendments to the SCP
- ensuring that emergency spill response exercises and inspections are conducted at least semiannually
- ensuring that the results of the regular inspections are used to improve spill response practices, and improve relevant plans accordingly
- completing annual internal audits of the EMS, including SCP, and arranging for external audits of the system every three years by independent specialists.

11.2. TRAINING

11.2.1. On-Site Personnel

A designated ERT consisting of on-site personnel will be established. AEM will ensure that the ERT is trained and present at all times. All members of the team will be trained and familiar with emergency and spill response resources, including their location and access, the SCP, and appropriate emergency spill response methodologies. ERT training will be conducted annually to ensure that sufficient team members are present and to ensure that training is up to date.

The following training will be included:

- a review of the spill response plan and responsibilities of the ERT members
- the nature, status, and location of fuel and chemical storage facilities
- the on-site and off-site spill response equipment, and how to use it
- emergency contact lists
- desktop exercises of “worst case” scenarios
- the likely causes and possible effects of spills.

All instructors will be highly qualified in spill response and prevention methods. All personnel and contractors at the project site will be familiar with spill reporting requirements. This will be ensured by conducting an orientation and training program on initial spill response procedures for all contractors and new personnel. Attendance will be tracked on site and re-training will be completed annually.

Fuel-handling crews will be fully trained in the safe operation of the facilities, spill prevention techniques, and initial spill response. Similarly, staff involved with the process, tailings, and wastewater systems will be trained in the safe operation of these systems. These crews will be re-trained annually; retraining schedules will be tracked on site.

Training programs will include regular WHMIS and Transportation of Dangerous Goods (TDG) training for all employees who use or are responsible for chemicals on site. A qualified trainer will provide WHMIS and TDG training. Additional safe chemical handling training will be conducted for employees handling or working in the vicinity of dangerous chemicals such as caustic soda, hydrochloric acid, explosives, and fuels. Completion dates of this training will be tracked and retraining done annually.

Re-training for TDG will be completed every three years. Employee TDG training status will be tracked by on-site personnel so that re-training can be completed before expiry of previous TDG training. All new staff handling or responsible for chemical use will receive Occupational Safety and Health Association (OSHA) training and annual refresher courses. Dates of course attendance will be tracked so that refresher courses can be offered prior to expiry of the previous course. Qualified trainers will provide the OSHA training.

Other specialist training will be considered for key Emergency Response Personnel including:

- Incident Command System National Training
- First Aid (Red Cross or similar)
- CPR (Red Cross or similar)
- Wildlife response (several types of classes available)
- Watercraft Safety - 241 FW 1 or (Coast Guard or equivalent)
- Natural Resource Damage Assessment
- Spill Response
- Media Relations

AEM will create a training matrix, which will identify specific spill and health and safety related training for generic classes of personnel on the ERT. The HR Representative, together with the General Mine Manager, will ensure that records of current training are retained, employee training expiry dates are tracked, and re-training is completed in a timely manner.

11.2.2. Contractors

Where pertinent, contractors will be required to have WHMIS, TDG and OSHA training as well as undergo site-specific health and safety training. Specialist responders will be expected to have technical environmental, health and safety training specific to their role as a qualified external contractor. AEM will request proof of qualifications for the areas external contractors are intended to support. All contractors working on site will be expected to complete site-specific training to ensure they are familiar with the risk and processes at the site.

11.3. EMERGENCY/SPILL EXERCISE

AEM will conduct semi-annual emergency/spill exercises to test the response of the ERT to system failures, emergencies, or spills. The type of drill/exercise will be varied between tests. The On-Scene Coordinator will document and prepare a report for the General Mine Manager noting the response time, personnel involved, and any problems or deficiencies encountered. This report will be used to evaluate the ability of personnel to respond to spills and to determine areas requiring improvement. The results of this report will be used in subsequent training exercises in order to continually improve the training program. The results of actual spill events and the success of the associated response will also be evaluated. Any deficiencies in the actual response will be investigated as to route cause and used to design new exercises and to test new procedures resulting from the corrective actions. The SCP will be revised and updated accordingly

12. LIST OF ACRONYMS

ANFO Ammonium Nitrate Fuel Oil
CCME Canadian Council of Ministers of the Environment
DFO Fisheries and Oceans Canada
EMS Environmental Management System
ERP Emergency Response Plan
ERT Emergency Response Team
ERTC Emergency Response Team Coordinator
FS Fuel Storage Area
GN Government of Nunavut
HAV Hepatitis A Virus
HCN Hydrogen Cyanide
HM Hazardous Materials Storage Area
HMMP Hazardous Materials Management Plan
HR Human Resources
HW Hazardous Waste Storage Area
INAC Indian and Northern Affairs Canada
LEL Lower Explosion Limit
AEM Meadowbank Mining Corporation (Cumberland)
MSDS Materials Safety Data Sheets
NIOSH National Institute for Occupational Safety and Health
OHSP Occupational Health & Safety Plan
PCB Polychlorinated Biphenyls
PPE Personal Protective Equipment
SCP Spill Contingency Plan
TDG Transportation of Dangerous Goods
WHMIS Workplace Hazardous Materials Information System

APPENDIX A
FUEL STORAGE MONITORING PLAN

The fuel storage monitoring plan at the Meadowbank exploration camp will consist of the following daily and weekly inspections conducted by AEM personnel that have been trained in the use of fuel pumping equipment and fuel spill response.

The following inspections will be conducted and recorded on a daily basis:

1. All tanks, lines, pumps, hoses, valves and fittings will be inspected for leaks or damage.
2. Ensure proper fuel only is dispensed into the correct tanks and barrels for use in the camp and associated exploration work sites.
3. Ensure that the 'No Smoking' signs posted in the area of the fuel tanks are always clearly visible.
4. Ensure that all personnel on site abide by the 'No Smoking' rule within the distances outlined in the regulations for fuel tanks.
5. Ensure that all fuel pumping and spill response equipment is clearly visible and easily accessed.

The following inspections will be conducted on a weekly basis:

1. Fuel levels in all primary tanks checked and compared against the fuel dispensed from each primary tank for each week.
2. Outer tanks checked for fuel leakage from the primary tank.
3. Spill response equipment checked.
4. Pumping equipment checked.

APPENDIX B
General Response Procedures for Spilled Chemical Substances Explosives

Ammonium Nitrate B.1
Ammonium Nitrate Fuel Oil (ANFO) B.2

Appendix B.1
Ammonium Nitrate

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank camp.

The first step against prevention of potential spills and association hazards is the application of proper storage procedures for bulk Ammonium Nitrate, including the following

- Good house keeping of the storage facility will prevent spilling and or contamination of materials.
- Ammonium nitrate should be stored away from combustible materials and fuels, as well as other blasting accessories (i.e. boosters, delays, detonating cords and detonators).
- The storage facility should be well ventilated.
- Proper signage restricting the use/exposure of ammonium nitrate to ignition sources should be posted (e.g. no hot work, smoking or vehicle maintenance).
- The storage facility should be locked at all times with only authorized personnel allowed access.

The following is a general spill response procedure for ammonium nitrate. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required. AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For an **ammonium nitrate spill (solid)**:
1) Isolate and evacuate the spill area.

2) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

3) Put on appropriate personal protective equipment. For an ammonium nitrate spill this includes:
a. Gloves **as recommended by the MSDS or glove manufacturer**
b. Protective eyeglasses or chemical safety goggles or face shield **as recommended by the MSDS**
c. Lab coat, coveralls or TyvekTM coveralls **as recommended by the MSDS**
d. Half mask air-purifying respirator with cartridges and/filters **as recommended by the MSDS or respirator manufacturer**

4) Ventilate (open windows/doors to outdoors) closed spaces before entering.

5) Remove all sources of heat and ignition (no smoking, flares, sparks or flames in immediate area) and remove uncontaminated combustible materials and organic compounds (wood, paper, oil, etc.,) from spill area.

6) For spills to land, protect the spill area from storm water runoff by constructing a ditch or dike using suitable absorbent materials, soil or other appropriate barrier.

7) Vacuum or sweep the spill residue using non-metal, non-sparking tools and place the residue in a labelled, plastic, container (plastic pail with lid or double heavy duty plastic bags) for re-use or off-site disposal at a licensed disposal facility.

Note: Recovered solid, if generally free from impurities, may be suitable for its intended use. In this case, place solid in suitable container with lid, and **clearly label the container per WHMIS Guidelines**. Note: Minimize dust generation during the operation.

8) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash potential skin contact locations after handling.

Appendix B.2
Ammonium Nitrate Fuel Oil (ANFO)

Currently no ANFO is stored at the site. ANFO is fabricated as required, with ammonium nitrate and fuel oil. In the event that ANFO would be stored at the camp, AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp site. Proper handling and disposal of ANFO is an important first step in mitigating against spills and associated hazards.

The proper storage procedures are as follows:

- ANFO should only be used under the supervision of authorized trained personnel.
- ANFO should be kept away from heat, sparks, and flames, as well as initiating explosives, oxidizing agents, combustibles, and other sources of heat.
- Containers should be protected from physical damage and in dry, well ventilated conditions.
- Transportation to the Mine site will be in accordance with Section 14 of the *Mines Act* and Regulations and the *Transportation of Dangerous Goods Act*. Transport vehicles will be in sound mechanical condition and equipped with proper safety equipment. Loaded vehicles will not be left unattended and only authorized personnel will be responsible for the security of the explosives under their control.
- Explosives that have been identified as deteriorated or damaged will need to be disposed of or destroyed. The appropriate method of disposal or destruction and subsequent course of action will be determined by authorized personnel or the explosive supplier.

The following is a general spill response procedure for ammonium nitrate fuel oil – ANFO. The following procedure does not apply to emulsions or other explosives. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required. AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For an **ANFO spill (solid)**:
1) Isolate and evacuate the spill area.

2) Immediately extinguish any open flames and remove ignition sources (no smoking, flares,sparks in immediate area) IF SAFE TO DO SO. **Fires involving large quantities of ANFO should not be fought.**

3) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

4) Put on appropriate personal protective equipment. For an ANFO spill this includes:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Protective eyeglasses or chemical safety goggles or face shield **as recommended by the MSDS.**
c. Lab coat, coveralls or TyvekTM coveralls **as recommended by the MSDS.**
d. Shoe covers or rubber boots.

e. Half mask air-purifying respirator with cartridges and/filters **as recommended by the MSDS or respirator manufacturer.**

5) If the spill has occurred outdoors, stay upwind and avoid low lying areas. Ventilate (open windows/doors to outdoors) closed spaces before entering. Ensure adequate explosion proof ventilation for clean-up.

6) Remove all sources of heat and ignition (no smoking, flares, sparks or flames in immediate area) and remove uncontaminated combustible materials and organic compounds (wood, paper, oil, etc.,) from spill area.

7) Do not operate radio transmitters within 100 m of electric detonators.

8) For spill on land, protect the spill area from storm water runoff by constructing a ditch or dike using suitable absorbent materials, soil or other appropriate barrier. For spill to water, utilize damming, and/or water diversion to minimize the spread of contamination.

9) Collect, sweep or shovel spilled material and the other contaminated material/soil using non-metallic, spark-proof tools and place residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags) for off-site disposal at a licensed disposal facility.

Note: Recovered solid, if generally free from impurities, may be suitable for its intended use. In this case, place solid in suitable container with lid, and **clearly label the container per WHMIS Guidelines.**

Note: The drums/containers/residues are to be stored in ventilated areas away from incompatible materials for eventual off-site disposal at a licensed disposal facility.

10) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.

APPENDIX C
General Response Procedures for Spilled Chemical Substances

Compressed Gases C.1
AEM commits to review, modify and approve as required to establish this procedure as appropriate for Meadowbank exploration camp.

The following is a general spill response procedure for compressed gases. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required. AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **compressed (inert and flammable) gas leak:**

1) IF SAFE TO DO SO and it will stop the gas leak, turn off cylinder valve.

2) If the leak cannot be stopped by closing the cylinder valve, and it is **an inert atmospheric gas** (e.g. nitrogen, carbon dioxide, etc) isolate and evacuate the affected area. If the leak is a **flammable gas** and the leak is outside of a ventilated building enclosure that will contain the gas, immediately activate the fire alarm system and evacuate the area/building.

3) Contact the On-Scene Coordinator who will assemble spill response team members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

4) If possible and safety permits, adjust leaking cylinder so that gas escapes rather than liquid.

5) If possible and safety permits, eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area) and turn off electrical equipment.

6) If the spilled has occurred outdoors, stay upwind and avoid low lying areas. If the spill has occurred inside a building, prevent spread of vapour throughout the building by closing doors to other rooms and hallways. If the room's air exchange system distributes air throughout the building, then it may also be necessary to have it shut-down. Allow vapours to ventilate outdoors by opening windows and doors to the exterior.

7) Isolate area until gas has dispersed. On-Scene Coordinator to verify safe conditions.

APPENDIX D
General Response Procedures for Spilled Chemical Substances

Flammable and Combustible Liquids D.1

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp. The following is a general spill response procedure for flammable or combustible liquids, particularly petroleum hydrocarbon products. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required.

AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **spill of flammable or combustible petroleum hydrocarbon product (liquid):**

1) Isolate and evacuate the spill area.

2) Immediately extinguish any open flames and remove ignition sources (no smoking, flares, sparks in immediate area) IF SAFE TO DO SO.

3) Stop leak and contain spill (**see Step 9**) IF SAFE TO DO SO.

4) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

5) Put on appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Splash goggles or face shield.
c. Shoe covers or rubber boots.
d. Lab coat or TyvekTM coveralls.
e. Half mask air-purifying respirator with **organic vapour or combination** cartridges, or **as otherwise recommended by the MSDS or respirator manufacturer**.

6) If the spilled has occurred outdoors, stay upwind and avoid low lying areas. If the spill has occurred inside a building, prevent spread of vapour throughout the building by closing doors to other rooms and hallways. If the room's air exchange system distributes air throughout the building, then it may also be necessary to have it shut-down.

7) Ventilate (open windows/doors to outdoors) closed spaces before entering. Ensure adequate explosion-proof ventilation for clean-up. A vapour suppressing foam or water spray may be used to reduce vapours.

8) Remove all sources of ignition (no smoking, flares, sparks or flames in immediate area) and combustible materials (wood, paper, oil, etc.) within the spilled area.

9) Contain spill by using spill absorbent, spill pads or pillows, soil or snow to construct a dike that limits flow and prevents entry to sewer, waterways or onto ice. For spills to land, excavation of trenches/pits to capture spill flow may also be appropriate. If possible, compact soil or snow dikes, and place plastic tarps over the dike and at its foot to allow the product to pool on the plastic for easy recovery.

Note: Do not use paper towels to absorb spill as this increases the rate of evaporation and vapour concentration in the air.
Note: Do not flush with water into drainage areas or ditches as this will spread spill.
Note: Snow works well as a natural absorbent to collect and contain spilled petroleum hydrocarbons. However, its use in containing a spill will result in a water-contaminant mixture that may be more difficult to manage. It is important to scrape up the contaminated snow and ice as soon as possible.

10) Carefully cover the spill area with spill absorbent, spill pads, soil or snow, starting at the outside and working inward. Do not touch or walk through spilled material.

11) Sweep up or shovel the residue using non-metallic, spark-proof tools and place the residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags). For larger spills to land, excavate impacted absorbent material and soil, place in lined and bermed temporary storage area or directly into sealed drums/containers.

Note: The Territorial Government may give permission to burn off pools of recovered fuel or product. Environmental Advisor to confirm by contacting the NT-NU 24-HOUR SPILL REPORT LINE. Inert or non-combustible absorbents (vermiculite, sand, snow) are not suitable for incineration.
Note: The drums/containers/residues are to be stored in ventilated areas away from incompatible materials for eventual treatment at on-site landfarm (if present) or off-site disposal at a licensed disposal facility. Electrically ground all containers and transporting equipment.
Note: If appropriate, product may be recovered from absorbent pads for re-use by squeezing to release absorbed fuel into empty drums. Larger pools of product may be pumped into empty storage tanks or drums.

12) If spill is indoors, mop the affected area using detergent and water. Dispose of this water to drums for eventual off-site disposal at a licensed disposal facility. Spills to land may require further excavation or remediation of contaminated soil until acceptable soil quality is achieved. The On-Scene Coordinator and/or Environmental Advisor will assess this requirement.

13) For spills to water, immediately limit the area of the spill on water using absorbent pads and booms and similar materials to capture small spills on water. Deploy and slowly draw in absorbent booms to encircle and absorb the spilled product. Recover larger spills on water with floating skimmers and pumps, as required, and discharge recovered product to drums or tanks.

Note: Petroleum hydrocarbons are generally hydrophobic, and as such, do not readily dissolve in water. They typically tend to float on the water's surface. Absorbent booms are often relied on to recover hydrocarbons that escape land containment and enter water.

Note: Antifreeze sinks and mixes with water. If released to water, attempt to isolate/confine the spill by damming or diverting the spill. Pump contaminated water to tanks or drums.

14) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated leather articles, (including shoes) that cannot be decontaminated.

APPENDIX E
General Response Procedures for Spilled Chemical Substances

Oxidizing Substances - Liquids E.1
Oxidizing Substances - Solids E.2

Appendix E.1
Oxidizing Substances - Liquids

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp. The following is a general spill response procedure for liquid oxidizer compounds. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required.

AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **liquid oxidizer spill**:

1) Isolate and evacuate the spill area.

2) Stop leak and contain spill (**see Step 8**) IF SAFE TO DO SO.

3) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

4) Put on the appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Splash goggles or face shield.
c. Shoe covers or rubber boots.
d. Lab coat, coveralls or TyvekTM coveralls **as recommended by the MSDS.**
e. Half mask air-purifying respirator with cartridges and/or filters **as recommended by the MSDS or respirator manufacturer**.

5) Ventilate closed spaces before entering. Ensure adequate explosion-proof ventilation for clean-up.

6) Remove and/or moisten with water any combustible material (wood, paper, oil, etc.) affected by the spill.

7) Use water spray to reduce vapours or divert vapour cloud drift, if required.

8) Contain spill by using non-combustible spill absorbent, soil or snow to construct a dike that limits flow and prevents entry to sewer, waterways or onto ice. For spills to land, excavation of trenches/pits to capture spill flow may also be appropriate.

Note: Flushing area with flooding quantities of water may also be appropriate assuming this does not make clean up and waste management more difficult– **refer to the MSDS**.

9) Carefully cover the spill area with spill absorbent, soil or snow, starting at the outside and working inward. Use non-combustible absorbent. Do not touch or walk though spilled material.

10) Sweep up or shovel the spill residue using non-metal, non-sparking tools and place the residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags) for off-site disposal at a licensed disposal facility.

11) For indoor spills, mop the affected area using detergent and water. Flushing area with flooding quantities of water may also be appropriate – **refer to the MSDS**. Dispose of this water to the sanitary sewer, process stream or waste drums as appropriate. Spills to land may require further excavation or remediation of contaminated soil until acceptable soil quality is achieved. The On-Scene Coordinator and/or Environmental Advisor will assess this requirement.

12) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

Appendix E.2
Oxidizing Substances - Solids

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp.

The following is a general spill response procedure for solid oxidizer compounds. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required.

AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **solid oxidizer spill:**

1) Isolate and evacuate the spill area.

2) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

3) Put on the appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Safety glasses or goggles.
c. Lab coat.
d. Half mask air-purifying respirator with **N95 or greater protection** particulate filter or **as recommended by the MSDS or respirator manufacturer**.

4) Remove all sources of heat and ignition (no smoking, flares, sparks or flames in immediate area) and remove uncontaminated combustible materials and organic compounds (wood, paper, oil, etc.,) from spill area.

5) For spills to land, protect the spill area from storm water runoff by constructing a ditch or dike using suitable non-combustible absorbent materials, soil or other appropriate barrier. For spill to water, utilize damming, and/or water diversion to minimize the spread of contamination.

6) Vacuum, sweep or shovel the spill residue using non-metal, non-sparking tools and place the residue into a labelled, plastic, container (plastic pail with lid or double heavy duty plastic bags) for re-use or off-site disposal at a licensed disposal facility.

Note: Recovered solid, if generally free from impurities, may be suitable for its intended use. In this case, place solid in suitable container with lid, and **clearly label the container per WHMIS Guidelines**.

Note: Minimize dust generation.

7) If there is still oxidizer residue left in the spill area, neutralize with appropriate agent **as recommended by the MSDS**, or for spills to land continue to excavate until no visible spilled solid remains. Use non-combustible spill absorbent or soil to absorb the neutralized residue. Place in suitable drums/containers for disposal to a licensed facility.

8) For indoor spills, mop the affected area using detergent and water. Dispose of this water to the sanitary sewer, process stream or waste drums as appropriate.

9) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

APPENDIX F
General Response Procedures for Spilled Chemical Substances

Poisonous and Toxic Substances (Sodium Cyanide) F.1

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp.

The following is a general spill response procedure for solid Sodium Cyanide.
AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **Sodium Cyanide (solid) spill:**

1) Isolate and evacuate the spill area.

2) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

3) Put on the appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
e. Gloves **as recommended by the MSDS or glove manufacturer.**
f. Safety glasses or goggles.
g. Lab coat.
h. Half mask air-purifying respirator **as recommended by the MSDS or respirator manufacturer**.

Note: For worker safety, maintain readily accessible supply of cyanide antidote kits on site.

4) Ventilate area of spill or leak.

5) Avoid exposure to acids, water or weak alkalies which can react to form toxic hydrogen cyanide (HCN) gas.

6) Contain spill to prevent release to sewer, waterway or onto ice. For spills to land, protect the spill area from storm water runoff by constructing a ditch or dike using absorbent materials, soil or other appropriate barrier. If raining, cover spill area with tarp or plastic to minimize contact with water and prevent subsequent runoff. For spill to water, utilize damming, and/or water diversion to minimize the spread of contamination.

7) Shovel the spilled material into labelled drums, containers or plastic bags for re-use or off-site disposal at a licensed disposal facility.

Note: Recovered solid, if generally free from impurities, may be suitable for its intended use. In this case, place solid in suitable container with lid, and **clearly label the container per WHMIS Guidelines**.

Note: Minimize dust generation.

8) If there is still spilled sodium cyanide residue left in the spill area, neutralize with appropriate agent **as recommended by the MSDS** (sodium or calcium hypochlorite solution), or for spills to land continue to excavate until no visible spilled solid remains. Use suitable spill absorbent or soil to absorb the neutralized residue. Place in suitable drums/containers for disposal to a licensed facility. Collect material and place in a closed container for recovery or disposal.

9) For indoor spills, mop the affected area using detergent and water. Dispose of this water to waste drums/containers for disposal to a licensed facility.

10) Remove and bag personal protective equipment for disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

APPENDIX G
General Response Procedures for Spilled Chemical Substances

Corrosive Substances
Acids, Liquids G.1
Acids, Solids G.2
Bases/Alkali, Liquids G.3
Bases/Alkali, Solids G.4

Appendix G.1
Corrosive Substances – Acids, Liquids

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp.
The following is a general spill response procedure for liquid acid compounds. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required. AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **liquid acid spill**:

1) Isolate & evacuate the spill area.

2) Stop leak and contain spill (**see Step 8 below**) IF SAFE TO DO SO.

3) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

4) Put on appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Splash goggles or face shield.
c. Shoe covers or rubber boots.
d. Lab coat or TyvekTM coveralls.
e. Half mask air-purifying respirator with **acid gas or combination** cartridges, or **as otherwise recommended by the MSDS or respirator manufacturer**.

5) If the spill has occurred outdoors, stay upwind and stay out of low areas. If the spill has occurred inside a building, prevent spread of vapour throughout the building by closing doors to other rooms and hallways. If the room's air exchange system distributes air throughout the building, then it may also be necessary to have it shut-down.

6) Ventilate (open windows/doors to outdoors) closed spaces before entering.

7) Remove all sources of ignition (no smoking, flares, sparks or flames in immediate area).

8) Contain spill by using spill absorbent, spill pads or pillows, or dry soil to construct a dike that limits flow and prevents entry to sewer, waterways or onto ice. For spills to land, excavation of trenches/pits to capture spill flow may also be appropriate. Ideally, use spill absorbent that contains a mild neutralizing agent **as recommended by the MSDS**.

Note: Many acids, particularly concentrated acids react violently in the presence of water. Do not flush spill area with water unless the **MSDS** indicates acceptable.

Note: Nitric Acid reacts violently and explosively with organic chemicals and organic material such as wood, cotton and paper; therefore, do not use organic absorbent material on Nitric acid.

Note: Hydrofluoric acid will fume during neutralization. Provide adequate ventilation and approach from upwind. Neutralize carefully with sodium bicarbonate, soda ash or lime. Use water spray to disperse the gas/vapour if required. Remove all sources of ignition.

9) Carefully cover the spill area with spill absorbent, spill pads or dry soil, starting at the outside and working inward. If practical, neutralize spill using **MSDS-recommended** or commercially available neutralizers. Use pH indicator paper to determine if spill is neutralized (pH 7).

Note: Use caution as neutralization reactions generate heat.

10) Sweep or shovel the neutralized spill residue using non-metal, non-sparking tools and place the residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags) for off-site disposal at a licensed disposal facility.

11) Check the pH of the spill area. If it is less than pH 6, then further neutralize with a dilute solution of a suitable reagent **as identified on the MSDS** or for spill to land continue to excavate contaminated soil.

12) For indoor spills, mop the affected area using detergent and water. Dispose of this water to the sanitary sewer, process stream or waste drums as appropriate.

13) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

14) After the spill has been cleaned up, the area should be free of vapours. However, if personnel note odours or irritation, isolate the spill area, re-clean the area as per **Steps 11 and 12** or wait at least **1 hour** before re-entering or until considered safe by the On-Scene Coordinator or Environmental Advisor.

Appendix G.2
Corrosive Substances – Acids, Solids

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use on the Meadowbank exploration camp.

The following is a general spill response procedure for solid acid compounds. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required.

AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **solid acid spill**;

1) Isolate and evacuate the spill area.

2) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

3) Put on the appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Safety glasses or goggles.
c. Lab coat.
d. Half mask air-purifying respirator with **N95 or greater protection** particulate filter, or **as otherwise recommended by the MSDS or respirator manufacturer**.

4) Contain spill to prevent release to sewer, waterway or onto ice. For spills to land, protect the spill area from storm water runoff by constructing a ditch or dike using absorbent materials, dry soil or other appropriate barrier. If raining, cover spill area with tarp or plastic to minimize contact with water and prevent reaction and/or subsequent runoff. For spill to water, utilize damming, and/or water diversion to minimize the spread of contamination.

5) If necessary to minimize dust production, slightly moisten the solid. Use water, or if the material is water reactive, another inert liquid **as recommended by the MSDS**.

6) Sweep up or shovel the residue using non-metallic, spark-proof tools and place the residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags) for reuse or off-site disposal at a licensed disposal facility

Note: Recovered solid, if generally free from impurities, may be suitable for its intended use. In this case, place solid in suitable container with lid, and **clearly label the container per WHMIS Guidelines**.

7) Remaining solid acid residue may be neutralized using a dilute solution of appropriate agent **as recommended by the MSDS** (e.g. sodium bicarbonate - baking soda), or for spills to land continue to excavate until no visible spilled solid remains. Check the pH of the spill area;

the final pH should be between pH 6 and 10. Use spill absorbent, spill pads or dry soil to absorb the neutralized residue.

Note: Use caution as neutralization reactions generate heat.

8) For indoor spills, mop the affected area using detergent and water. Dispose of this water to the sanitary sewer, process stream or waste drums as appropriate.

9) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

Appendix G.3
Corrosive Substances – Bases/Alkali, Liquids

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp.

The following is a general spill response procedure for liquid alkali or base compounds. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required.

AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **liquid alkali or base spill**:

1) Isolate & evacuate the spill area.

2) Stop leak and contain spill (**see Step 8**) IF SAFE TO DO SO.

3) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

4) Put on the appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Splash goggles or face shield.
c. Shoe covers or rubber boots.
d. Lab coat or TyvekTM coveralls.
e. Half mask air-purifying respirator with cartridges/filters **as recommended by the MSDS or respirator manufacturer**.

5) If the spill has occurred outdoors, stay upwind and stay out of low areas. If the spill has occurred inside a building, prevent spread of vapour throughout the building by closing doors to other rooms and hallways. If the room's air exchange system distributes air throughout the building, then it may also be necessary to have it shut-down.

6) Ventilate (open/windows to outdoors) closed spaces before entering.

7) Remove all sources of ignition (no smoking, flares, sparks or flames in immediate area) and combustible materials (wood, paper, oil, etc.).

8) Contain spill by using spill absorbent, spill pads or pillows, or dry soil to construct a dike that limits flow and prevents entry to sewer, waterways or onto ice. For spills to land, excavation of trenches/pits to capture spill flow may also be appropriate. Ideally, use spill absorbent that contains a mild neutralizing agent **as recommended by MSDS**.

Note: Use caution as neutralization reactions generate heat.

9) Carefully cover the spill area with spill absorbent, spill pads or dry soil, starting at the outside and working inward. If practical, neutralize spill using MSDS-recommended or commercially available neutralizers. Use pH indicator paper to determine if spill is neutralized (pH 7).

Note: Use caution as neutralization reactions generate heat.

10) Sweep or shovel the neutralized spill residue using non-metal, non-sparking tools and place the residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags) for off-site disposal at a licensed disposal facility.

11) Check the pH of the spill area. If it is greater than pH 10, then further neutralize with a dilute solution of a suitable reagent **as identified on the MSDS**, or for spill to land continue to excavate contaminated soil.

12) For indoor spills, mop the affected area using detergent and water. Dispose of this water to the sanitary sewer, process stream or waste drums as appropriate.

13) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

14) After the spill has been cleaned up, the area should be free of vapours. However, if personnel note odours or irritation, isolate the spill area, re-clean as per **Steps 11 and 12** or wait at least **1 hour** before re-entering or until it is considered to be safe by the On-Scene Coordinator or Environmental Advisor.

Appendix G.4
Corrosive Substances – Bases/Alkali, Solids

AEM commits to review, modify and approve as required to establish this procedure as appropriate for use at the Meadowbank exploration camp.

The following is a general spill response procedure for solid alkali or base compounds. Consult the MSDS for the specific spilled compound to determine whether deviations from the general guidance are required.

AEM commits to review and test, and if necessary, modify and update thus spill response procedure on an annual basis.

For a **solid alkali or base spill**;
1) Isolate and evacuate the spill area.

2) Contact the On-Scene Coordinator who will assemble ERT members and the appropriate spill response materials outside the spill area. **Obtain and read the MSDS** for the substance to determine the chemical-specific hazards and to identify any special precautions that must be taken.

3) Put on the appropriate personal protective equipment. Depending on the scale of the spill and properties of the spilled substance, this can include:
a. Gloves **as recommended by the MSDS or glove manufacturer.**
b. Safety glasses or goggles.
c. Lab coat.
d. Half mask air-purifying respirator with **N95 or greater protection** particulate filter or **as recommended by the MSDS or respirator manufacturer**.

4) Contain spill to prevent release to sewer, waterway or onto ice. For spills to land, protect the spill area from storm water runoff by constructing a ditch or dike using absorbent materials, dry soil or other appropriate barrier. If raining, cover spill area with tarp or plastic to minimize contact with water and prevent reaction and/or subsequent runoff. For spill to water, utilize damming, and/or water diversion to minimize the spread of contamination.

5) If necessary to minimize dust production, slightly moisten the solid. Use water, or if the material is water reactive, another inert liquid **as recommended by the MSDS**.

Note: Do not use water to flush bases in powdered form, such as calcium oxide (lime), as this material is not very soluble.

6) Sweep or shovel the residue using non-metallic, spark-proof tools and place the residue into a labelled, plastic, waste container (plastic pail with lid or double heavy duty plastic bags) for offsite disposal at a licensed disposal facility.

Note: Recovered solid, if generally free from impurities, may be suitable for its intended use. In this case, place solid in suitable container with lid, and **clearly label the container per WHMIS Guidelines**.

7) Remaining solid alkali or base residue may be neutralized using a dilute solution of appropriate acid. Check the pH of the spill area; the final pH should be between pH 6 and 10. Use spill absorbent, spill pads or dry soil to absorb the neutralized residue.

8) For indoor spills, mop the affected area using detergent and water. Dispose of this water to the sanitary sewer, process stream or waste drums as appropriate.

9) Remove and bag personal protective equipment for cleaning, informing laundry personnel of contaminant hazards, or disposal at a licensed disposal facility. Thoroughly wash with soap potential skin contact locations after handling. Properly dispose of contaminated clothing that cannot be decontaminated.

APPENDIX H

TRANSPORTATION LOAD MANIFEST

Agnico-Eagle Mines Limited **Meadowbank Division**	**Date:**

VEHICLE TYPE: **ESTIMATED DEPARTURE:** **ESTIMATED ARRIVAL:**	**OWNER:** **FROM:** **TO:**

SUPPLY LIST

FUEL	**TYPE**	**VOLUMES**
	P-50	
	GASOLINE	
	JET – B/A	
	PROPANE	
	ACETYLENE	
	VOLUMES OR WEIGHT	
SALT		
CORE/BOXES		
CORE RACKS		
GRAVEL		
LUMBER		
DRILL SUPPLIES		
OTHER		
	TOTAL WEIGHT:	
DRIVER/ASSISTANT		

APPENDIX I

MSDS DATA SHEETS

APPENDIX J

SPILL REPORTING FORMS

External Spill Reporting Form

Internal Spill Reporting Form

AEM	Meadowbank Project	Spill report
Date and time of spill :		
Location of spill :		
First responder name :		
Person on the contact list contacted :		
Nature of contaminant :		
Volume/quantity of the container / tank		
Quantity spilled :		
Cause of the spill :		
Contaminant collected by :		
Follow-up done by : :		
Actions taken :		
Incident investigation recommended : YES ☐ NO ☐		
Report completed by:	Date :	
Government agency notified :	YES ☐ NO ☐	
Date of notification to government agency :		
Date of report : _____	Signature of environmental personnel : _____	

Spill Logbook Entry Form

Date of Spill	Date of Spill Report completion	Description (type, approximate quantity, location of spill)	Clean-up action taken	Logged by:
