Minto Mine

2016 Spill Contingency Plan

Prepared by:

Minto Explorations Ltd.

Minto Mine

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1 Introduction

Minto Mine (administered by Minto Explorations Ltd. (Minto)) is a high-grade copper and gold mine that is located 240 km north of Whitehorse, Yukon. Operations started in October 2007. The mineral deposits mined at the site were identified during exploration programs occurring in the area in the 1970's; exploration activities occurred sporadically since that time until construction of the mine and related facilities began in earnest in 2006.

This Spill Contingency Plan (SCP) is an update to the previous SCP, submitted in March 2015. The content of this SCP is derived from the *Plan Requirement Guidance for Quartz Mining Projects* (Yukon Government, 2013). The SCP has been updated annually and submitted as part of Minto's Water Use Licence and Quartz Mining Licence annual reports.

The purpose of the SCP is to establish guidelines for staff, contractors and suppliers working at the site with a formal framework of actions to be taken when responding to spills during mine operation. The SCP includes practices and planning of future efforts to further reduce the potential for environmental contamination and other spill-related impacts. The SCP describes the fuels, chemicals and other materials used at the Minto Mine, reporting thresholds for those materials, a spill action plan for responding to unintentional spills of those materials, reporting sequences and forms, training requirements, spill prevention activities and routine monitoring and maintenance.

1.1 Project Description

Minto Explorations Ltd. (Minto), a wholly owned subsidiary of Capstone Mining Corporation (Capstone), owns and operates the Minto Project located 240 km (150 miles) northwest of Whitehorse, Yukon. The Minto Mine is a high-grade copper and gold mine with ongoing operations since October 2007. The Project area encompasses the Minto Creek Valley which collects and drains in to the Yukon River (Figure 1-1). The Minto Mine is currently in Phase V/VI of operations. An overview of major infrastructure at the Minto Mine and the expansion of Phase V/VI is shown on Figure 1-2.

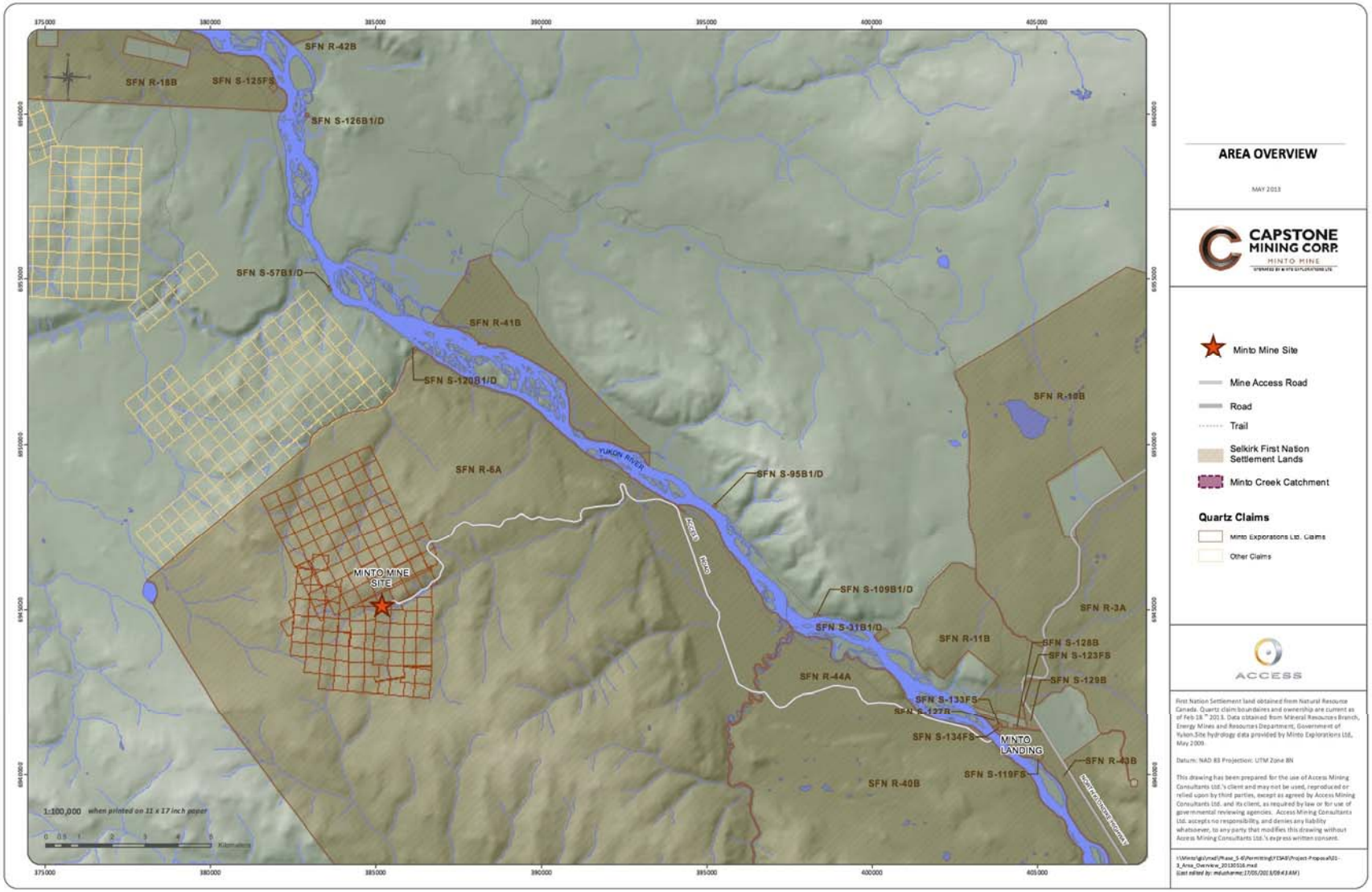


Figure 1-1: Minto Mine Area Overview

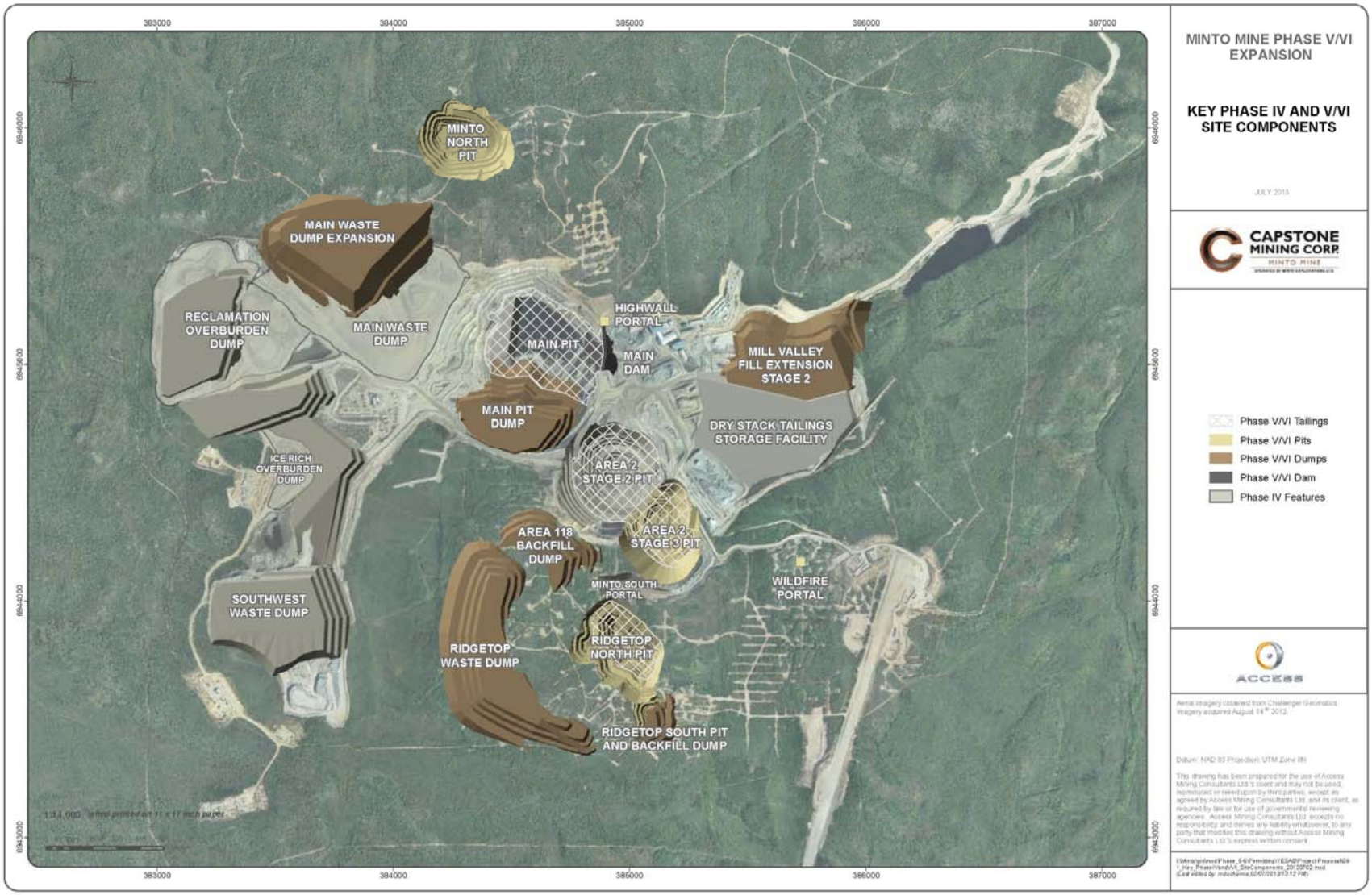


Figure 1-2: Minto Mine Area Overview – Existing and Phase V/VI Proposed Infrastructure

2 Definitions

The following definitions apply to the components of the SCP outlined herein.

Dangerous Good - A product, substance or organism included by its nature or by the regulations in any of the classes listed in the schedule to the act (*Yukon Transportation of Dangerous Goods Act)*.

Deposit out of the normal course of events - A deposit that can reasonably be expected to occur at the mine and that can reasonably be expected to result in damage or danger to fish habitat or fish or the use by man of fish, and the identification of the damage or danger (*Metal Mining Effluent Regulations, Part 3, SOR/2002-222)*.

Discoverer - The person that discovers an incident that could possibly result in a spill or has resulted in a spill.

Spill - A release of a substance in to the natural environment that is abnormal in quantity or quality in light of all circumstances of the release; or is in excess of an amount specified in the regulations (*Yukon Environment Act, Part 11*):

> **Emergency Spill -** A release of a hazardous product where there is potential for that product to enter a waterway or cause significant danger to life, health or environment.
>
> **Non-Emergency Spill -** All spills that do not meet criteria of an *emergency spill* and that the responsible party is competent to manage safely and efficiently in terms of assessment, prevention, containment and clean-up.

Substance - A hazardous substance, pesticide, contaminant or special waste often referred to as a "**deleterious substance".**

3 Purpose and Scope

Minto will ensure that all requirements related to Spill Response and reporting within these documents are implemented throughout the property for the life of mine. If statutory and regulatory responsibilities change over time updating of this Plan will result.

This SCP is prepared in support of Minto's Type "A" Water Use License QZ14-031 (WUL), which states that:

> *"The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the spill contingency plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report."*

As well as *Part 3 – Deposits Out of the Normal Course of Events*, Section 30 of the *Metal Mining Effluent Regulations* (MMER), which indicates that:

> *"The owner or operator of a mine shall prepare an emergency response that describes the measures to be taken in respect of a deleterious substance within the meaning of subsection 34(1) of the Act*

> *to prevent any deposit out of the normal course of events of such a substance or to mitigate the effects of such a deposit."*

And under *Part 7 – Emergency Response Assistance Plans and Security Plans of* the *Transportation of Dangerous Goods Act*:

> *"No person shall import, offer for transport, handle or transport dangerous goods in a quantity or concentration that is specified by regulation — or that is within a range of quantities or concentrations that is specified by regulation — unless the person has an emergency response assistance plan that is approved under this section."*

And finally to satisfy the requirements of the Quartz Mining License QML-0001 Schedule B, that requires "*a plan that describes the measures designed to minimize the potential impact to the environment following a fuel or chemical spill."*

The SCP will apply to Minto Mine and the main access route for one year, whereby the owner or operator shall update and test the SCP to ensure it continues to meet the requirements of both the WUL, subsection 30(2) of the MMER, and the QML.

3.1 Purpose

The purpose of the SCP is to outline a general set of procedures to be followed to assess, prevent, contain and clean-up a spill at the Minto Mine. For procedures to be effective, Minto must ensure that employees and contractors, through experience and training, possess the skills necessary to safely assess, prevent, contain and clean-up a spill or potential spill. These procedures are necessary to ensure continuity and develop the foundation for a robust and effective SCP. The SCP is also designed to establish clear reporting and clean-up procedures as they apply to emergency and non-emergency spills and incidents.

This document also addresses opportunities to improve spill preparedness, response, and mitigation for deposits out of the normal course of events that have the potential to impact the Yukon River and its tributaries within the project site.

All Minto employees and contract staff must be familiar with the general spill reporting procedures outlined in this document and will be introduced to them as part of their site orientation.

3.2 Scope

The objectives of the SCP are to:

- identify potentially hazardous materials located on site;
- identify spill prevention measures;
- establish a high order of preparedness in the event that a spill occurs;

- ensure an orderly and timely decision-making, response and reporting process; and
- describe current and planned protective measures for all areas of the Mine Site

The *Minto Mine Emergency Response Plan* (Minto, 2016) contains other information that relates to Emergency spill procedures. The Emergency Response Team (ERT) and members of the Environmental Department have been trained on responding to Hazmat Spills. It is beyond the scope of this document to define the specific Spill Response Procedures and decision loops involved in an ERT response. Any details pertaining to a response from ERT to assess, prevent, contain and clean-up a spill at a spill incident is the responsibility of the Site Safety Department. General procedures for spill response procedures to emergency spills will be detailed herein.

3.2.1 Hardcopy Locations

Copies of the SCP are kept on-site at all times in the following locations: Mill Control Room; Site Safety Office; Environmental Office; General Manager's Office; Site Services Office; and on the Copper Queen Tug. Contact information is provided in Table 4-2.

4 Communication and Spill Reporting

Any spill that occurs at the Minto Mine site must be reported through the internal reporting chain of command and follow the procedures for assessment, prevention, containment and clean-up and reporting. Should a spill exceed the thresholds set by the Yukon Government (Table 4-1) then it must be reported to external authorities.

A spill in excess of the thresholds outlined in Table 4-1 or any spill that is abnormal in quality or quantity is considered a "reportable spill" under the *Yukon Spill Regulations* (O.I.C. 1996/193), pursuant to the *Environment Act*.

Table 4-1: Reportable Spill Thresholds

Product	TDG[1.] Code	Threshold Quantity
Explosives	1	Any amount
Flammable gases	2.1	> 100 litres
Non-flammable gases	2.2	> 100 litres
Non-poisonous gases	2.2	> 100 litres
Corrosive gases	2.4	Any amount
Non-corrosive gases	2.2	> 100 litres
Flammable liquids	3	> 200 litres
Flammable solids	4	> 25 kg
Spontaneously combustibles	4	> 25 kg
Dangerous when wet	4	> 25 kg
Oxidizers	5.1	> 50 kg or 50 litres
Organic peroxides	5.2	> 1 kg or 1 litre
Poisonous substances	6.1	> 5 kg or 5 litres
Corrosive materials	8	> 5 kg or 5 litres
Miscellaneous Dangerous Goods	9.1	> 50 kg
Special wastes	9.3	> 5 kg or 5 litres

1. TDG = *Transportation of Dangerous Good Regulations* (Government of Canada, 1985)

4.1 Internal Reporting (All Spills)

All spills (whether reportable externally or not) must be reported by the discoverer to their immediate supervisor and then to either Site Safety or the Environmental Department by radio or telephone following assessment of the scene. The Environmental Department will issue an Environmental Incident Notification to notify the site and its directors including senior management. This typically occurs concurrently with spill response (prevention, containment and clean-up) activities.

Following the spill response, responsible department heads will be required to document the spill on an Environmental Incident Report, available through the Environmental Department, and provided in Appendix A. The report requires inclusion of photos, a description of clean-up activities, subsequent actions, identifies root cause and determines any required corrective actions.

4.2 External Reporting (Reportable Spills Only)

Under federal and territorial regulations, the environmental lead will call the 24-hour Yukon Spill Report line should a spill of a reportable quantity occur (Table 4-1). Although several government agencies at the federal, territorial and municipal levels may ultimately be informed, only the Yukon 24-Hour Spill Report line is required for reporting purposes. The environmental lead will ensure that the appropriate information is collected before reporting to the Spill Report line. Any spill of an amount greater than those

listed in Table 4-1 or a spill of any amount that enters the Yukon River or a tributary of the river is a "reportable spill".

The following information should be provided to the 24-Hour Spill Report line:

- Name
- Phone number
- Product spilled
- Quantity spilled
- Quality of product (thin, viscous etc.)
- Location of spill
- Distance to water
- Distance to drinking water wells
- What happened
- Responsible party
- Actions to contain the spill

When reporting the spill to the Spill Report line, the environment lead will obtain the Environment Yukon Spill Reporting Number and first/last name of the person whom the report has been made to (in the event of a reporting discrepancy).

Minto will also contact: the Selkirk First Nation Lands Director; Energy Mines and Resources Client Services and Inspections; and Environment Canada via email or phone after discovery of a reportable spill. A detailed written report will be submitted to the regulatory authorities within 10 days after the event. The contact information for the various Minto employees, emergency response and external reporting personnel is provided in Table 4-2.

Table 4-2: Contact Information for Minto Personnel and External Agencies

Resource	Email	Contact Number
Minto Internal Communications Contact Info		
Health and Safety Department	safety@mintomine.com	604 759-0860 ext. 4644
Environmental Department	minto_environment@mintomine.com	604 759-0860 ext. 4659
Ron Light, General Manager	ronl@mintomine.com	604 759-0860 ext. 4639
Ryan Herbert, Environmental Manager	ryanh@mintomine.com	604 759-0860 ext. 4659

Resource	Email	Contact Number
Emergency Phone Contacts		
Yukon 24- Hour Spill Line		867 667-7244
CANUTEC-Dangerous Goods Help (Transport Canada)		1-888-CANUTEC or 613 996-6666
Fire Department – Pelly Crossing (Emergency)		867 537-3000
Police – Pelly Crossing		867 537-5555
Health Centre - Carmacks		867 863-4444
Hospital – Whitehorse		867 667-8700
Fire Department – Whitehorse		867 668-8699 or 867 668-2462
Police – Whitehorse		867 667-5555
YG Department of Environment, Water Resources Branch		867 667-3227
YG Environmental Protection Branch		867 667-3436
Selkirk First Nations, George Magrum, Lands Manager		867 537-3331
YG EMR, Client Services and Inspections		867 667-3199
External Reporting and Contacts for Submission of Spill Reports		
YG EMR, Steve Colp, Natural Resources Officer - Mining	Steve.Colp@gov.yk.ca	867 456-3839
Selkirk First Nation, George Magrum, SFN Lands Manager	magrumg@selkirkfn.com	867 537-3331 ext. 603
YG Environmental Health Services, Craig Van Lankveld, Environmental Health Officer	craig.vanlankveld@gov.yk.ca	867 667-8316
Environment Canada, Travis Teele, Enforcement Officer	Travis.Teel@ec.gc.ca	867-393-6705

5 Spill Action Plan

Implementation of the spill action plan requires knowledge of spill response supplies and locations, spill response procedures (Sections 5.1 and 5.2) and clean-up protocols (Section 5.3). In addition to the internal and external reporting requirements, spills must further be categorized as "emergency" or "non-emergency" incidents as the action plans and reporting requirements will differ according to the type of spill.

5.1 Spill Response Procedures: Non-Emergency

The majority of spills that are likely to occur on the Minto Mine Site will include a simple stepwise process initiated by the discoverer. If the safety at the scene is in doubt then it is imperative that the Site Safety department is notified immediately. A "non-emergency" spill is defined as a spill of any product that the discoverer, or other personnel within close proximity, of the incident can competently, safely, and efficiently manage in terms of assessment, prevention, containment and clean-up. This typically includes fuels, blasting agents, oils, lubricants or coolants and many of the reagents involved in mill operations. Once the scene is assessed for safety by the discoverer or supervisor and deemed non-emergency, they will prevent, contain and clean-up and contact the environmental team as soon as practical. If assistance is required to deal with the incident, the environmental team is to be notified by radio/telephone immediately.

Major contractors have personnel trained to NFPA 472 Awareness level and are able to respond to non-emergency spills. A complete inventory of Dangerous Goods stored and used at the Minto Mine, including details on material handling and clean-up, reporting thresholds, special precautions, PPE requirements, and disposal methods is provided for reference during spill response activities (Appendix B).

5.2 Spill Response Procedures: Emergency

An "emergency spill" is a release of a hazardous product where there is potential for that product to enter a waterway or cause significant danger to life, health or environment. When a spill is discovered the first step is to assess the scene for safety and **if safe to do so** immediately control and contain the spill by any means necessary. If the discoverer or other personnel within close proximity of the incident do not have the required training, resources or equipment to deal with the incident then the individual must report a "Code 1" callout. This protocol will initiate response of the Safety Department, Environmental Lead and the Emergency Response Team. The Emergency Spill Response Command Structure and General Spill Procedure are detailed in Figure 5-1 and Figure 5-2, respectively. If the scene is safe and the discoverer and the immediate supervisor have the means necessary to control, contain and recover the spill then they should proceed as such.

Once called via a "Code 1" the Safety Coordinator/Medic will respond to the scene and conduct an initial assessment and assume command of the scene. If the Safety Coordinator/Medic is required to treat

patients, command is transferred to the Health and Safety Superintendent/Officer or Emergency Response Team Captain. Unified Command Structure will be initiated once the General Manager, Area Manager, or Environmental Lead is on scene. The Unified Command Structure is a cooperative effort command between the General Manager, Health and Safety Superintendent/Officer, Area Manager of involved Department and the Environmental Lead. Transfer of command includes a detailed verbal report of the incident and activities conducted and underway.

A "Code 1" Protocol initiated by an emergency spill will trigger the specific spill response procedure based on the product type, quantity and environmental and safety conditions.

Initial spill response will be conducted in accordance to *Transport Canada's 2012 Emergency Response Guidebook* (Transport Canada, 2012). This Guidebook will assist Incident Command with information to identify the material, use the guide to reference potential hazards, public safety and emergency response information. The *Table of Initial Isolation and Protective Action Distances* will be used to dictate isolation and protection for large and small spills. However, this is not a comprehensive spill mitigation and response document and will only assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. The *Emergency Response Guidebook* does not address all possible circumstances that may be associated with a dangerous goods incident. The *Minto Mine Emergency Response Plan* (Appendix C) has additional specific procedures for responding to the most commonly transported and hazardous materials including Nitric Acid, Gasoline, Diesel, Ammonium Nitrate, Sodium Sulfide and Propane.

In addition to on-site response, Minto, through its carriers of dangerous goods, has contracts in place with spill responders. These are full service response agencies that have commitments to mobilize fully trained emergency response teams and equipment 24 hours a day, 7 days a week.

5.2.1 CANUTEC Transport Canada

In the event that a spill requires additional technical resources Minto is registered with CANUTEC, a division of Transport Canada, for 24 hour Spill Response support and information to deal with emergency situations. If a spill occurs beyond the boundaries of the Minto property, the owner of the transportation firm and the owner or consignor of the dangerous goods will communicate with the regulators. For incidents that occur on the Minto property, the Environmental Department will ensure reporting to regulators is performed accordingly.

5.2.2 Surrounding and Downstream Communities

Notification of downstream water users of a spill, if required, is the responsibility of the Yukon Government, Environmental Protection Branch. Minto will additionally notify the authorities including police and fire departments and the Selkirk First Nation community of Pelly Crossing.

5.2.3 Public Relations

The General Manager is the designated spokesman for Minto. The General Manager may delegate his responsibility for public relations if required to do so by the scale of the incident.

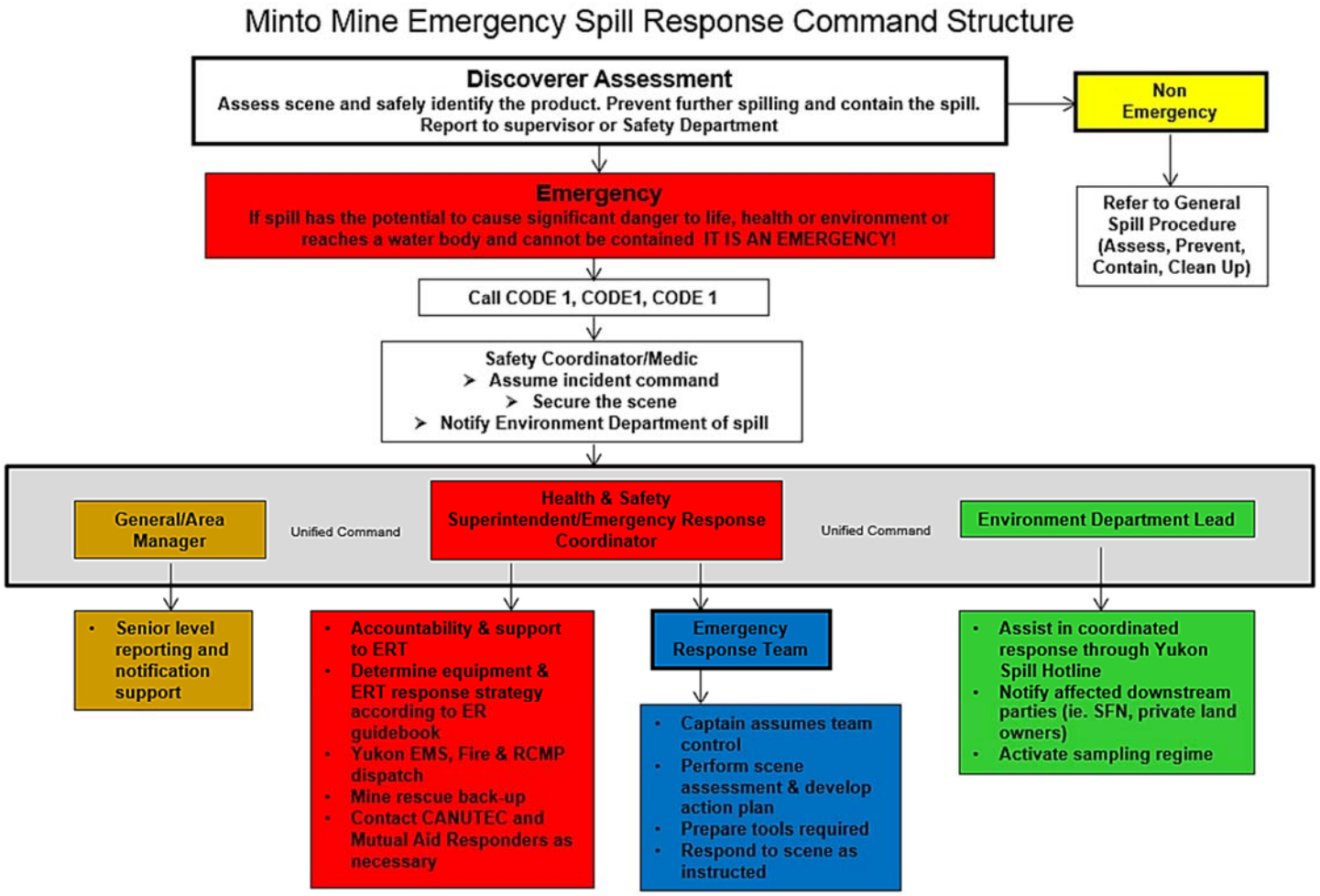


Figure 5-1: Minto Mine Emergency Spill Response Command Structure

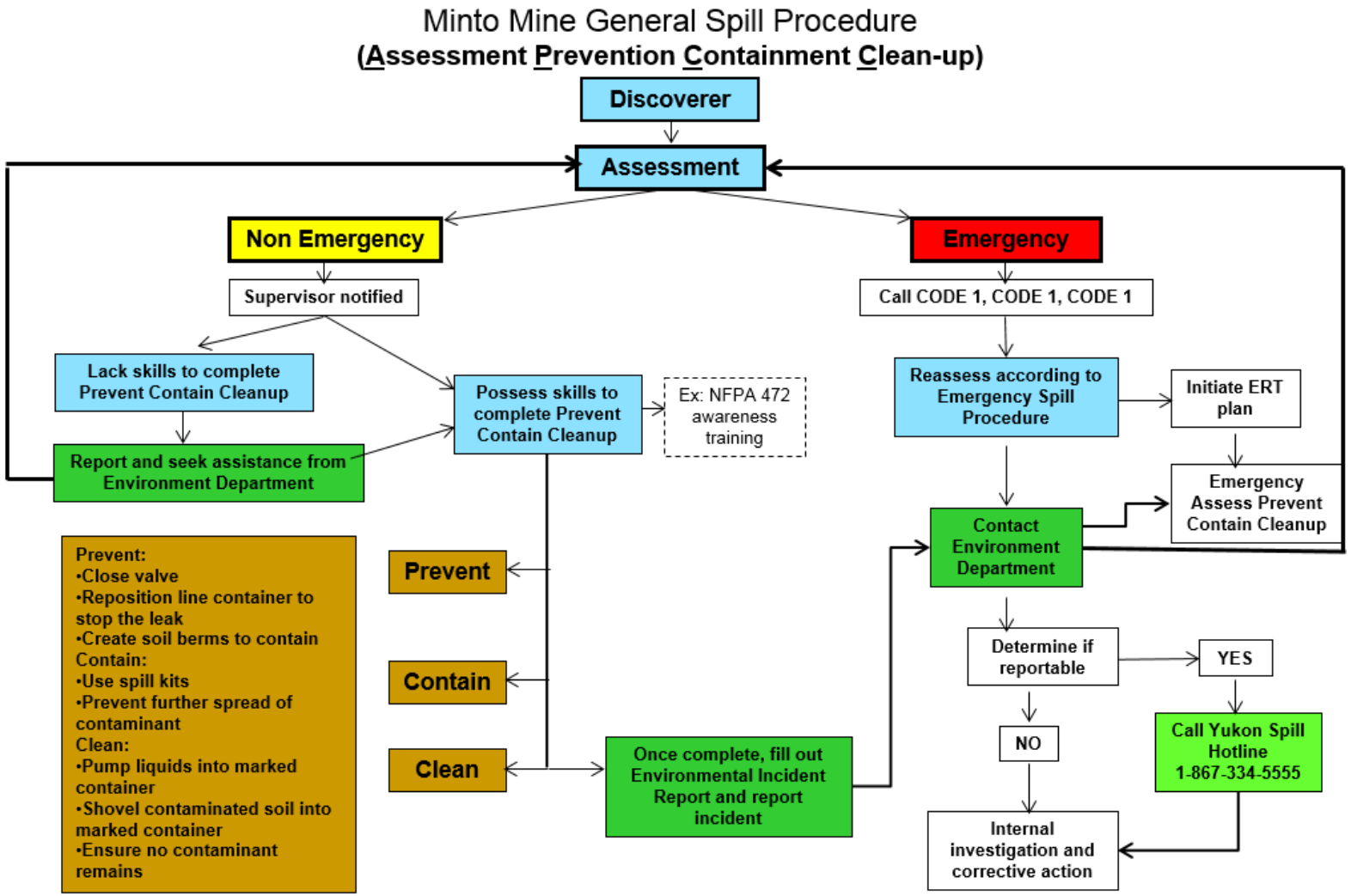


Figure 5-2: Minto Mine General Spill Procedure

5.3 Disposal and clean-up

Disposal and treatment methods of contaminated material are outlined below, and are further detailed in the *Minto Mine Spill Response Procedure: Non-emergency spills on soil* and the *Minto Mine Land Treatment Facility Standard Operating Procedure* documents which are both updated frequently by the Environmental Department. The Minto Mine Site has a Land Treatment Facility to accept incoming contaminated material from petroleum hydrocarbon and ethylene glycol spills. Depending on the state and substrate of the surface material, the clean-up and disposal location will differ. Brief practical descriptions of the clean-up procedures are summarized in Table 5-1.

Table 5-1: Disposal and Movement of Contaminated Material from Spill Sites

WASTE TYPE	DESCRIPTION	MOVEMENT OF MATERIAL FROM SPILLS
Oil or Glycol Contaminated Soil	Soil, Organics, and granular material (avoid coarse rock) contaminated as a result of a hydrocarbon or glycol spill	Contaminated soil will be transferred to the Land Treatment Facility. Contaminated soil will first be placed in the staging cell and labelled to be later categorized and treated. Contact Environment dept. before dropping off material in the Land Treatment Facility. Small spills will be stored in a composite pile in the staging area. Larger spills will be stored separately in staging while waiting for lab results.
Oil or Glycol Contaminated Rock	Blasted rock and coarse material and/or bedrock, contaminated as result of a hydrocarbon spill or glycol spill	If blasted rock contains ore and has been cleared by Mill operations ore will be processed through the mill. Non-ore containing rock will be placed in the main pit and in-situ bioremediation will be applied to the pile.
Oil or Glycol Contaminated Snow/ Ice/Water	Snow, Ice, and/or Water that has been contaminated as a result of a hydrocarbon spill or glycol spill	Contaminated snow/water will be transferred to the Land Treatment Facility. The contaminated product will be placed in a separate pile in the cell.

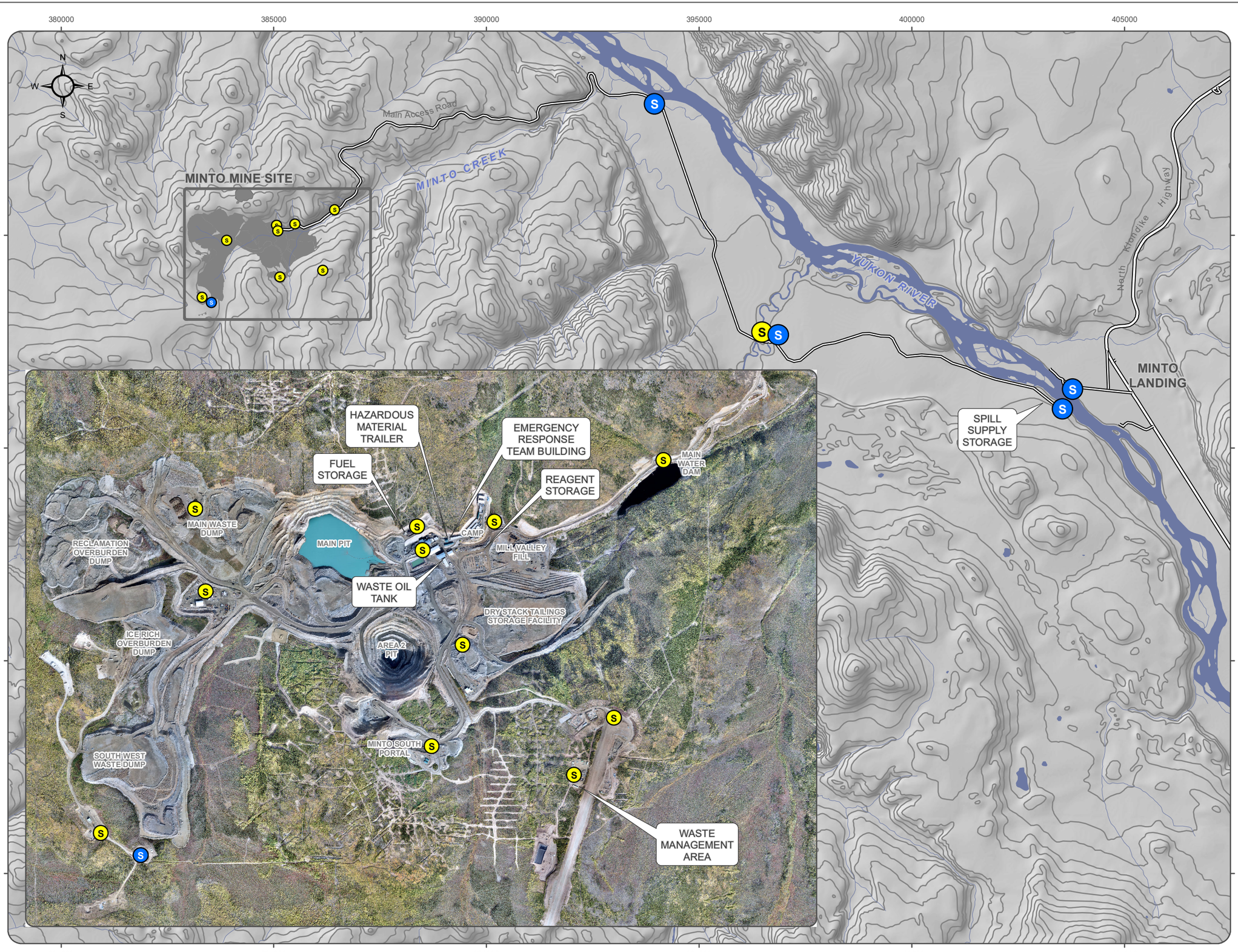
**** Any amount of material that has more than 30,000 ppm oil or glycol is considered special waste and must be disposed of off-site to a Special Waste Facility**

6 Spill Response Supplies

Spill kits (yellow and blue drums) are located throughout the Minto Mine Property at locations indicated in Figure 6-1. Additionally, there are blue drums located at the km 12 gravel pit, Minto Creek and at the east and west terminals of Minto Landing. The contents of the yellow and blue barrels are summarized in Table 6-1. Spill kits are also supplied for each heavy and light truck at the Minto Mine. Contractor supervisor trucks have spill kits permanently affixed to the truck body. All contract trucking agencies coming to the mine are required to carry spill kits within or affixed to the truck.

Table 6-1: Spill Kit Contents

Spill Kit Item	Yellow Barrel	Blue Barrel	Yellow Truck Bag
Tyvek splash suits	2	2	
Chemical master gloves	2	2	1
Garbage bags with ties	10	5	3
Oil only booms (5” x 10’)	4	2	1
Oil only mats (16” x 20”)	100	100	
Universal sorbent mat	20	20	10
Sorbent socks	20	20	
Sorbent pads (pillows)	10	10	
Absorb-all pellet bags	2	2	
Tarp	2	1	
Duct tape	1	1	
Utility knife	1	1	
Field notebook and pencil	1	1	
Rake	1		
Pick axe	1		
Aluminum scoop shovels	2	2	
Instruction binder	1	1	1



MINTO MINE

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FIGURE 6-1

MINTO AREA SPILL KIT LOCATIONS

MARCH 2016

S Yellow Spill Kit Locations

S Blue Spill Kit Locations

1:85,000
when printed on 11 by 17 inch paper

0 500 1,000 2,000 3,000 4,000
Meters

ALEXCO ENVIRONMENTAL GROUP

Datum: NAD 83 Projection: UTM Zone 8N

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Heavy machinery at the mine site is available for use in spill response and clean-up, as required under contract. Additionally, Minto has a 1991 Chevrolet Top Kick Fire truck with a 3200 litre/minute pump with 3800 litre supply tank and 3000 litre drop tank. This truck can support all spill response activities with SCBA, Class A and B foam capabilities, decontamination needs, as well as fire suppression/protection tools and equipment common to a truck of this nature. All ERT members are competent with the operation of this fire truck and related equipment in accordance with NFPA standards.

In 2013, Minto, on advice from Emergency Response Action Plan providers, procured a 20 foot Hazmat trailer and a helicopter-portable In-Viro-Drum vacuum unit (Figure 6-2) capable of being transported to locations not reachable with a vacuum truck. It has a liquid cooled three cylinder Kubota diesel engine and 250 CFM non-sparking blower, which makes it safe to vacuum flammable liquids and solids from water or dry land. It comes with a Double Port Vac Drum that allows for transfer of product from the drum to one of our 9500 litre bladders, while the drum continues to be filled. This system allows for quick, efficient and effective clean-up of hazardous products from hard to reach locations.

Figure 6-2: In-Viro Drum and vacuum unit and 24' Packman vessel for spill response operations

Further training and skill development will take place in Spill Response Exercise to be staged in 2016.

Minto Mine also acquired a 24 foot Packman man boat, which is described, further in the "Barge Emergency Contingency Plan" (Appendix D).

Spill contingency equipment and earth moving equipment located at Minto Mine are listed in Table 6-2. All contractor equipment is available for use in spills and clean-up operations.

Table 6-2: Spill contingency equipment located at Minto Mine

Quantity of Units	Equipment		Quantity of Units	Equipment
1	416 Backhoe		1	Assorted Wooden Plugs
1	3800 Litre Vacuum Truck		4	773DTruck
Various	Dozers, Excavator, Loaders		9	777 Truck
1	In-Viro Drum Portable Vacuum unit		1	Hazmat trailer 20’
2	9500 Liter bladders		1	Top Kick fire truck
1	24’ Packman Response Vessel		500’	Sorbent Boom (various sizes)
2	10000 Litre Fuel Trucks		1	Storage Sea Can at Landing
1	Roll Over Kit		3	Trash pumps
1	Pipe Plug kit			

7 Spill Prevention and Response Training

Education and training are critical to the success of any site-wide initiative, and the most important tool to ensuring the success of the SCP. Minto has a comprehensive training program in place that ensures all workers and supervisors are aware of their responsibilities and the practices that personnel and contractors must adhere to. Records are kept of the names of all employees or contractors that receive training, tracked though the either the Simply Safety software program or in the Environmental Department tracking sheets. Annual re-training is scheduled for all Minto and major contractor employees.

7.1 Existing Spill Prevention and Response Training

In 2012, Hazmat and Transportation of Dangerous Goods training was carried out to the National Fire Protection Association (NFPA) 472 Awareness Level for all departments and major contractors. Employees are trained to understand the potentially hazardous situations that spills can create with respect to the health and safety of workers and the environment. They are trained to understand responsibilities as employees to Assess, Prevent, Contain, and Clean-up as well as to report any spills. The SCP is made available to all employees and employees will be advised of revisions or changes to the SCP.

7.1.1 Orientation

Employees and visitors are required to sign off on the environmental policy as part of the employee, contractor and visitor orientations that include a summary of the response required when a spill has occurred. The orientation has a strong focus on ensuring proper reporting of spills, so that the appropriate response and clean-up can occur.

7.1.2 "Big 6" Training

As part of the orientation, all Minto employees and major contractors receive training that is a computer based PowerPoint presentation, followed by a written test. The "Big 6" package focuses on some of the most common safety training required for site, which includes WHMIS (Workplace Hazardous Material Information System), fall protection, confined spaces, lock out, hot work training and Environmental Awareness. The Environmental Awareness portion of the training is comprised of four modules, with one module dedicated to Spill Response covering reporting and basic steps for assessing, preventing, containing and cleaning-up spills.

7.1.3 Targeted Practical Training

Training sessions are put on by the Environmental Department, and efforts are made to tailor the training to the attending group (i.e. underground miners, surface contractors, site services, etc.). Smaller groups are identified and targeted for specialised spill prevention training that is more job-specific. These include,

but are not be limited to; maintenance personnel (mechanics), waste and water truck operators, fuelling personnel, and warehouse workers. Training in smaller groups focusses on spill prevention techniques.

7.1.4 Training for Fuel Handling Employees

Currently there are Safe Work Practices (SWP) designed for bulk fuelling at the fuel farm and for fueling of equipment in the field. These SWPs include descriptions of the stepwise procedure for safely performing the task and also includes steps to take for emergency shut-off. Both the procedure and the equipment are audited during Workplace Inspections and Planned Job Observations by immediate supervisors and the Environmental Department.

7.1.5 ERT Training

An Emergency Response Team (ERT) has been established to, among other duties, respond to emergency spills. The Emergency Response Team periodically receives training to the NFPA 472 Operations Level Responder and are required to thoroughly understand this document in order to respond to spills or incidents of a specific nature. This training is required as a foundation to develop site specific contingency planning for response tactics in areas specific to the Minto Mine associated activities that present a risk to the Yukon River and its tributaries.

7.1.6 Emergency Spill Response drills

Table top and/or field drills will help to prepare the ERT and other mine staff to respond to a major spill safely by identifying any deficiencies in the equipment or processes in place. On October 26th, 2014 a combined field and table top exercise took place with the following objectives:

- Help individuals become more knowledgeable with the ERP and SCP;
- Identify gaps in the plan;
- Improve communication between stakeholders and departments; and
- Learn new ways and better ways to execute the plan.

The announced exercise was initiated to test part of the Emergency Response Plan as it applies to Spills and the SCP. It focused on the crisis, interaction and escalation of problems within:

- Administrative;
- Operational;
- Managerial; and
- Facilities.

The scenario was as follows:

- A tanker truck with pup and trailer of diesel overturns on Oct 26th on icy roads at 3:20pm at south end of Big Creek. It is still dark and it is a Sunday and roads are icy and snowing lightly.

The exercise lasted approximately 2 hours and involved management staff onsite and offsite, the ERT, major contractors, The Yukon Spill Hotline, CANUTEC, Transnorth Helicopters, WCB, Parkland Fuel, and Quantum Murray. A post –incident debrief revealed both opportunities and successes at the field operations and management level.

7.1.7 KPIs and Scheduled Re-Training

Individuals who receive training are tracked, and training numbers are used as a key performance indicator (KPI) with annual targets. In addition, tracking is used to ensure annual retraining is delivered and statistics measured against key performance indicators.

8 Routine Maintenance and Monitoring

The Fuel Farm is inspected twice monthly for any leakages and, through the Human Machine Interface (HMI) readout, regular inventory is tracked daily to identify any incidental losses. An overfill protection system is installed on the two main diesel tanks using a visual indicator and a relay to the control room that will alarm on the HMI to alert maintenance personnel. The area also receives inspections by a qualified engineer and recommendations are recorded and deficiencies corrected as per the *CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products* (Canadian Council of Ministers of the Environment, 2003).

The tug and barge receive frequent inventory inspections for spill equipment and have had major overhauls in the last few years to ensure that the operation is continually improving. Maintenance activities are also carried out regularly and systems are inspected as per Transport Canada Regulations. The daily start-up procedure includes checking for leaks and ensuring all systems are performing to specifications. Annual maintenance activities have included the following: propeller repairs, controls work, system checks and repairs. Substantive refits have included: cylinder heads, exhaust manifold seals, motor mounts, transmission mounts and replacement of water pumps. A new transmission, propulsion seals and propellers have been installed and aligned. Other improvements have included welding reinforcements on the bow of the barge for landings, electrical upgrades, and the installation of an anchor with hawser.

The open pit mining equipment is outfitted with Wiggins Fast Fuel Systems on newer contractor open pit equipment that is a fail-safe system for overflow protection. All fuel trucks receive a daily walk-around

inspection to ensure emergency shutoffs and hatches and tank valves are operating properly and are free of leaks. These are recorded daily.

The Waste Management Area (WMA) is restricted to access between 10-3 pm every Sunday by an attendant familiar with the protocols for waste segregation, incineration, special waste handling and landfilling. The attendant will inspect all loads that come into the WMA to ensure that waste has been properly sorted before any material is off loaded. The Environmental Department is directly responsible for the administration, compliance and procedures associated with the management of waste. They are also responsible for providing support and manpower to prepare shipments for backhauling and to ensure the WMA is maintained in accordance with the Commercial Dump Permit (# 81-005). The Environmental Monitors are responsible for conducting weekly inspections to ensure that the WMA is in compliance.

9 References

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Appendix A: Spill Report and Environmental Incident Report Forms

Spill Report Form

Spill Name:	

General Report Information: (To be completed by the supervisor of responsible department or company)

EIR #:		Location of Incident:	
Date of Incident:		Time of Incident:	
Contaminant Type:		Volume of Spill (L):	
Equipment (Type):		Equipment (#):	
Company or Department:		Supervisor	
Hours since last PM:		Proximity to nearest waterbody:	
Previous indication of leak (i.e. Prior Drip) (Yes/No):		Estimated cost of spill:	

Failure of Mechanism: (Check one box below)

Blown Hose		Failed Hose Connection		Human Error	
Unforseen		Blown or Leaking Seal		Unknown	
Other					

Brief Description of Cause: (conditions at time of spill, what was happening at the time, specific direct cause of spill, etc.)

Clean Up Actions Undertaken:

Land Treatment Facility Information: (To be filled out by Environment Department)

Material Moved to LTF (Yes/No):		Material Sampled (Yes/No):		Quantity (m^3):	

Notes:	

Corrective Actions: (Must fill out for all reportable and preventable spills)

Action Item #	Responsible Department	Corrective Action	Due Date

Reporting Sequence:			
First Observer:	Name	Company	Date/Time
Reported To:	Name	Company	Date/Time
Reported To Environmental:	Name	Company	Date/Time
Reported To General Manager:	Name	Company	Date/Time

Regulatory Tracking: **(To be completed by Environment Department)**

24 Hour Spill Hotline (867) 667-7244:					
Reported By:		Reported To:		Date/Time:	
Selkirk First Nation Lands Director (867)-537-3331					
Reported By:		Reported To:		Date/Time:	
EMR - Client services and Inspections (867) 456-3882: (or site inspectors)					
Reported By:		Reported To:		Date/Time:	
Environment Canada in the event of a discharge to a waterway (867)-667-3400					
Reported By:		Reported To:		Date/Time:	
Detailed written report and MSDS to YWB, EMR, EC and SFN (Required within 10 days of spill):					
Submitted By:		Date of Submission:			

Photos:	

Appendix B: Reporting Threshold, Special Precautions, PPE Requirements, and Cleanup and Disposal Methods

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Acetone	2-Propanone	Anachemia	Liquid	3	B-2, D-2B	1, 3, 0	200 L	Solvent	Extremely Flammable	Goggles, gloves. SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant foam. Do not allow into waterway or drains. Contain spread of spill and soak up with absorb all, absorbant pads. Clear up using non-sparking tools. Place liquid and absorbents into tighly sealed container, label clearly and dispose of as hazardous waste offsite.
Acetylene	C_2H_2	AIRGAS INC	Pressurized gas dissolved	2.1	A, B-1, F	1, 4, 3	any if container larger than 100 L	Welding/cutting gas	Extremely flammable, pressurized gas dissolved in an extremely flammable liquid (Acetone)	Goggles, gloves. Respirator or SCBA if in confined space	Eliminate all sources of ignition, if possible without risk, shut off bottles. If bottle is ruptured after the gas has been expelled, the bottle will release the Acetone. At that point treat as an Acetone spill.
AERO 6493 Promoter	Alkyl hydroxamate	Cytec Canada	Liquid above 15C	9		2, 1, 2		Metal flotation in mill			Soak up with absorbent (do NOT use sawdust. Use PLASTIC tools). In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Place recovered spilt liquid in labelled drums for disposal as Special waste. Incinerate used absorbent pads.
AERO MX-5149	Modified Thionocarbamate 15-40%Xanthate esther 40-70%	Cytec Canada	Liquid	3				Metal flotation in mill	Flammable		
Aerodri 100 Dewatering Agent		Cytec Canada	Liquid	3	B-2, D-2A	2, 3, 0	200 L		Avoid contact with strong oxidizers or acids.	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste. Soak up with absorbent materials and dispose of offsite in clearly labeled containers
Alconox		Anachemia	solid	not regulated	D-2B	1, 0, 0	50 kg			Safety Glasses, Gloves	Clean up uncontaminated material for reuse. Incinerate waste.
ALIQUAT 336	Methytrioctyl-ammonium Chloride	Sigma-Aldrich Canada	Liquid	6	D-2B	2, 1, 1	5 kg		Toxic if swallowed. Very corrosive. Will burn skin and eyes. Avoid contact with strong oxidizers. Hygroscopic: avoid contact with moist air.	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
AlphaSolve II	>50% Sodium Hydroxide <50% Silicate	Alpha Resources	Solid						Avoid contact with strong oxidizers.	Safety Glasses, Impervious Gloves.	Highly caustic. Will produce heat and steam on contact with water. May boil and spatter. May generate hydrogen gas on contact with metals. Sweep or vaccum and, if not re-useable, send offsite as hazardous waste, in tightly closed, well labeled containers.
Aluminex 5	Aluminum Chloride Hydroxide Sulphate 15%	NALCO	Liquid					Coagulant		Safety Glasses, Gloves	Soak up with absorbent materials. These can be incinerated. Any remaining spilt liquid should be stored in closed container, labelled and disposed of off-site as Special Waste.
Aluminum Standard - AA		Anachemia	Liquid	8	E	4, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
AM28 Flotation Reagent	Mixture of Potassium Hydroxide Alkyl hydroxamate	Australian Metallurgical Services	Liquid	not regulated	D-2B	1, 0, 0				Safety Glasses, Gloves	Soak up with absorbent (do NOT use sawdust. Use PLASTIC tools). In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Place recovered spilt liquid in labelled drums for disposal as Special waste. Incinerate used absorbent pads.
Amco Clear Turbidity Standard		GFS Chemicals	Liquid	not regulated	not regulated					Safety Glasses, Gloves	Contain spill. Incinerate waste or place in landfill
Ammonia, Refrigerant	Ammonia, Anhydrous	GT&S, INC	Liquefied Gas	2.3, 8	does not appear classified??	3, 0, 0	any amount		Liquefied gas, will produce extreme cold when released. Death has occurred at 5000ppm exposure for 5 minutes. Evacuate release area upwind and avoid low areas.	Goggles, gloves. SCBA.	Toxic gas and will react with a large number of substances, many in a violent manner, Gas will dissipate quickly in air. Small spills can be dissolved in water at ratio of 1:10 Not very flamable. Do not attempt to neutralise.
Ammonium Nitrate prill	Ammonium Nitrate										

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Ammonium Nitrate Emulsion	Ammonium Nitrate Emulsion										
Arsenic Standard - AA		Anachemia	Liquid	8	D-2A, E	4, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Ascorbic Acid	L-Ascorbic Acid (Vitamin C)	Anachemia	solid	not regulated	not regulated	1, 1, 1			also known as Vitamin C	Safety Glasses, Gloves	Contain spill. Incinerate waste or place in landfill
Brake & Parts Kleen	CO_2 aerosol of Heptane and Isopropyl alcohol	Kleen-Flo Tumbler Industries	aerosol	Consumer Commodity	A, B5, D2-B	1, 3, 0			Highly flammable	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO2, Alcohol-resistant Foam or water spray. Incinerate waste.
Buffer Solution pH 10		Anachemia	Liquid	not regulated	D-2A	1, 0, 0			Dilute Sodium Hydroxide	Safety Glasses, Gloves	Contain spill. Absorb with sand, vermiculite or sorbal. Incinerate waste.
Buffer Solution pH 4		Anachemia	Liquid	not regulated	not regulated	1, 0, 0				Safety Glasses, Gloves	Contain spill. Absorb with sand, vermiculite or sorbal. Incinerate waste.
Buffer Solution pH 7		Anachemia	Liquid	not regulated	not regulated	1, 0, 0				Safety Glasses, Gloves	Contain spill. Absorb with sand, vermiculite or sorbal. Incinerate waste.
Cadmium Standard - AA		Anachemia	Liquid	8	D-2A, E	4, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use flooding quantities of water. Contributes to combustion of other materials. Neutralize with soda ash or lime. Contain spill, keep from entering ground water. Neutralized spill can be pumped to the pit or tailings system.
Calcium Chloride		J.T. Baker	solid	not regulated		1, 0, 2, 3			Road Salt, will corrode metals	Safety Glasses, Gloves	Sweep up spilled material and it my be deposed of in dilute form to the pit or tailings system. In case of fire use appropriate measures for surrounding fire.
Carbon Dioxide in Argon		Mittler Supply Inc.	Pressurized gas	2.2	A, D-2B	1, 0, 0	any if container larger then 100 L		Non-Flammable but will replace the O_2 in confined space	Goggles, gloves. SCBA if in confined space	close valve if possible without risk, or allow the vent. In case of fire use any media suitable for surrounding fire. Use water spray to cool fire exposed containers.
Caustic Soda (solid)	Sodium Hydroxide	Fisher Scientific	solid	8	E	3, 0, 1	5 kg		very corrosive solid	Safety Glasses, Gloves	Sweep up spilled material for reuse. In case of fire use appropriate measures for the surrounding fire. Minimise direct water spray on material. This material melts and 318^{o}C and when molten reacts violently with water. Neutralize the residue with a dilute solution of acetic acid. Neutralized solution can be disposed of in the pit or tailings system.
Caustic Soda (solution)		DOW	Liquid	8	E	3, 0, 1	5 L		very corrosive liquid	Safety Glasses, Gloves	Contain spill and pump to plastic barrel for re-use. In case of fire use appropriate measures for the surrounding fire. Neutralize the residue with a dilute solution of acetic acid. Neutralized solution can be disposed of in the pit or tailings system.
Caustic Potash	Potassium Hydroxide	Brenntag Canada	Solid		D-1B, E						
Chevron 2-Cycle Oil		Chevron Lubricants Canada	Liquid	not regulated	B-3	1, 2, 0			flammable oil for 2-storke fuel	Safety Glasses, Gloves	contain spill and use absorbent and incinerate waste
Chevron ATF+3 Automatic Transmission Fluid		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Automatic Transmission Fluid MD-3		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Clarity Synthetic Machine Oil		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Compressor Oil 260		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Coupling Grease	Grease	Chevron Lubricants Canada	Semi-Solid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Chevron Delo 300 Motor Oil		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Delo Grease EP	Grease	Chevron Lubricants Canada	Semi-Solid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
Chevron Diesel Engine Oil Delo 6170 CFO		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Drive Train Fluid HD		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron ECO Hydraulic Oil AW		Chevron Lubricants Canada	Liquid	not regulated	not regulated	0, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Gas Engine Oil 930 and 940		Chevron Lubricants Canada	Liquid	not regulated	not regulated	0, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Mid-grade unleaded gasoline		Chevron Products	Liquid	3	B-2, D-2A, D-2B	2, 3, 0	200 L		Extremely Flammable, Vapours are harmful and they may be explosive. Non-sparking tools required. Vapours will collect in low areas and travel along the ground to an ignition source.	Goggles, gloves. Respirator or SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Dike the spill and pump to containers for recycling. Use absorbent. In case of fire, use dry chemical, CO2, Alcohol-resistant Foam or water spray. Allow waste absorbent to evaporate and then Incinerate waste.
Chevron NWS Manual Transmission Fluid 6044GR		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron RPM Universal Gear Lubricant		Chevron Lubricants Canada	Liquid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Chevron Supreme Antifreeze/Coolant	Ethylene Glycol	Chevron Lubricants Canada	Liquid	not regulated under 5000 lb.	D-2A	1, 1, 0			may be fatal by ingestion	Safety Glasses, Gloves	contain spill. Can be pumped, filtered and reused. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
Chevron Ulti-Plex® Grease EP		Chevron Lubricants Canada	Semi-Solid	not regulated	not regulated	1, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
Chloramine T	Chloramine-T trihydrate	Fisher	solid	8	D-2A, E	3, 1, 1			Container may explode under fire conditions. Will release toxic fumes with fire or when mixed with strong oxidizers or acids	Goggles, gloves. SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. In case of fire. Material by itself is non-flammable, may decompose violently >100^{o}C, use dry chemical, CO_2 foam or water spray. DISPOSAL mix with flammable solvent and incinerate.
Chromium Standard - AA		Anachemia	Liquid	8	D-2A, E	3, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Citric Acid	Citric Acid, Monohydrate	Anachemia	solid	not regulated	E	2, 1, 0			Will cause severe eye damage. Avoid oxidizers, acids, bases and bleach.	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. In case of fire, use flooding quantities of water. Will decompose at high temperatures and emit acrid smoke and fumes.
Copper Standard - AA		Anachemia	Liquid	8	E	4, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Crystal 78	Sodium Silicate	Quadra Chemicals	Liquid	not regulated	D-2B				Caustic solution. Avoid mixing with strong acids. Contact with metals such as aluminum, tin, lead and zinc generates hydrogen gas.	Goggles, gloves. Respirator	solution can be pumped into plastic drum and possibly recycled in mill circuit, or shipped off site. In case of fire use appropriate measures for surrounding fire.
Cyquest DP-6	Sodium polyacrylate in water	Cytec Canada	Liquid	not regulated				Mill reagent	Slippery	Goggles, Impervious gloves	Soak up with absorbent materials. These can be incinerated. Any remaining spilt liquid should be stored in closed container, labelled and disposed of off-site as Special Waste.

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Delo Diesel Fuel System Cleaner		Chevron Lubricants Canada	Liquid	3	B-3, D-2A, D-2B		200 L			Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
Diesel Fuel No. 2		Chevron Products Company	Liquid	3	B-3, D-2A, D-2B	0, 2, 0	200 L			Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
DIISOBUTYL KETONE	2,6-Dimethyl-4-heptanone	J.T. Baker	Liquid	3	B-2, D-2A	2, 2, 0	200 L		Avoid contact with strong oxidizers or acids.	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
Drierite, indicating		Anachemia	solid	not regulated	D-2A	1, 0, 1				Safety Glasses, Gloves	Eliminate all sources of ignition. In case of fire use measures dictated by surrounding fire. Will decompose at 1450^{o}C liberating Cl_2 and SO_2. This product can be dried and reused, recycled.
FLEET CHARGE 50/50 Antifreeze	Ethylene Glycol	OLD WORLD INDUSTRIES	Liquid	not regulated under 5000 lb.	D-2A	1, 1, 0			may be fatal by ingestion	Safety Glasses, Gloves	contain spill. Can be pumped, filtered and reused. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
Fleet Charge PG Antifreeze/Coolant	Propylene Glycol	OLD WORLD INDUSTRIES	Liquid	not regulated	not regulated	0, 1, 0				Safety Glasses, Gloves	contain spill. Can be pumped, filtered and reused. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
Flomin C 3505 Collector	Potassium amyl xanthate (PAX)	Flomin Inc.	solid	4	not regulated	2, 2, 1	25 kg		Product is spontaneously combustible. Avoid contact with heat, moist air, and water.	Safety Glasses, Gloves	Sweep up spilled material and place in closed container for reuse. Solutions of product my be deposed of on the pit or tailings system. In case of fire use appropriate measures for surrounding fire.
Flomin F 500 Frother	4-METHYL-2-PENTANOL (Methyl isobutyl carbinol - MIBC)	Flomin Inc.	Liquid	3	B-2, D-2B	2, 2, 0	200 L		Acids, acid chlorides, alkalis, oxidizing agents. Will attack some forms of plastics, rubber and coatings	Goggles, gloves. Respirator or SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
Floran Catalyst	Proprietary Inorganic Peroxide Blend	Floran Technologies	Liquid	5	C, D-2B	2, 0, 1, OX	50 L		Non-Flammable but will aid combustion of other materials	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use flooding quantities of water. Contributes to combustion of other materials. Contain spill, keep from entering ground water. Absorbed pill can be disposed in the pit or tailings system.
Frost Killer (Tannergas)	Methyl alcohol	TANNER SYSTEMS, INC.	Liquid	3, 6.1	B-2, D-1B, D-2A,D-2B	1, 3, 0	200 L		Extremely Flammable, Vapours are harmful and solution is poisonous	Goggles, gloves. Respirator or SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
FUEL INJECTOR CLEANER		Radiator Specialty Co	Liquid	3	B-3, D-2A, D-2B		200 L			Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
Gasoline, Unleaded		Petro-Canada	Liquid	3	B-2, D-2A, D-2B	2, 3, 0	200 L		Extremely Flammable, Vapours are harmful and they may be explosive. Non-sparking tools required. Vapours will collect in low areas and travel along the ground to an ignition source.	Goggles, gloves. Respirator or SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Dike the spill and pump to containers for recycling. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Allow waste absorbent to evaporate and then Incinerate waste.
Havoline DEX-COOL Extended Life 50/50 Anti-Freeze/Coolant	Ethylene Glycol	Chevron Lubricants Canada	Liquid	not regulated	D-1b, D-2A	2, 0, 0			may be fatal by ingestion	Safety Glasses, Gloves	contain spill. Can be pumped, filtered and reused. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
HAVOLINE DEX-COOL extended life anti-freeze/coolant-B	Ethylene Glycol	Chevron Lubricants Canada	Liquid	not regulated	D-1b, D-2A	2, 1, 0			may be fatal by ingestion	Safety Glasses, Gloves	contain spill. Can be pumped, filtered and reused. Small amounts can use absorbent and incinerate waste. Larger absorbent material in plastic drums and shipped off site for disposal.
Havoline Power Steering Fluid		Chevron Products	Liquid	not regulated	not regulated	0, 1, 0				Safety Glasses, Gloves	contain spill. Small amounts can use absorbent and incinerate waste. Larger material pumped into plastic drums and used in a waste oil heating system.
Hot 4-in-1 Heating Oil Treatment	Proprietary Blend	FPPF Chemical Company, Inc.	Liquid	3	B-3, D-1A, D-2A, D-2B	3, 2, 0	200 L		Fuel Additive, fumes will collect in low area's.	Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO_2, Alcohol-resistant Foam or water spray. Incinerate waste.
Hydrated Lime	$Ca(OH)_2$	Chemical Lime Company of Canada Inc.	Solid		D-2A, E				Will cause severe caustic burns. Avoid strong acids, and aluminum	Safety Glasses, Gloves	sweep up uncontaminated material for reuse. Neutralize with dilute acid and may be disposed of in pit or tailings system.

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Hydraulic Oil SAE 10W		EXXON MOBIL	Liquid	not regulated	not regulated	0, 1, 0				Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO2, Alcohol-resistant Foam or water spray. Incinerate waste.
Hydrochloric Acid		Anachemia	Liquid	8	D-1A, E	3, 0, 1	5 L		Concentrated acid, Extremely corrosive. Ventilate or stay upwind	Goggles, gloves. Respirator or SCBA if in confined space	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Hydrofluoric acid, 47 - 51%		Fisher	Liquid	8, 6.1	D-1A, D-2A, E	4, 0, 1	5 L		**Extremely corrosive and Toxic acid. Causes very severe acid burns with symptoms being delayed. Skin contact of <10% can be fatal from cardio-pulmonary problems. IMMEDIATE medical attention is required for all exposures.**	**Goggles, gloves. Respirator or SCBA if in confined space (Actually SCBA should be used anywhere unless spill is in a fumehood)**	Neutralize with soda ash. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to a plastic barrel and then disposed of in the pit or tailings system.
IPAC 6832		Quadra Chemicals	Liquid	not regulated	not regulated				water soluble	Safety Glasses, Gloves	No special clean up procedures,
Iron Standard - AA		Anachemia	Liquid	8	E	1, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Javex Liquid Bleach		Colgate Palmolive	Liquid								
KOPR-KOTE	Graphite, Cu & MoS_2 mixture	Jet-Lube of Canada	paste	not regulated	not regulated					Safety Glasses, Gloves	Wipe up spill with rages and incinerate waste.
Lead Standard - AA		Anachemia	Liquid	8	D-2A, E	4, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Lime		Chemical Lime Company of Canada Inc.	powder	not regulated	E	3, 0, 1			Will cause severe caustic burns. Avoid strong acids, and aluminum	Safety Glasses, Gloves	sweep up uncontaminated material for reuse. Neutralize with dilute acid and may be disposed of in pit or tailings system.
Liquid Nitrogen	Nitrogen	Praxair Canada Inc.	Liquefied Gas	2.2 Non-flammable gas	A	3, 0, 2	any if container larger then 100 L		Use air supplied respirator when working in confined space, Loose-fitting cryogenic gloves, Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuff less trousers should be worn outside of shoes	Extremely cold liquefied gas, Will cause severe frost bite Use SCBA when working in confined space,	Evacuate all personnel from danger area. Allow spilled liquid to evaporate. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing re-entry
LIQUID WRENCH SUPER LUBRICANT (AEROSOL)	Proprietary Blend	Radiator Specialty Co	aerosol	2.1	A, B5, D-1A, D2-B		any if container larger then 100 L		containers may rupture if exposed to high temperatures.	Safety Glasses, Gloves	Allow container to completely discharge while eliminating ignitions sources. Wipe up spill with rages and incinerate waste.
Loctite Belt Dressing	Proprietary Blend t	Henkel Canada, Inc.	aerosol	2.2	A, D-2A, D-2B		any if container larger then 100 L		containers may rupture if exposed to high temperatures.	Safety Glasses, Gloves	Allow container to completely discharge Wipe up spill with rags and incinerate waste.
LPS 2 Spray Lubricant	Proprietary Blend	LPS Laboratories	aerosol	2.2	A, D-2A, D-2B		any if container larger then 100 L		containers may rupture if exposed to high temperatures.	Safety Glasses, Gloves	Allow container to completely discharge Wipe up spill with rages and incinerate waste.
Magnesium Nitrate Matrix Modifier		Spex CertiPrep	Liquid	8	D-2A, E	3, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
MAXGOLD™ 900 Promoter	Proprietary Blend	Cytec Canada	Liquid	3	B-3, D-2A	3, 2, 0	200 L		slightly yellow liquid that has a slight sulphur smell. In confined space use respirator with organic vapour cartridges	Goggles, gloves. Respirator or SCBA if in confined space	eliminate ignition sources, use absorbent on small spills, for large spill pump to plastic drum for shipment off site. In case of fire use dry chemical extinguisher, CO_2 or foam. Water likely not effective.
MERCSORB Mercury Amalgamation Powder		NPS Corporation	solid	4		0, 1, 1	25 kg		Dry zinc dust will not ignite spontaneously, but once ignited, it may burn readily in air	Safety Glasses, Gloves	Sweep up spilled material and place in closed container for reuse. In case of fire use appropriate measures for surrounding fire.

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Mercury Indicator Powder	Proprietary Blend	NPS Corporation	solid	not regulated		2, 1, 0			Odorless, yellowish-tan to gray powder. Dust may form a flammable or explosive mixture in air. When heated to decomposition, toxic fumes of sulfur oxides are produced	Safety Glasses, Gloves	Sweep up spilled material and place in closed container for reuse. In case of fire use appropriate measures for surrounding fire. This product in itself is considered to be non-hazardous.
Mercury Standard - AA		Anachemia	Liquid	8	D-2A, E	3, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Mercury Vapor Suppressor	Proprietary Blend	NPS Corporation	solid	not regulated		2, 1, 0			Odorless, black, irregular, dry granular solid. Wet activated carbon removes oxygen from the air causing a severe hazard to workers in confined space.	Safety Glasses, Gloves	Sweep up spilled material and place in closed container for reuse. Contaminated waste can be incinerated. In case of fire use appropriate measures for surrounding fire. This product in itself is considered to be non-hazardous.
Methanol		Anachemia	Liquid	3, 6.1	B-2, D-1B, D-2A,D-2B	1, 3, 0	200 L		Extremely Flammable, Vapours are harmful and solution is poisonous	Goggles, gloves. Respirator or SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Use absorbent. In case of fire, use dry chemical, CO2, Alcohol-resistant Foam or water spray. Incinerate waste.
MIBK	4-Methyl-2-pentanone	Fisher Scientific	Liquid	3	B-2	2, 3, 0	200 L		clear liquid that has a slightly sweet smell. In confined space use respirator with organic vapour cartridges	Safety Glasses, Gloves	Clear liquid that is immiscible with water. Use absorbent for small spills and incinerate waste. Large spills, eliminate ignitions sources and pump to plastic drum for shipment off site.
Molybdenum Standard - AA		Anachemia	Liquid	not regulated	not regulated	0, 0, 0				Safety Glasses, Gloves	Contain spill. Incinerate waste or place in landfill
Mucasol universal detergent		Sigma-Aldrich Canada	Liquid	not regulated	D-2B	2, 0, 0				Safety Glasses, Gloves	
Nickel Standard - AA		Anachemia	Liquid	8	D-2A, E	1, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Nitric Acid		Anachemia	Liquid	8	C, D-1A, E	4, 0, 0, OX	5 L		Concentrated acid, Extremely corrosive. Ventilate or stay upwind. **Strong Oxidizer**	Goggles, gloves. Respirator or SCBA if in confined space	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Nitric Acid 40%		Quadra Chemicals	Liquid	8	C, D-1A, E	4, 0, 0, OX	5 L		Concentrated acid, Extremely corrosive. Ventilate or stay upwind. **Strong Oxidizer**	Goggles, gloves. Respirator or SCBA if in confined space	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Oxygen		BOC Canada Limited (Linde)	Pressurized gas	2.2	A, C	0, 3, 0, OX	any if container larger then 100 L		Strong Oxidizer will Contribute to combustion of other materials.	Safety Glasses, Gloves	close valve if possible without risk, or allow the vent. In case of fire use any media suitable for surrounding fire. Use water spray to cool fire exposed containers.
Oxygen Refrigerant		Air Liquide Canada	Liquefied Gas	2.2	A, C	0, 3, 0, OX	any if container larger then 100 L		Strong Oxidizer will Contribute to combustion of other materials. Liquefied gas, will produce extreme cold when released.	Safety Glasses, Gloves	close valve if possible without risk, or allow the vent. In case of fire use any media suitable for surrounding fire. Use water spray to cool fire exposed containers.
Palladium Nitrate Matrix Modifier		Spex CertiPrep	Liquid	8	D-2A, E	3, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Phosphoric acid		Sigma-Aldrich Canada	Liquid	8	D-1A, D-2B, E		5 L		Concentrated acid, Extremely corrosive. Ventilate or stay upwind.	Goggles, gloves. Respirator	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.
Polyclear 2528	Polyclear Floc	QUADRA CHEMICALS	solid	not regulated	not regulated				concentrated solution is extremely slippery, use caution	Safety Glasses, Gloves	Sweep up spilled material and it my be deposed of in dilute form to the pit or tailings system. In case of fire use appropriate measures for surrounding fire.
Potassium hydroxide	KOH	Science lab	Solid	8	D-1B	3, 0, 1	5 kg		very corrosive solid	Safety Glasses, Gloves	Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.
Potassium Iodide		Anachemia	solid	not regulated	D-2A	1, 1, 1			light and water exposure will cause breakdown	Safety Glasses, Gloves	Eliminate all sources of ignition. In case of fire use measures dictated by surrounding fire. Will decompose at high temperatures and emit toxic I_2 fumes. Use appropriate SCBA.
Potassium permanganate		CAIROX	Solid	5.1	C, E	1, 0, 0, OX	50 kg		corrosive solid. Oxidizing solid	Safety Glasses, Gloves	Sweep up solid spill for possible reuse. If necessary reduce material in aqueous solution with sodium thiosulfate (hypo), In case of fire use flooding quantities of water, material will contribute to combustion.
Propane		Superior Propane	Liquefied Gas	2.1	A, B-1		any if container larger then 100 L		Extremely flammable. Liquefied gas, will produce extreme cold when released.	Goggles, gloves. SCBA if in confined space	close valve if possible without risk, or allow the vent. In case of fire use any media suitable for surrounding fire. Use water spray to cool fire exposed containers.
Selenium Standard - AA		Anachemia	Liquid	8	E	1, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.

Common Name (Synonyms)	Chemical Name	Manufacture / Supplier	Phase	TDG Class	WHMIS Class	NFPA Rating	Reporting Threshold	Use	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Sodium Borohydride		Anachemia	solid	4.3	B-6, B-4, D-1B, E	3, 1, 2	25 kg		Flammable solid. Reacts violently with water and acids to produce flammable H_2 gas. Strong reducing agent.	Safety Glasses, Gloves	Eliminate ignition sources, sweep up dry material. In case of fire use only dry chemical extinguisher, DO NOT USE WATER OR CO_2
Sodium Hydroxide Solutions (various strengths)	NaOH (The Anachemia MSDS is current, treat all solutions in the same manner regardless of strength.)	Various Suppliers	Liquid	8	E	3, 0, 1	5 L		Caustic solution. Avoid mixing with strong acids. Contact with metals such as aluminum, tin, lead and zinc generates hydrogen gas.	Safety Glasses, Gloves	Neutralize the residue with a dilute solution of acetic acid. Neutralized solution can be disposed of in the pit or tailings system.
Sodium Nitrite		Anachemia	solid	5.1, 6.1	C, D-1B, D-2A	3, 0, 2, OX	50 kg		**Strong Oxidizer** will Contribute to combustion of other materials.	Safety Glasses, Gloves	Eliminate all sources of ignition. In case of fire, use flooding quantities of water. Will decompose at high temperatures and emit acrid smoke. Strong oxidizer, may form compound that are sensitive to shock, friction. Sweep up solid spill for disposal. Dispose of contaminated solution in the pit or tailings system.
sodium sulphide Flakes	Sodium sulphide Hydrated	Quadra Chemicals	solid	8	D-1B, E		5 kg		caustic, very corrosive solid	Goggles, gloves. And a respirator, avoid creating dust and avoid any acids. Contact with acids liberate toxic H_2S	Sweep up spilled material an place in plastic sealed container for shipment off site.
TMT 15%		Quadra Chemicals	Liquid	not regulated	D-2B				water soluble	Safety Glasses, Gloves	No special clean up procedures,
Urea		Anachemia	solid	not regulated	not regulated	1, 0, 0			Avoid contact with strong oxidizers. In fire conditions it can produce oxides of nitrogen. Also ammonia, and HCN	Safety Glasses, Gloves	Sweep up spilled material and it my be deposed of in dilute form to the pit or tailings system. In case of fire use appropriate measures for surrounding fire.
VARSOL 3139 SOLVENT	Petroleum Hydrocarbons	Imperial Oil Chemicals	Liquid	3	B-3, D-2B	1, 2, 0	200 L		Flammable solvent	Safety Glasses, Gloves	Clean up uncontaminated material for reuse. Incinerate waste.
VoltEsso 35		Imperial Oil Chemicals	Liquid	not regulated	not regulated	1, 1, 0			electrical insulating oil	Safety Glasses, Gloves	Clean up uncontaminated material for reuse. Incinerate waste.
Zinc Standard - AA		Anachemia	Liquid	8	E	1, 0, 0	5 L		Dilute Nitric Acid <5%	Safety Glasses, Gloves	Neutralize with soda ash or lime. Contain spill, **do not** allow un-neutralized acid to enter water systems. Neutralized spill can be pumped to the pit or tailings system.

Appendix C: ERT Response to HazMat Spills

ERT Response to Hazmat Spill

Spill Contact: Yukon Territory Spill Line 1-867-667-7244

Canutec: 1-613-996-6666 Cell: *666

1. **Site Management and control**

   Initial responders will :

   - Approach the scene from uphill and upwind.
   - Establish command uphill and upwind of spill at an appropriate distance.
   - Establish 2 isolation perimeters: one that separates the hot zone from the warm zone and another that separates the warm zone from the cold zone. Emergency Response Guide or Canutec shall be referenced for perimeter size.
   - Evacuate affected area or 'protect in place', as req'd. Emergency Response Guide or Canutec shall be referenced for evacuation zone.
   - Identify contaminated persons and ensure they remain isolated until they can be decontaminated.
   - Establish a staging area.
   - Designate an information officer.
   - Possible unification of command.

2. **Identification of the problem**

   I/C will identify the:

   - Spilled product, as per witness testimony, placards, labels, bill of lading, type of container, etc. If product cannot be identified from command position, then a recon team will be tasked with identification.
   - Size of container.
   - Size and nature of release.
   - Conditions and # of victims at accident site.
   - Topography of area, and exposures threatened.

3. **Hazard & Risk Evaluation**

   A risk evaluation will be conducted, taking into consideration:

   - Product hazards
   - Access & Egress

- Size of Spill
- Condition of container
- Proximity of exposures
- Personnel available to perform operations, and their level of training/experience
- Information from MSDS, ERG, Canutec, etc., minimum 3 sources

4. Personal Protective Equipment

PPE will be selected for Ops, RIT, and Decon teams, considering:

- Flammability/explosiveness of product
- Toxicity of product
- Route of entry of product
- Permeation rate of PPE
- Breakthrough time of PPE
- Availability of PPE
- Visibility and workability while wearing PPE

5. Information management and resource coordination

The information officer will begin to gather information about the product once it has been identified. The information officer can use the MSDS, ERG, Canutec, or many other resources to gather information, such as:

- Properties of the product
- Hazards of the product
- Expected travel of product released
- Populations/ environment in jeopardy
- PPE req'd by responders
- Decontamination requirements

Command will prioritize the information and ensure that the correct people receive the correct information.

6. Implementing Response Objectives

Command will develop an overall strategy, which may be offensive (entry of hot zone to gain quick control), defensive (contain from the cold zone to prevent spread), or passive (isolate only, and wait for incident to run its course), considering:

- Life safety
- Incident stabilization
- Environmental protection
- Property salvage

Command will delegate tactics to operations teams, such as:

- Reconnaissance for unknown product
- Evacuation for toxic gas leak, fire, or explosive hazard
- Fire control for flammable gas, flammable liquid, or oxidizer
- Search and rescue
- Leak control
- Neutralization of corrosives
- Deployment of boom, drain covers, etc.
- Building of dams, dykes, etc.

To follow: specific tactic options will be discussed in more detail, pertaining to hazardous materials that are commonly found in large quantities at the Minto Mine.

Entry teams will enter with a clear objective, but must assess for the next team's objective. For example, the 1st entry team may be tasked with rescuing the driver of a fuel truck that rolled down a bank and is spilling fuel. Although their objective is to rescue, while they are on scene they should observe where the leak is, consider what could be used to stop it, where the fuel is going, and what is needed to contain it. They should bring a camera, so that pictures can be brought back to command. This will give command crucial information and better prepare the next team for their task.

7. Decontamination

Considerations for decontamination should begin at the outset of the incident. A decontamination construct will exist in the warm zone prior to any team entering the hot zone. It will typically consist of a large berm fashioned out of a large chemical resistant tarp, wrapped over a charged 2 ½" hose-line. There will be a charged 1 ½" hose-line nearby for emergency decontamination. Within the berm, there will be a series of smaller berms, in which, personnel will stand while being decontaminated. Personnel conducting the decontamination will be wearing the appropriate PPE (typically 1 class below ops) and will use detergent and water to gently scrub and rinse ops personnel and rescuees as they exit the hot zone. Tools and anything else exiting the hot zone will be decontaminated as well.

Once decontamination is complete, all product collected by the berms, will be handled as per the MSDS.

8. Termination

Once emergency operations are complete, the scene will be handed over to clean-up & recovery operations. Command will ensure that the hand-off includes all pertinent information about the spilled product:

- Properties
- Hazards
- Location
- Safe-handling
- Exposure signs and symptoms
- Req'd PPE
- Disposal procedures

Command will conduct an on-site debrief. As well, a more formal debrief will be conducted, with all parties involved, at a later time. The incident will be documented, including exposure records for all personnel that entered the warm and/or hot zones.

Nitric Acid 40%

Note: when it comes to corrosives such as Nitric Acid, the solution to pollution is NOT dilution. For a spill of 1 45 gal drum, it would take over 450,000 gal of pure water to make the solution habitable for fish. It would take over 45,000,000 gal of pure water to neutralize it.

Site management and control

- Set up perimeter with at least 50m radius.
- Command, staging, & decon shall be positioned uphill.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept., product Carrier (if spill occurs during delivery to mine).

Identification

- UN# 2031
- Liquid state
- Colourless to yellow
- Transported in 45 gallon drums
- # of 45 gal drums possibly damaged will help estimate size of spill.
- What is downhill from spill? Could acid reach a stream?

Hazard & risk evaluation

- Strong acid, very corrosive.
- Severely hazardous to eyes and skin
- Ingestion could cause death
- Inhalation hazard, although low vapour pressure 1.3kPa (wants to be a liquid).
- Could be devastating to stream life.
- Strong oxidizer, could have explosive reaction with organic or combustible materials

PPE

- If there is a fire situation, PPE will consist of full turn-out gear and SCBA.
  Otherwise
- Know and heed permeability rate and breakthrough times of all PPE.
- Acid resistant, class B suit with hood.
- Full-face respirator with appropriate chemical cartridges.
- Chemical resistant gloves & boots
- Chemical resistant tape used to seal between boots/suit, gloves/suit, and mask/hood.

Information management and resource coordination

- See MSDS for product information.
- Know the product's route of travel.
- Was anyone exposed?
- Will non-human life be exposed?
- Standard decon set-up will be constructed.
- Have tools cribbed for entry teams.
- Ensure there is enough PPE at the site to complete the task.
- Ensure there is enough neutralizing agent at the site to complete the task. ***See below for chart***
- Ensure there is drinking water for responders.
- Have hazmat trailer, ambulance & fire truck in staging area, as req'd
- Have Site Services staged for digging, damming, product extraction, as req'd.

Implementing Response Objectives

- Rescue injured/exposed personnel.
- Prevent from entering streams
- Prevent from contacting combustibles and organics.
- If possible, stop the leak.
- If possible, contain by covering drains/culverts, damming, diverting to a berm, etc.
- Use over-pack to contain leaking drums that still contain product.
- Neutralize spilled product with weak caustic – primary neutralizing agent is Ansul Spill X-A, alternatively hydrated lime or baking soda (if available). Be cautious of chemical reaction.
- Use Litmus paper to test for pH when neutralizing with lime or baking soda.
- Site Services Vac-truck is an option for cleaning up product before or after neutralized, as necessary.

Decontamination

Standard decon set-up will be utilized in warm zone:

- Large berm fashioned out of large chemical resistant tarp, wrapped over charged 2 ½" hose-line, 2 small berms, will be in series, within the large berm.
- Decon personnel shall don class C suits without need for respiratory or splash protection, other than safety glasses.
- Ensure all personnel that entered hot zone are properly decontaminated.
- Ensure that all tools that entered the hot zone are properly decontaminated.

Termination

- Once operation complete, vac-truck can be utilized to clean up solution contained with the decon berms.
- Safe and proper disposal of all spent PPE.

- Transition of command.
- Debrief

Quick Access Chart for Estimating Amount of Caustic Req'd to Neutralize 40% Nitric Acid

For **Spill X-A**, use 1:1 ratio by volume, or 10lbs Spill X-A per 1 gal Nitric Acid.

Amount of Nitric Acid Spilled (in Gal.)	Amount of Baking Soda Req'd (in Lbs.)
1	5.6
2	11
5	28
10	56
20	110
45	252
90	504
135	756
180	1,008

Amount of Nitric Acid Spilled (in Gal.)	Amount of Lime Req'd (in Lbs.)
1	2.4
2	4.8
5	12
10	24
20	48
45	108
90	216
135	324
180	432

Charts derived from formulas below

Specific Gravity Nitric Acid: 1.2455

Concentration: 40%

1 gal HNO_3 x 1.24 x 8.34 lbs/gal x 0.40 = 4.14 lbs HNO_3

$HNO_3 + NaHCO_3 \rightarrow NaNO_3 + H_2O + CO_2$ Therefore 1 mol Nitric Acid per 1 mol Sodium Bicarb (Baking Soda)

$2HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + 2H_2O$ Therefore 2 mol Nitric Acid per 1 mol Calcium Hydroxide (Lime)

HNO_3 = 63 amu

$NaHCO_3$ = 85 amu

$Ca(NO_3)_2$ = 74 amu

(4.14 lbs HNO_3/63 amu-HNO_3) x 85 amu-$NaHCO_3$ = 5.6 lbs $NaHCO_3$

Therefore 1 gallon of Nitric Acid req's 5.6 lbs of baking soda

(4.14 lbs HNO_3/2(63) amu-HNO_3) x 74 amu-$Ca(OH)_2$ = 2.4lbs $Ca(NO_3)_2$

Neutralization Formulas and Quick Access Charts **Formulas**

The key to effective and efficient neutralization, is knowing how to use the following formulas.

1. The first formula indicates how much acid is spilled in weight.

Step #1- Determine the quantity of acid spilled, usually in gallons.
Step #2- Determine the specific gravity of the acid usually provided in MSDS.
Step #3- Determine the concentration of the acid spilled usually in %.
Step #4- The weight of water is 8.34 pounds per gallon.

After the above figures are known plug them into the following formula.

Quantity of spill X specific gravity X weight of water X concentration = weight of the spill

Example
One gallon of sulfuric X 1.84 X 8.34 X 98% = 15.04 pounds of sulfuric

2. The second formula will determine the quantity of the neutralizer needed. The type of neutralizer needs to be selected based on costs and availability. Plug numbers into the following formula.
3.

Weight of the acid spilled X number in the chart for the selected neutralizer.

Example

15.04 pounds of sulfuric X 1.06 for Soda Ash = 15.94 pounds of Soda Ash

Determination through Chemistry

To calculate the amount of neutralization agent needed the balanced chemical reaction must be written and the equivalent weights of acid and base determined.

Example: 1,000 gallons of 38% hydrochloric acid will be neutralized with lime.

Step #1 – Write the complete balanced neutralization reaction:
$2HCl + CaO \rightarrow CaCl_2 + H_2O$
This equation shows that 2 moles of HCl are required in the reaction with one mole of calcium oxide (lime).

Step #2 – Calculate the molecular weight of each compound:
HCl – H = 1, Cl = 35.5, Total = 36.5 amu
CaO – Ca = 40, O = 16, Total = 56

Step #3 – Calculate the weight of the HCl spill:
1,000 gallons X 1.20 X 8.34 X 0.38 = 3,803.04 pounds of HCl
Step #4 – Calculate the amount of neutralizer needed:
From Step #1 it was found that 2 moles of HCl are needed to react with 1 mole of CaO. From Step #2 it was found that 1 mole of HCl weighs 36.5 amu's so 2 moles weigh 73.0 amu's. The formula is**; weight of acid/formula weight of acid X formula weight of base = pounds of the neutralizer needed.**
3,803.04/73 X 56 = 2,917.4 pounds of lime

Finer Points
The final amount is an approximation and in actual practice more neutralizing agent should be obtained. The neutralization process needs to be checked at several spots to assure pH levels are acceptable and uniform.

Neutralization Precautions
Remember, the neutralization process is exothermic and it may involve splashing of product. Safety is paramount and proper protective equipment is very important. Also, the neutralizer is hazardous in its own right and needs to be handled with care. Consider expense and availability in selecting neutralizer. Other weak bases that may be used and their molecular weights are; sodium bicarbonate ($NaHCO_3$)- 85, and magnesium hydroxide ($Mg(OH)_2$)-58.

Neutralization Chart Information
Acids

Hydrochloric Acid, HCl, MW = 36.5, density/specific gravity is 1.19, weight of a gallon is 3.77 pounds at 38% concentration. Synonyms are chlorohydric acid and muriatic acid.

Nitric Acid, HNO_3, MW = 63, density/specific gravity is 1.41, weight of a gallon is 8.23 pounds at 70% concentration. Synonyms are Aqua Fortis and Azotic Acid. (Aqua Regia is a mixture of nitric and hydrochloric acids).

Phosphoric Acid, H_3PO_4, MW = 98, density/specific gravity is 1.69, weight of a gallon is 11.98 pounds at 85% concentration. Synonyms are orthophosphoric acid.

Sulfuric Acid, H_2SO_4, MW = 98, density/specific gravity is 1.84, weight of a gallon is 15.04 pounds at 98% concentration. Synonyms are Oil of vitriol and "oleum" is fuming sulfuric acid.

Bases

Ammonium hydroxide, NH_4OH, MW = 35, clear solution, synonyms are ammonia solution and aqua ammonia. Strong ammonia odor evolves from liquid. High vapor pressure.
Calcium carbonate, $CaCO_3$, MW = 100, white powder, synonyms are crushed limestone and dolomite. Low heat of reaction that gives off carbon dioxide gas.
Calcium hydroxide, $Ca(OH)_2$, MW = 74, white powder, synonyms are slaked lime, hydrated lime, and calcium hydrate.
Calcium oxide, CaO, MW = 56, white powder, synonyms are quicklime, lime, and unslaked lime. Most economical, lowest cost, neutralizer. **Best choice!** Maximum pH is 12.45 at 25C.
Magnesium carbonate, $MgCO_3$, MW = 84, synonyms are magnesia alba and carbonate magnesium.
Magnesium hydroxide, $Mg(OH)_2$, MW = 58, white powder, synonyms are milk of magnesia and magnesia hydrate. Good neutralization agent. Maximum pH is 10.6 at 25C.
Potassium hydroxide, KOH, MW = 56, white flakes, synonyms are caustic potash. High heat of reaction with toxic fumes. Maximum pH is 14 at 25C.
Sodium bicarbonate, $NaHCO_3$, MW = 85, white powder, synonyms are baking soda and sodium acid carbonate. Low heat of reaction with carbon dioxide gas evolution.
Sodium Carbonate, Na_2CO_3, MW = 106, white powder, synonyms are soda ash. **Second most economical neutralization agent next to lime.** Maximum pH is approximately 11 at 25C.
Sodium hydroxide, NaOH, MW = 40, white powder, synonyms are caustic soda, soda lye, caustic, and lye. High heat of reaction with toxic fumes. Maximum pH is 14 at 25C.

Quick Access Charts

Sulfuric Acid neutralization using Baking Soda (Sodium Bicarbonate)

Amount of Sulfuric Acid spilled	Amount of Baking Soda needed in pounds
1 gallon	25.6
2 gallons	51.2
3 gallons	76.8
4 gallons	102.4
5 gallons	128.0
10 gallons	256.0
50 gallons	1280.0
55 gallons	1408.0
100 gallons	2560.0

Hydrochloric Acid neutralization using Baking Soda

Amount of Hydrochloric Acid spilled	Amount of Baking Soda needed in pounds
1 gallon	5.5
2 gallons	11.0
3 gallons	16.5
4 gallons	22.0
5 gallons	27.5
10 gallons	55.0

50 gallons	275.0
55 gallons	302.5
100 gallons	550.0

Nitric Acid neutralization using Baking Soda

Amount of Nitric Acid spilled	**Amount of Baking Soda needed in pounds**
1 gallon	7.4
2 gallons	14.8
3 gallons	22.2
4 gallons	29.6
5 gallons	37.0
10 gallons	74.0
50 gallons	370.0
55 gallons	407.0
100 gallons	740.0

Sodium Sulfide

Site management and control

- Set up perimeter with at least 50m radius if water introduced, or 25m if solid.
- Command, staging, & decon shall be position upwind and uphill.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept., product carrier (if spill occurs during delivery to mine).

Identification

- UN# 1849
- Solid state
- Yellow
- Smell sulfurous or like rotten eggs with introduction of moisture.
- Transported in 1000 Kg 'Super-Sacks'.
- # of super-sacks possibly damaged, will help estimate size of spill.
- Is water being introduced to the spill? If so, what is downhill form the spill? Could run-off reach a stream?
- Are corrosives being introduced to spill? If so, what is downwind?

Hazard & risk evaluation

- Strong caustic.

- Severely corrosive to digestive tract, respiratory system, eyes, and skin.
- Dust is powerful systemic poison. Inhalation could cause headache, dizziness, unconsciousness, pulmonary edema, asphyxiation, death.
- Contact with acid releases toxic and flammable Hydrogen Sulfide.
- Routes of entry include absorption, inhalation, and ingestion.
- Keep spilled product dry
- If water introduced, avoid run-off, contact with soil, waterways.

PPE

- If there is a fire situation, PPE will consist of full turn-out gear and SCBA.
  Otherwise
- Know and heed permeability rate and breakthrough times of all PPE.
- SCBA if significant H2S release, otherwise, full-face respirator & OV cartridges with pre-filter.
- Corrosive resistant, class B suit with hood.
- Chemical resistant gloves & boots
- Chemical resistant tape used to seal between boots/suit, gloves/suit, and mask/suit.

Information management and resource coordination

- See MSDS for product information.
- Was anyone exposed?
- Will non-human life be exposed?
- Standard decon set-up will be constructed.
- Have tools cribbed for entry team.
- Ensure there is enough PPE at the site to complete the task.
- Ensure there is drinking water for responders.
- Have hazmat trailer, ambulance & fire truck in staging area, as req'd
- Have Site Services staged for digging, damming, product extraction, as req'd.

Implementing Response Objectives

- Rescue injured/exposed personnel.
- Keep product dry.
- Monitor atmosphere for H2S and SO2.
- If water introduced, contain run-off by covering drains/culverts, damming, diverting to a berm, etc. Solution collected can be mixed with oxidizing agent, such as hydrogen peroxide or sodium hypochlorite to prevent evolution of H2S.
- If product has entered a stream, consider using over-flow dams to contain product, for extraction.
- Vacuum or sweep up dry product
- Disposal as per Environmental Dept. recommendations

Decontamination

Standard decon set-up will be utilized in warm zone:

- Large berm fashioned out of large chemical resistant tarp, wrapped over charged 2 ½" hose-line, 2 small berms, will be in series, within the large berm.
- Decon personnel shall don class C suits without need for respiratory or splash protection, other than safety glasses.
- Ensure all personnel that entered hot zone are properly decontaminated.
- Ensure that all tools that entered the hot zone are properly decontaminated.

Termination

- Once operation complete, solution in decon berms to be disposed of, as per Environmental recommendations.
- Safe and proper disposal of all spent PPE.
- Transition of command.
- Debrief

LPG (Propane)

Note: Minto gas detectors are calibrated to methane, and must be corrected to propane prior to use, during propane leak mitigation.

Site management and control

- Set up initial perimeter of at least 100m. For large tank where there is fire, set up perimeter of at least 1600m.
- Command, staging, & decon shall be positioned uphill and upwind.
- Eliminate sources of ignition.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept., product carrier (if spill occurs during delivery to mine).

Identification

- UN# 1075
- Colourless liquid and vapour while stored under pressure.
- Colourless and odourless gas in natural state at any concentration.
- Commercial propane has an odorant added which is commonly ethyl.
- Transported by tanker truck.
- Stored in 12,000L tank at ramp to camp and twin 18,000L tanks at Km 0 of the access road.

- What is downhill from spill?
- Is there threat to life?
- Is there threat to a stream?

Hazard & risk evaluation

- Extremely flammable gas.
- Vapour could be ignited by any source of ignition.
- Vapour is heavier than air and may travel considerable distance to an ignition source, and flash back.
- Stored under pressure, as a liquid.
- Product extraction methods could create static if not bonded/grounded, and serve as an ignition source.
- Massive explosion hazard where flame impingement on tank.

PPE

- Full turn-out gear with SCBA.

` **Information management and resource coordination**

- See MSDS for product information.
- Consider contacting Canutec.
- Know the product's route of travel.
- Ensure tools are cribbed for entry teams.
-
- Have fire truck at scene and ambulance in staging area, as req'd

Implementing Response Objectives Leak in an enclosed space

- Evacuate structure.
- Close supply valve remotely if possible.
- Eliminate any source of ignition.
- Use positive pressure to ventilate space, ensure that it is exhausting to safe location.

If no remote isolation valve:

- Entry team (2 ERT members) & RIT team (2 ERT members) will don full turn-out gear & SCBA.
- Any electronic equipment being carried, such as radio or gas detector, must be intrinsically safe.
- Entry team will enter with charged 1 ½" hose-line and gas detector equipped with LEL sensor, while RIT stages in the cold zone .

- Once entry team is at 'reach of stream' distance from the leak, the nozzleman (Entry member 1) will set-up, with nozzle fixed on Entry member 2. Entry member 2 will continue toward valve, with gas detector.

  If LEL sensor rises above 20%, entry team will retreat until ventilation can be made adequate.

- Once Entry member 2 reaches the valve, he will close the valve, then back away until he reaches entry member 1.
- Entry team will exit the structure, until it has been adequately ventilated.
- Once adequately ventilated, ERT members, wearing appropriate PPE, will sweep the structure with gas detector(s), to ensure there are no pockets of gas, before deeming the structure 'safe to enter'.

LPG line on fire, with no impingement

Note: a propane leak that is burning is safer than one that is not burning, as long as there is no impingement on a tank or structure. Therefore, in this scenario, gas will be allowed to burn until the valve can be shut off.

- Evacuate immediate area.
- If possible, close isolation valve from remote location.

  If no remote isolation valve:

- Eliminate any further source of ignition.
- 2 or more ERT members in full turn-out gear & SCBA will be on 1 ½" hose-line.
- Nozzle will be turned to full fog, which will create a water-curtain between the fire and the fire fighters.
- The fire team will approach the isolation valve, keeping the water-curtain between themselves and the fire at all times, being careful not to put the fire out with the stream
- When the valve is reached by the team, the 2nd member on the line will let go of the hose and approach the valve, while the nozzleman maintains the water-curtain between the fire and the valve/fire team.
- The 2nd member will close the valve then back away from the fire until he regains his position on the hose.
- The team will maintain the water-curtain while they back away from the damaged gas-line.
- Once the team is at a safe distance, a 45 degree pattern can be fixed on the broken gas-line to cool it, and disperse any residual gases.

LPG leak, not enclosed, not on fire

Note: LPG has a very high vapour pressure (1013 kPa) so it wants to be a gas, a high vapour density (1.52) so it's heavier than air, and a low flash point (-103.4 C). This combination means that it can form an explosive gas cloud that will stay close to the ground, may linger in incident area, or migrate downwind and/or downhill, possibly settling in low lying areas.

- Evacuate immediate area as well as areas downwind/downhill as per ERG recommendations.
- If possible, close isolation valve from remote location.
- From 'reach of stream', set up ground monitor and fix a 45 degree fog pattern on area of concern. This will push gas cloud away from area and disperse it. Be sure to push it to a safe location.

If no remote isolation valve:

- Entry team (2 ERT members) & RIT team (2 ERT members) will don full turn-out gear & SCBA.
- Any electronic equipment being carried, such as radio or gas detector, must be intrinsically safe.
- Entry team will enter with charged 1 ½" hose-line and gas detector equipped with LEL sensor, while RIT stages in the cold zone.
- While ground monitor continues to 'make it rain' in the hot zone, nozzleman (entry member 1) will fix nozzle on entry member 2, as entry member 2 approaches the isolation valve, with gas detector.

If LEL sensor rises above 20%, entry team will retreat until water stream can be made more effective

- Once Entry member 2 reaches the valve, he will close the valve, then back away until he reaches entry member 1.
- Entry team will retreat to the cold zone until gases are adequately dispersed
- Once the gas is adequately dispersed, ERT members, wearing appropriate PPE, will sweep the area with gas detector(s), including low-lying areas where gas may have migrated to, before deeming the area 'safe to enter'.

Fire where there is flame impingement on LPG tank

- Evacuate all non-ERT members for at least 1,800 m where there is flame impingement on either the 12,000 L tank or the tandem 18,000 L tanks.
- Command will know and understand the signs of imminent BLEVE.
- If Command witnesses signs of imminent BLEVE from an upright tank, there shall be no attempt made to cool tanks, rather, all focus shall be on a rapid evacuation of all personnel, at least 1,800m.
- If tank has been knocked over, there may be little or no warning signs of BLEVE, therefore no attempt shall be made to cool, rather, all focus shall be on a rapid evacuation of all personnel, at least 1,800m.
- If a BLEVE is not imminent, an attempt will be made to connect a ground monitor to the stand-pipe at the Tailings bldg.
- A narrow fog stream will be fixed on the tank at the area of flame impingement.
- The monitor will be left unmanned and the remaining ERT will evacuate at least 1,800m.

Where a tanker truck carrying propane has over-turned on the access road, causing damage to the tank trailer and subsequent rapid release of propane, the strategy for the hazmat portion of the incident response, will be passive and conducted from an upwind/uphill location, at a safe distance, as per the ERG. Transfer of residual product for the scenario, will be conducted by outside resource.

Decontamination

- 1 ½" charged hose-line, as emergency decon

Termination

- Debrief

BW GasAlert Micro 5 is intrinsically safe, as per: *http://directories.csa-international.org/xml_transform.asp?xml=certxml%5C080259_0_000-4828-82.xml&xsl=xsl/certrec.xsl*

- GasAlert Micro 5 Portable Gas Detector, Model M5-xwt1t2-r-p-d-a-b-cc & M5PID-xwt1t2-r-p-d-a-b-cc; utilizing electrochemical, catalytic bead and photo-ionization sensors; Intrinsically Safe when powered by one of the following AA Size Batteries /

Battery Pack
- Duracell MN1500; T-Code T4; Ambient -20 to +40°C; T-Code 139.8°C (T3C); Ambient -20 to +50°C
- Energizer E91; T-Code 153°C(T3C); Ambient -20 to +40°C; T-Code 163°C (T3B); Ambient -20 to +50°C
- NiMH Rechargeable Battery Pack "M5-BAT01"; T-code T4; Ambient -20 to +50°C
- Lithium Polymer Rechargeable Battery pack “M5-BAT07B”; T-Code T4; Ambient -20 to +50°C

Diesel, Kerosene, CFE 150

Note: LEL sensor will not detect presence of long-chain hydrocarbon vapour. Photo-ionization detector (PID) should be used, if available.

Site management and control

- Set up perimeter with at least 50m radius.
- Command, staging, & decon shall be positioned uphill and upwind.
- Eliminate sources of ignition.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept, Dyno Nobel (if spilled product is CFE 150), product carrier (if spill occurs during delivery to mine).

Identification

- UN# 1202.
- Liquid state.
- Colour varies.
- Petroleum odour.
- Transported by B-train, tidy-tanks.
- Stored in tanks at fuel farm.
- What is downhill from spill??
- Is there threat to life?
- Is there threat to a stream?

Hazard & risk evaluation

- Combustible liquid.
- Vapour could be ignited by any source of ignition.
- Extraction methods could create static if not bonded/grounded, and serve as an ignition source.
- Ambient temperature relevant.

- Irritant to eyes and skin
- Ingestion and inhalation hazard
- Toxic to aquatic life.

PPE

- If there is a fire situation, PPE will consist of full turn-out gear with SCBA.

Otherwise

- For offensive strategies, such as rescue or plugging, full turn-out gear with SCBA
- For defensive strategies, such as diverting, damming, booming, diking, class B suit.
- Respirator with OV cartridges.
- Oil resistant gloves & boots

Information management and resource coordination

- See MSDS for product information.
- Know the product's route of travel.
- Standard decon set-up will be constructed.
- Ensure tools are cribbed for entry teams.
- Ensure there is enough PPE at the site to complete the task.
- Ensure there is drinking water for responders.
- Have hazmat trailer, ambulance & fire truck in staging area, as req'd.
- Have Site Services staged for digging, damming, product extraction, as req'd.

Implementing Response Objectives

- Rescue injured personnel.
- Consider using fog stream to protect rescuers.
- Fire-fighting: Use dry chemical, CO2, Class B foam, or water with fog pattern.
- If using fog, considering increased run-off hazard
- Prevent from entering streams.
- If possible, stop the leak: close valves, use plugs, plug n' dyke, gaskets, straps, jacks, cribbing, etc.
- Containment berm at source, 'Surrey Condom'.
- If possible, contain by covering drains/culverts, diking, diverting to a berm, absorbing, etc.
- If product has entered a stream, use booms, hydrocarbon-only absorbent socks and pads, under-flow dams, diversion-booms, skimmers to contain and extract, as per instructions found later in this document.
- If transfer of product req'd, ensure entire system is bonded/grounded.
- Use non-sparking tools, such as pneumatics.
- Site Services Vac-truck is an option for cleaning up product.

Decontamination

Standard decon set-up will be utilized in warm zone:

- Large berm fashioned out of large chemical resistant tarp, wrapped over charged 2 ½" hose-line, 2 small berms, will be in series, within the large berm.
- Decon personnel shall don class C suits without need for respiratory or splash protection, other than safety glasses.
- Ensure all personnel that entered hot zone are properly decontaminated.
- Ensure that all tools that entered the hot zone are properly decontaminated.

Termination

- Once operation complete, vac-truck can be utilized to clean up solution contained with the decon berms.
- Safe and proper disposal of all spent PPE.
- Transition of command.
- Debrief

Gasoline

Note: Minto gas detectors are calibrated to methane and must be corrected to gasoline, or alternatively pentane, prior to use during gasoline spill mitigation

Site management and control

- Set up perimeter. Consider radius up to 800m depending on amount of product and level of explosion hazard.
- Command, staging, & decon shall be positioned uphill and upwind.
- Eliminate sources of ignition.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept., product carrier (if spill occurs during delivery to mine).

Identification

- UN# 1203.
- Liquid state.
- Colourless to slightly yellow.
- Recognizable odour.

- Transported by B-train, tidy-tanks.
- Stored in tank at fuel farm.
- What is downhill from spill??
- Is there threat to life?
- Is there threat to a stream?

Hazard & risk evaluation

- Flammable liquid. Extremely flammable in presence of ignition source, at nearly any temperature.
- Vapour could be ignited by any source of ignition.
- Vapour is heavier than air and may travel considerable distance to an ignition source, and flash back.
- Product extraction methods could create static if not bonded/grounded, and serve as an ignition source.
- Explosion hazard where flame impingement on tank.
- Irritant to eyes.
- Ingestion and inhalation hazard
- Toxic to aquatic life.

PPE

- If there is a fire situation, PPE will consist of full turn-out gear with SCBA.
  Otherwise
- For offensive strategies, such as rescue or plugging, full turn-out gear with SCBA
- For defensive strategies, such as diverting, damming, booming, diking, fire resistant class B suit.
- Respirator with OV cartridges, only if LEL's are being monitored, otherwise, do not dampen sense of smell. Rather, move upwind of product vapour.

Information management and resource coordination

- See MSDS for product information.
- Know the product's route of travel.
- Standard decon set-up will be constructed.
- Ensure tools are cribbed for entry teams.
- Ensure there is enough PPE at the site to complete the task.
- Ensure there is drinking water for responders.
- Have hazmat trailer, ambulance & fire truck in staging area, as req'd
- Have Site Services staged for digging, damming, product extraction, as req'd.

Implementing Response Objectives

- Offensive tactics for rescue of injured personnel only.
- Consider blanketing affected area with class B foam, prior to rescuers entering hot zone.

- Use fog stream to suppress vapours and protect rescuers.
- Rescuers will carry intrinsically-safe radios and gas-detector.
- Prevent from entering streams
- If possible, stop the leak.
- If possible, contain by covering drains/culverts, diking, diverting to a berm, absorbing, etc.
- If product can or has has entered a stream, use booms, hydrocarbon-only absorbent socks and pads, under-flow dams, diversion-booms, as per instructions found later in this document.
- Safe handling and disposal of all waste product.

Decontamination

Standard decon set-up will be utilized in warm zone:

- Large berm fashioned out of large chemical resistant tarp, wrapped over charged 2 ½" hose-line, 2 small berms, will be in series, within the large berm.
- Decon personnel shall don class C suits without need for respiratory or splash protection, other than safety glasses.
- Ensure all personnel that entered hot zone are properly decontaminated.
- Ensure that all tools that entered the hot zone are properly decontaminated.

Termination

- Once operation complete, safe disposal of decon berm contents
- Safe and proper disposal of all spent PPE
- Hand-over command of operation to Environmental Dept.
- Debrief

Ammonium Nitrate

Site management and control

- Set up perimeter with at least 25m radius.
- Command, staging, & decon shall be positioned upwind.

- Eliminate sources of ignition.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept, Dyno Nobel, product carrier (if spill occurs during delivery to mine).

Identification

- UN# 1942.
- Solid state. Prills or granules.
- White.
- Odorless.
- Is there threat to a stream?

Hazard & risk evaluation

- Oxidizer .
- Exposure to high heat may evolve toxic, flammable gases.
- Explosive when confined and exposed to high heat.
- Ingestion and inhalation hazard.
- Toxic to aquatic life.

PPE

- If there is a fire situation, PPE will consist of full turn-out gear with SCBA.
  Otherwise
- Class C suit with long sleeves.
- Dust mask.
- Oil resistant gloves & boots

Information management and resource coordination

- See MSDS for product information.
- Work closely with Dyno.
- Standard decon set-up will be constructed.
- Have tools cribbed for entry teams.
- Ensure there is enough PPE at the site to complete the task.
- Ensure there is drinking water for responders.
- Have hazmat trailer, ambulance & fire truck in staging area, as req'd
- Have Site Services staged for digging, damming, product extraction, as req'd.

Implementing Response Objectives

- Rescue injured personnel.
- Fire-fighting: If flame impingement on tank, use unmanned ground monitor to supply flooding quantities of water via straight-stream, to cool tank. Then, evacuate area 800m in all directions. If signs of imminent explosion are present prior to setting up ground monitor, do not attempt to set it up, just evacuate for 800m in all directions.
- Prevent from entering streams.
- Once in stream, may be unrecoverable. Underflow dams should be constructed, and surface can be skimmed.
- If possible, stop anymore product from being spilled.
- Follow Dyno's recommendations for recovery and clean-up of product.

Decontamination

Standard decon set-up will be utilized in warm zone:

- Large berm fashioned out of large chemical resistant tarp, wrapped over charged 2 ½" hose-line, 2 small berms, will be in series, within the large berm.
- Decon personnel shall don class C suits without need for respiratory or splash protection, other than safety glasses.
- Ensure all personnel that entered hot zone are properly decontaminated.
- Ensure that all tools that entered the hot zone are properly decontaminated.

Termination

- Once operation complete, vac-truck can be utilized to clean up solution contained with the decon berms.
- Safe and proper disposal of all spent PPE.
- Transition of command.
- Debrief.

Emulsion

Site management and control

- Consider initial perimeter of 800m.

- Command, staging, & decon shall be positioned upwind.
- Eliminate sources of ignition.
- Unify command with Safety Superintendent, Mine Manager, Environmental Dept, Dyno Nobel, product carrier (if spill occurs during delivery to mine).

Identification

- UN# 0332.
- Viscous liquid.
- Pink, opaque.
- Slight fuel oil odour.
- Shipped in bulk by tanker truck.

Hazard & risk evaluation

- Emulsion explosives.
- Stable under normal conditions.
- May explode under fire conditions.
- Eye & skin irritant.
- Slight ingestion & inhalation hazard.
- Avoid contact with corrosives.
- Is there threat to a stream?

PPE

- Class C suit with long sleeves.
- Standard PPE

Information management and resource coordination

- See MSDS for product information.
- Work closely with Dyno.
- Standard decon set-up will be constructed.
- Have tools cribbed for entry teams.
- Ensure there is enough PPE at the site to complete the task.
- Ensure there is drinking water for responders.
- Have hazmat trailer, ambulance & fire truck in staging area, as req'd
- Have Site Services staged for digging, damming, product extraction, as req'd.

Implementing Response Objectives

- Rescue injured personnel.
- Fire-fighting: If fire reaches cargo, DO NOT ATTEMPT TO FIGHT FIRE. Cargo may explode. Evacuate in all directions for 1600m.
- Prevent from entering streams.
- If possible, stop anymore product from being spilled.
- Follow Dyno's recommendations for recovery and clean-up of product.

Decontamination

Standard decon set-up will be utilized in warm zone:

- Large berm fashioned out of large chemical resistant tarp, wrapped over charged 2 ½" hose-line, 2 small berms, will be in series, within the large berm.
- Decon personnel shall don class C suits without need for respiratory or splash protection, other than safety glasses.
- Ensure all personnel that entered hot zone are properly decontaminated.
- Ensure that all tools that entered the hot zone are properly decontaminated.

Termination

- Once operation complete, clean out berms under direction of Dyno.
- Safe and proper disposal of all spent PPE.
- Transition of command.
- Debrief.

Appendix D: Tug and Barge Emergency Contingency Plan

MINTO MINE
Tug and Barge Emergency Contingency Plan
VERSION 2013-01

Prepared by:

Capstone Mining Corporation

Minto Mine

January 15, 2013

Table of Contents

List of Appendices

1.0 Introduction

Minto Mine (Minto) a subsidiary of Capstone Mining Corporation is pleased to submit the following contingency plan (plan) as per requirements of the access and land use permit "*Minto Landing Ice Bridge and Marshalling Area and West Side Barge Landing and Marshalling Area"* (the permit). It is Minto's intention that this plan will fulfill the requirement as stated in Schedule 2, Section 9.0 Contingency Plan of the permit. It is not Minto's objective for this plan to mitigate all possible accidents or malfunction in regards to the in stream operation of the Copper Queen tug and barge.

The plan as prepared is adaptive and will be amended as is practicable. This plan is intended to deliver the best possible means of mitigating an accident or malfunction of the loading/unloading or in-stream operation of the tug and barge with the resources available at Minto. Preventing such an occurrence requires a combination of: procedural and engineering controls, based on an awareness of at risk conditions. These documents exist in the form of the Spill Contingency Plan, Emergency Response Plan, any procedures or plans on the tug or barge from Site Services. This document serves as a contingency plan in the event that an accident or malfunction occurs when loading, unloading, and in-stream operations of the Copper Queen tug and barge (CQTB).

2.0 General Procedures

Any Response to an Emergency condition will be based on a priority sequence of Life, Environment and Property. Therefore every event will be regarded with these priorities in mind. Initial on scene assessment of the accident or malfunction will be called out on channel one as a "Code 1". The Emergency Response Team will be dispatched, communication established and the barge operator and deckhand will respond to control the scene.

Deckhands will mitigate all emergencies on the barge to the best of their ability given the resources available. General procedure in the event of an emergency would have the barge move to the west landing if possible or practical unless otherwise communicated to the barge captain. To mitigate an emergency in offloading or loading vehicles onto the barge the deckhand will utilize the anchor points on both landings. Slack will be left in the rope to ensure the barge captain is able to maneuver when docked at the landing. Tying off to the anchor points will mitigate complete catastrophe if the barge loses power during loading and offloading and will be discussed further under the specific procedures section of this plan.

Minto is currently in discussion with JDS about a mutual aid agreement. It is Minto's intention to have the agreement in place before the 2013 barge operating season. The mutual aid agreement will be for assistance on the east side landing (equipment, manpower etc.) as well as in-stream support. To mitigate the risk of losing control of the barge downstream Minto will be installing an anchor on the barge. In the event of an emergency the deckhand would be able to deploy the anchor allowing the barge a safety contingency if control was lost.

3.0 Specific Procedures

Below is a list of the current on site procedures for dealing with various emergencies in regards to the CQTB at Minto Mine. For supporting documents of the below procedures see Appendix B.

1. Emergency Response to Sinking
2. Emergency Response to Loss of Power or Control
3. Emergency Response to Fire Onboard
4. Emergency Response to Man Overboard
5. Emergency Response to Freight or Vehicle Overboard
6. Emergency Response to Medical Emergency on Board of the Barge
7. Emergency Response to Spill Response

3.1 Emergency Response to Sinking of CQTB

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response.
2. Captain and deckhand will deploy Canadian Coast Guard approved life rafts.
3. As per Emergency Response Plan, Incident command (IC) will communicate with Deckhand by radio to determine any further details of events, number of injured or trapped people, risks to property and environment.
4. IC will respond to scene in one emergency vehicle ahead of remaining ERT. IC will upon arrival to scene provide initial scene assessment and gather any additional information available. Minimum ERT response will include full ERT member compliment, Environmental Lead, Hazardous materials response trailer, fire truck, ambulance and all associated equipment. ERT operations to be under the control of the ERT Captain. Additional response needs based on initial assessment and evaluation by IC will be communicated to the Emergency Communications Center (ECC) as per Emergency Response Plan.
5. Incident Accountability will be established and adhered to throughout the operation.
6. IC will determine the need for rescue of people downstream. Option to deploy rescue ropes via launcher considered for KM 12.
7. Alternate access to river to be determined by nature of incident, KM 20 provides a second potential access. All other access would require trail cutting which is possible but would take more time.
8. IC, ERT Captain, and Environmental Lead (Unified Incident Command Support) will assess ongoing situation and need for additional or fewer resources.
9. Alternate man boat (see Appendix A for details on man boat) will be deployed from landing as needed to support rescue and/or to gain more information regarding location of sunken vessel and determine possible plan for retrieval/securing. Man boat operator will work under the direction of IC.
10. If available and a benefit, Minto would exercise the use of the mutual aid agreement with JDS.
11. Once rescued, all patients will be treated as per OFA3/EMR protocols transported as per Yukon EMS dispatch confirmation aligned with Minto Emergency Response Plan.

3.2 Emergency Response to Loss of Power or Control of CQTB

The tug operates on two engines so total loss of power is not likely; however, is still possible and below is the emergency procedure that would be activated in the event that total loss or control of the CQTB was to occur.

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response. Captain will also communicate freight details and passenger numbers on board.
2. Passengers and crew will follow instructions from Captain and remaining on board if deemed safe. The Captain and deckhand will follow MED protocol in decision making in regards to passenger safety.
3. Captain and deckhand will deploy Canadian Coast Guard approved life rafts if deemed unsafe to stay on board by Captain.
4. IC will respond to scene or as close to it, in one emergency vehicle ahead of remaining ERT. IC will upon arrival to scene provide initial scene assessment and gather any additional information available. Minimum ERT response will include full ERT member compliment, Environmental Lead, Hazardous materials response trailer, fire truck, ambulance and all associated equipment. ERT operations to be under the control of the ERT Captain. Additional response needs and downstream communication and reporting requirements based on initial assessment and evaluation by IC will be communicated to the Emergency Communications Center (ECC) as per Emergency Response Plan.
5. Incident Accountability will be established and adhered to throughout the operation.
6. Captain will navigate to the best of his ability to the safest downstream location possible. Under the direction of the Captain the deckhand may deploy the anchor to assist in stopping the barge and tug.
7. Captain will communicate to IC location and details of condition of vessel and people and assist in determining plans for action.
8. Once vessel is secured to shore or where landed in river, Man boat will be deployed to assist with additional securing and remove non-essential people to location where they can be transferred back to site or alternate safe location.
9. If available and a benefit, Minto would exercise the use of the mutual aid agreement with JDS.
10. Plan for retrieval will be based appropriate to the conditions and location of vessel. Plan to be developed cooperatively through Barge Captain, Minto ECC and Mutual Aid resources. Equipment and additional resources will be sourced through ECC as per Minto Emergency Response Plan.

3.3 Emergency Response to Fire on the CQTB

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response.
2. If safe to do so, deckhand will attempt to supress fire using equipment on board following Marine Emergency Duty (MED) protocol.

3. Captain and deckhand will deploy Canadian Coast Guard approved life rafts if vessel in immediate danger. If possible and practical the Captain will position barge so that wind is blowing port to star board, to keep smoke/flames away from life raft.
4. If able to do so Barge will cross to West Bank of crossing and continue to use barge supplied fire suppression equipment. All passengers will disembark under direction of deckhand.
5. IC will respond to scene in one emergency vehicle ahead of remaining ERT. IC will upon arrival to scene provide initial scene assessment and gather any additional information available. Minimum ERT response will include full ERT member compliment, Environmental Lead, Hazardous materials response trailer, fire truck, ambulance and all associated equipment. ERT operations to be under the control of the ERT Captain. Additional response needs based on initial assessment and evaluation by IC will be communicated to the Emergency Communications Center (ECC) as per Emergency Response Plan.
6. Incident Accountability will be established and adhered to throughout the operation.
7. Once IC on scene and vessel safely secured, fire suppression will be conducted under the direction of the IC following NFPA 1081 standards. Industrial Fire Brigade.
8. Consideration of environmental sensitivity need to be considered by IC in cooperation with the Environmental Lead (unified incident command support).
9. Defensive spill containment methods to be utilized to control run off and releases from firefighting operations. This may include tactics such as extinguishing agent selection, damming and berming on barge, boom placement around vessel, removal of burning equipment once fire controlled, etc.

3.4 Emergency Response to Man Overboard

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response.
2. Captain and deckhand will throw out provided Canadian Coast Guard approved life-rings to all personnel overboard. The response from the barge crew will conducted as per their MED training.
3. If able to successfully rescue person overboard, deckhand will treat person based on marine first aid protocols awaiting response by ERT and site Medic.
4. If unable to successfully achieve rescue, vessel will continue to West landing and man boat deployed for downstream rescue. Communication to IC on Radio Channel 1 must be available at all times. Man boat operation will be conducted under the direction of IC once in place.
5. Captain will communicate to IC of possible downstream rescue requirement.
6. IC will instruct ERT to stage at KM 12 with option to deploy rescue ropes via launcher considered for KM 12.
7. Incident Accountability will be established and adhered to throughout the operation.
8. IC to stage ambulance for patient pick up.
9. IC will communicate the need for mutual aid to ECC who will follow the Minto ERP by contacting local agencies for assistance on East side of river.
10. Once rescued, all patients will be treated as per OFA3/EMR protocols transported as per Yukon EMS dispatch confirmation aligned with Minto Emergency Response Plan.

3.5 Emergency Response to Freight or Vehicle Overboard of the CQTB

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response. Captain will also communicate freight details and passenger numbers on board.
2. Passengers and crew will follow instructions from Captain (Captain will respond as per MED training) remaining on board if deemed safe.
3. Captain and deckhand will deploy Canadian Coast Guard approved life rafts if deemed unsafe to stay on board by Captain. If at landing passengers will be offloaded to safe location on shore.
4. IC will respond to scene or as close to it, in one emergency vehicle ahead of remaining ERT. IC will upon arrival to scene provide initial scene assessment and gather any additional information available. Minimum ERT response will include full ERT member compliment, Environmental Lead, Hazardous materials response trailer, fire truck, ambulance and all associated equipment. ERT operations to be under the control of the ERT Captain. Additional response needs and downstream communication and reporting requirements based on initial assessment and evaluation by IC will be communicated to the Emergency Communications Center (ECC) as per Emergency Response Plan.
5. Incident Accountability will be established and adhered to throughout the operation.
6. Captain will navigate to the best of his ability to the landing, preferably west landing.
7. Once vessel is secured to shore, man boat will be deployed by deckhand or ERT members to assist with additional securing of vessel and freight, and deployment of containment booms located at landing and on vessel. Man boat operation under the direction of IC once in place.
8. Plan for retrieval of freight will be determined appropriate to the condition and location of freight. Plan developed cooperatively through Barge Captain, Minto ECC and Mutual Aid resources.
9. Equipment and additional resources will be sourced through ECC as per Minto Emergency Response Plan including manpower, expertise, heavy equipment, etc.
10. Special considerations for support in the event of incident occurring on East side of river to include Yukon Emergency Measures Organization, local first responders and alternate equipment operations contractor.

3.6 Emergency Response to Medical Emergency on board CQTB

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response.
2. For serious injury as defined in the ERP, Yukon EMS will be notified immediately.
3. Deckhand will treat patient per Marine Emergency First Aid protocols.
4. Captain will navigate barge to west bank of Yukon River and all vehicles will offload on west bank, giving clear passage for Ambulance.
5. ERT response will include medic, ambulance, fire truck and compliment of team members to assist with patient transfer and packaging.
6. Incident Accountability will be established and adhered to throughout the operation.
7. Yukon EMS dispatch will be updated of situation once history and assessment confirmed.

8. Upon arrival, Minto Medic will take control of scene and advise ERT Captain of resources needed on scene.
9. Upon history and assessment, patient will be treated, packaged and transferred as per OFA3/ERM protocols transported as per Yukon EMS dispatch confirmation aligned with Minto Emergency Response Plan.

3.7 Emergency Response to a Spill

1. Activation of Emergency Protocol onboard CQTB calling code 1 to initiate ERT response.
2. Deckhand will attempt to contain spill using on board spill kit, to prevent spill into Yukon River.
3. IC will respond to scene in one emergency vehicle ahead of remaining ERT. IC will upon arrival to scene provide initial scene assessment and gather any additional information available. Minimum ERT response will include full ERT member compliment, Environmental Lead, Hazardous materials response trailer, fire truck, ambulance and all associated equipment. ERT operations to be under the control of the ERT Captain. Additional response needs, downstream communication, communication with CANUTEC and reporting requirements based on initial assessment and evaluation by IC will be communicated to the ECC as per Emergency Response Plan and Spill Contingency Plan.
4. Incident Accountability will be established and adhered to throughout the operation.
5. If practical the barge captain will navigate the barge to west landing.
6. All passengers will disembark vessel.
7. All vehicles and machinery that is not in the spill zone will disembark.
8. Deckhand and ERT members under the direction of IC will use the man boat to deploy containment booms around the barge.
9. IC with advice from the Environment Lead will develop and implement the plan for stopping the spill if possible.
10. If the spill cannot be stopped a plan to mitigate the quantity of contaminant spilt to environment will be developed and implemented.
11. If safe and practical to do so Environment Lead will deploy environment staff to sample downstream of spill to measure contamination concentration.
12. IC with advice from the Environment Lead will oversee cleanup of the spill.
13. Special considerations for support in the event of incident occurring on East side of river to access the barge with ERT by man boat.

4.0 Minto Mine Training

The barge crew were trained and certified in Marine Emergency Duties (MED) A1 and A2 in 2012. The MED course meets the standards of training, certification and watchkeeping and is run by Transport Canada. The A1 MED course covers basic safety with a focus on hazards and emergencies awareness, firefighting, emergency response, lifesaving appliances and abandonment, survival and rescue. The A2 MED course covers small passenger-carrying vessel safety with the same focus as A1 with the addition of maintenance and inspection of emergency equipment and passenger control. As well the barge crew is trained in Marine First Aid.

The ERT team and environment staff has been trained in NFPA 472 Hazardous Materials Response Certification, awareness and operations for responders. In 2013 Minto is planning to host a table top and field exercise in regards to Yukon River response. The table top and field exercise will be held in conjunction with ERT, barge crew, environment department, management, and consultants.

Appendix A

Man Boat Specifications

- Brand/Model: Munson Packman Landing Craft
- Hull Length: 24 feet (7.3 meters)
- Beam: 8 feet 6 inches (2.6 meters)
- Hull Type: Packman mono hull
- Power: Twin Yamaha 150hp
- Propulsion: Outboard (25” shaft)
- Outfitting: 52” bow door

Appendix B

Minto Mine Emergency Response Plan

Minto Mine Safe Job Procedure for Loading and Unloading the Barge

Minto Mine Spill Contingency Plan

Capstone Minto Safe Work Practice

Barge Loading and Offloading

Purpose: To ensure the safe practice of loading and offloading the barge at the Yukon River. To educate workers on the hazards of loading and offloading the barge, and working on landings.

Scope: This Safe Work Practice pertains to the Captain and the crew of the Minto Mine property who are exposed to operating the barge for transport across river.

Definitions:

Certified Flotation Device – Personal Flotation Devices marked "Approved by Department of Transport Canada" or "Approved by Canadian Coast Guard, Department of Fisheries and Oceans"

Hypothermia - A potentially fatal condition that occurs when the body core temperature falls below 95°F (35°C). This can occurs quickly when immersed in cold water.

Responsibilities

Employer / Supervisor Responsibilities

- Make sure appropriate training and assistance are provided to crew.
- Make sure appropriate rescue devices such as a life hook and floatation devices are available to workers

Safety Department Responsibilities

- Ensure this SWP is in alignment with the Yukon Health and Safety Act and Regulations

Worker Responsibilities

- Read, understand, and follow this safe work practice
- If unsure then stop work and ask for assistance
- Wear appropriate PPE defined to their work area.
- Provide training for proper use of PFD to passangers

Reference to Legislative and Site Requirements

- Yukon Occupational Health and Safety Regulations – Part 1 – section 1.34 – Each worker shall be provided with and be required to use an appropriate personal flotation device with the required buoyancy where a worker is employed in a situation where there is a risk of drowning

Safe Work Practice:

The captain and crew will give direction in regards to the following.

1. Landings.

1.1. Assess landing and vehicles to be loaded and unloaded. The use of wooden ramps may be needed. (For more information reference safe work practice for wooden ramps.)

1.2. Use gauge on apron ram to determine the need for landing to be rebuilt. This gauge is located on the ram closest to deckhand shed and has a max angle marked on the gauge. If the apron should go past the marked max angle stop and fix landing. (For more information reference safe work practice for landing maintenance and apron angle.)

2. Transportation.

2.1. Due to landing and vehicle loads ask driver to back on or drive on. This may be determined by many factors, such as:

- Angle and length of landing
- Apron angle and how it contacts the landing
- Underwater debris
- Drivers skill
- Extra low trailers
- Frozen or icy landings
- Load weights

2.2. Deckhand must communicate with captain any concerns about previously mention conditions. It is ultimately the captains' decision on how the barge is loaded.

3. Priority Boarding

3.1. Emergency vehicles on medical runs are given the top priority. Compassionate reasons or special circumstances are considered when loading vehicle traffic. The bus will also be given high priority

along with con trucks. Loading priority will be determined by the Captain or the Supervisor.

3.2. Priority may change from day to day and we ask that drivers cooperate and be patient. Ultimately the captain will make the decision based on information available at the time.

4. Communication.

4.1. Drivers are given a handout of standard hand signals as endorsed by WCB and a signature logbook is maintained to who has received the handout and when.

4.2. The deckhand is in charge of directing and communicating with all traffic. Radios, hand signals, face to face communication are all used. An air horn is used as warning to stop the drivers quickly.

5. Hazards.

5.1. Working at or near water has its inherent risks. A JHA should be conducted for any new or unusual work being conducted on or near the water. Some hazards to be aware of are:

- Exposure to the environmental elements of the season
- Slips, trips and falls on uneven ground
- Slipping on slippery rocks and surfaces
- Eroding shore line sloughing or slipping on ice along shoreline
- Falling into cold water
- Ice flows and ice jams
- Swift current
- Drowning
- Hypothermia
- Wildlife
- Slippery deck

6. Emergency Equipment.

6.1. Life ring with rope and pole must be available on the barge. An emergency response container complete with first aid kit, oxygen therapy unit, spare dry coveralls and several blankets is located on the tug. This container is used to reduce the effects of hypothermia until emergency response arrives.

6.2. As the river is 27kms from the mine site emergency response will take at least 40 minutes to arrive at the scene. Deckhands should have marine first aid training and clear knowledge of where all safety equipment is and its condition.

6.3. Honda pump & fire hose along with fire extinguishers are also in place. Deckhands should be well train in this area and will instruct people as needed on what to do in case of an emergency.

7. Training.

7.1. All workers must be trained and competent to operate or run any equipment that pertains to their job.

7.2. At least one worker must have a valid marine first aid ticket in the event of an emergency due to the location of this worksite and the anticipated delay on response time by ERT.

SWP Development and Approval

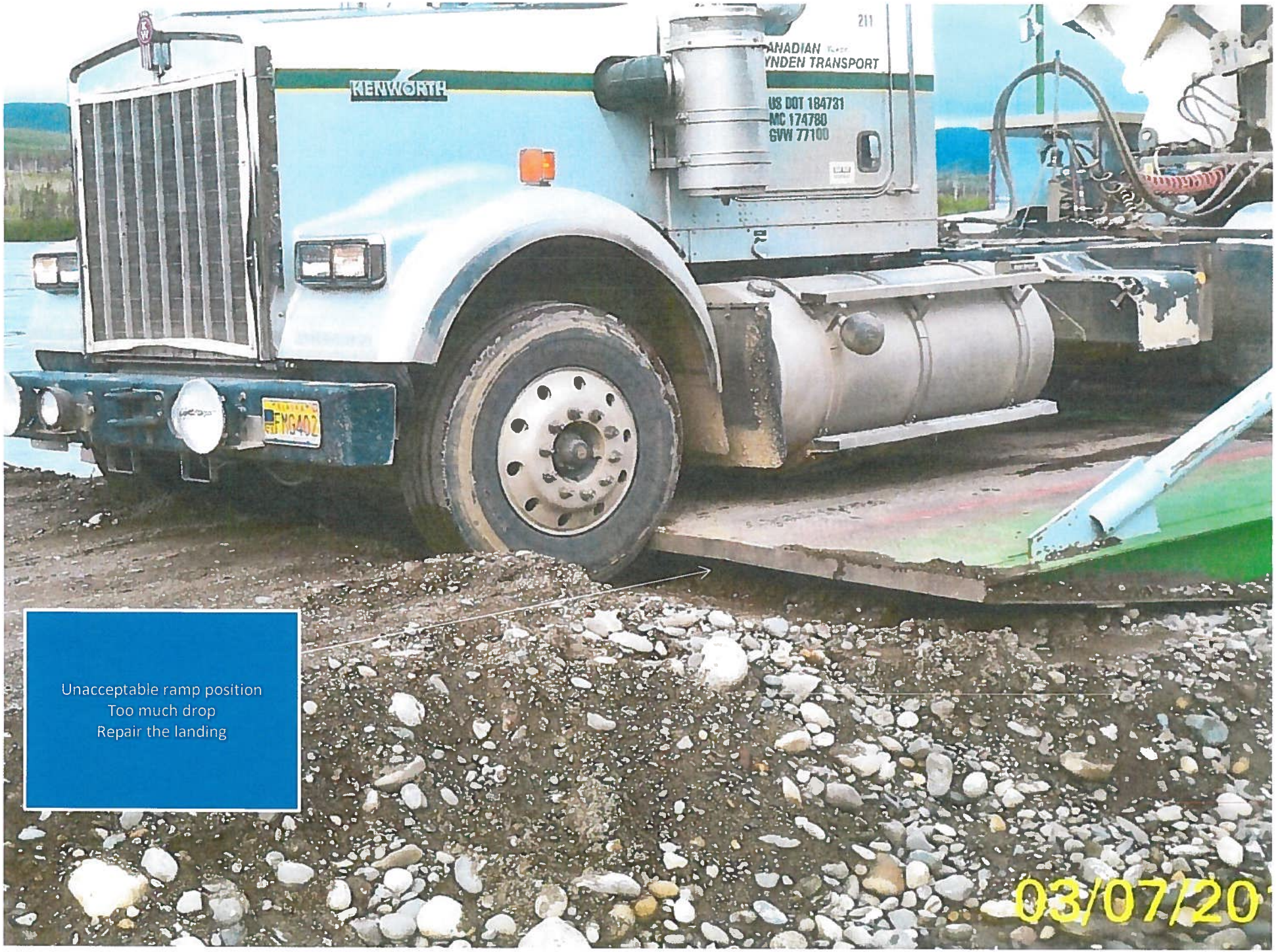
	Print: Developed/ Revised by:	DD/MM/YYYY
Worker:		**Date:**
Worker:		**Date:**
JOHSC Representative:	Siana mills	**Date:24/08/2012**
Supervisor:	Stephen Maunder	**Date:26/08/2012**
Supervisor:	Captain Dave Johnstone	**Date: :26/08/2012**
Supervisor:	Jeff Billings	**Date: :26/08/2012**
Supervisor:		**Date:**
JOHSC Representative:		**Date:**
Senior Supervisor:		**Date:**
Senior Supervisor:		**Date:**
Departmental Manager:		**Date:**
	Print & Sign: Reviewed By:	
Safety Department:	MARK GOEBEL	
Safety Department:		**Date:** Sept 19/12
	Print & Sign: Approved By: **Determined by Safety Dept.** **Enter NA if not applicable.**	**Date:**
Departmental Manager:	stephen maunder	**Date:** 19/09/12
General Manager:		**Date:** 9.20.2012

Clarification of this safe work practice can be directed to the Safety Department.

Name of SWP:
Location: X:\Health & Safety\Safety Public\Procedures and Safe Work Procedures
Last revision date: April 21 2012


Ideal Ramp Position for Loading


Good Ramp
Position


KENWORTH
US DOT 184731
MC 174780
GVW 77100
Unacceptable ramp position
Too much drop
Repair the landing
03/07/20


Ramp Angle Gauge
Minimum and Maximum
Ramp Angle Indicators


Ramp Angle Gauge
Minimum and Maximum Ramp Angle Indicators

MINTO MINE

EMERGENCY RESPONSE PLAN

November 2012

This controlled document will be regularly updated to reflect revisions.

Next scheduled update – November 2013

- Updated Emergency Response Plan (ERP) documents will be bound and distributed to all authorized personnel.

- All Minto Mine personnel must have ERP training and know where to gain access to the document in the event of an emergency.

Authorized Distribution / Location List

Minto Explorations Ltd. – Minto Mine:

Health and Safety Office
ERT Facility
General Manager Office
First Aid Room
Mill Control Room
Refuge Stations
Muster stations

Capstone Mining Corp

Capstone Mining Corp. Vancouver Office

Community:

Yukon EMS Dispatch Whitehorse
Pelly Nursing Station
Carmacks Nursing Station
Yukon Wildland Fire Management Carmacks

Government:

Yukon Workers Compensation Health and Safety Board

Primary Partners/On-site Contractors:

Selkirk First Nation – Pelly Crossing
Pelly Construction Site Office
Dyno Nobel Site Office
SGS Site Office
Sodexo Site Office
Dumas Mining

Contractor Specific Emergency Response Plans Related to Minto Site

Dyno Nobel
Pelly Construction Ltd

Table of Contents

1. PURPOSE

This guide sets out the response protocol in the event of an Emergency as defined in the following section.

It is intended for use as a quick reference handbook for managers and supervisors. Incident reporting and investigating is also outlined.

In an emergency situation it is imperative that safety and due diligence is exercised as well as discretion. The priorities are the protection of Life, Environment and Property – in that order.

2. DEFINITIONS

2.1. "Emergency"

An "**Emergency**" is defined as any occurrence meeting one or more of the following criteria:

1. Any "serious injury" or "serious accident" as defined in Yukon OH&S 30 (1)
2. Any incident requiring first aid or rescue response to the scene, depleting resources to respond to secondary emergency.
3. Any fire requiring more action that initial suppression deployment
4. Landslide, earthquake, avalanche, forest fire or flooding where injury or property damage results or may result.
5. Major power failure
6. Missing person
7. Loss of life
8. Spill Emergency – Reference Spill Contingency Plan

2.2. "Serious Injury" and "Serious Accident" under OH&S act

(Excerpt from Occupational Health & Safety Act)

"**Serious Injury**" means:

- **a)** an injury that results in death,
- **b)** fracture of a major bone, including the skull, the spine, the pelvis, or the thighbone,
- **c)** amputation other than of a finger or toe,
- **d)** loss of sight of an eye,
- **e)** internal bleeding,
- **f)** full thickness (third degree) burns,
- **g)** dysfunction that results from concussion, electrical contact, lack of oxygen, or poisoning, or
- **h)** an injury that results in paralysis (permanent loss of function);

"**Serious Accident**" means:

- **a)** an uncontrolled explosion,
- **b)** failure of a safety device on a hoist, hoist mechanism, or hoist rope,
- **c)** collapse or upset of a crane
- **d)** collapse or failure of a load-bearing component of a building or structure regardless of whether the building or structure is complete or under construction,
- **e)** collapse or failure of a temporary support structure,
- **f)** an inrush of water in an underground working,
- **g)** fire or explosion in an underground working,
- **h)** collapse or cave-in, of a trench, excavation wall, underground working, or stockpile,
- **i)** accidental release of a controlled product,
- **j)** brake failure on mobile equipment that causes a runaway,
- **k)** any accident that likely would have caused serious injury but for safety precautions, rescue measures, or chance. (As amended by SY 1988, c.22, s. 5; SY 1989, c. 19, s.6)

Reprinted from Yukon Workers' Compensation Health and Safety Board. Occupational Health and Safety Act and Regulations.

3. INITIAL RESPONSE TO EMERGENCY MINTO MINE

All references to Minto personnel by position are defaulted to defined designate if position vacant at time of emergency.

SITE MAP

CAMP, OFFICE and MILL MUSTER LOCATIONS

ACTIVE MINE MUSTER

UNDERGROUND MUSTER (SURFACE)

3.1. Code One Protocol

In the event of an emergency, the following protocol will be followed.

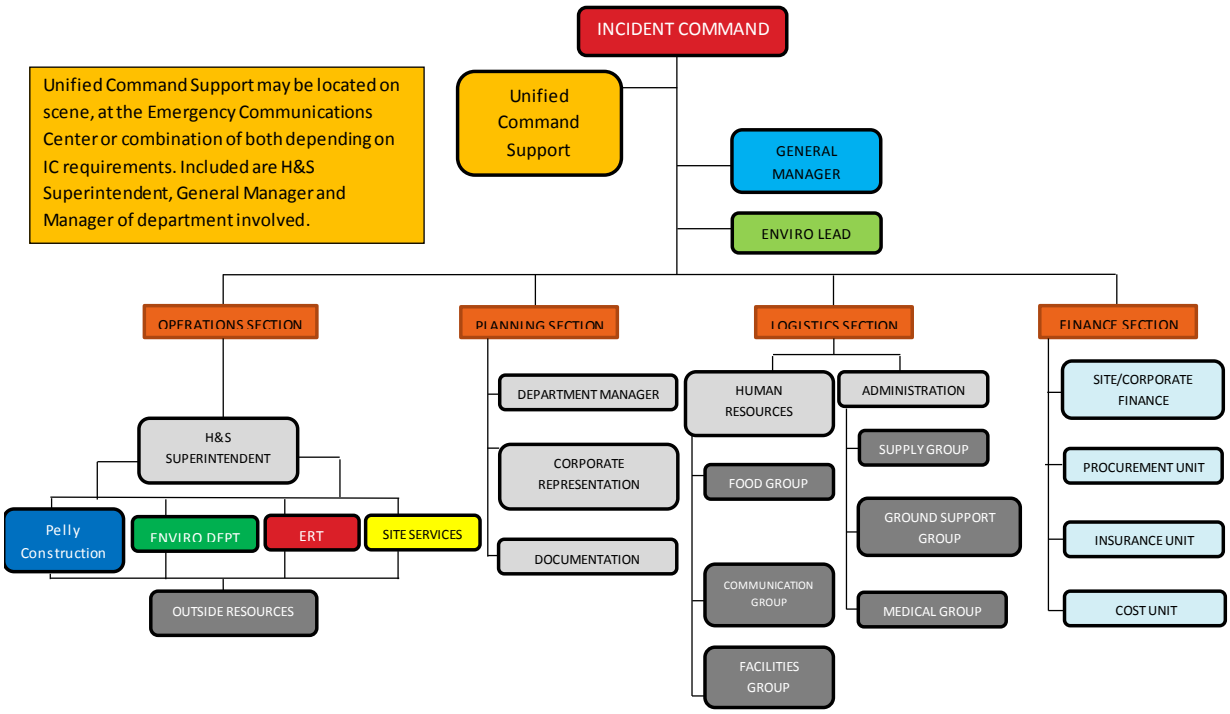
1. Any employee witnessing an emergency will call out on their current radio channel "Code 1, Code 1, Code 1" and state the nature and location of the emergency. (In the event of an injury, first aid certified worker in the area would be alerted to the incident and could respond directly to the scene) The employee immediately changes his radio to channel 1 (Emergency Channel) and calls out "Code1, Code 1, Code 1" and state the nature and location of the emergency. Employee remains on Channel 1 for a response from Site Safety/Medic.
2. Safety Coordinator/Medic will arrange for "Code 1, Code 1, Code 1" to be announced on all radio channels.
3. Upon hearing a Code 1, all personnel will safely stop work, all equipment is to be shut off and all vehicles will safely pull over to the side of the road. Mill and assay lab and water treatment plant personnel will report to control rooms and lunch rooms, while the mill remains operational. Radio silence will be recognized until Code 1 has been cleared.
4. Safety Coordinator/Medic will respond to caller with "What is the nature and location of the Emergency" on channel 1.
5. Employee will then state their name, the nature and location of the emergency.
6. Employee will then offer all available information and follow all instructions given to them by Safety Coordinator/Medic.
7. Safety Coordinator/Medic will coordinate the control room operator to send out a page for the ERT with nature and location of the emergency.
8. The Safety Coordinator/Medic will respond to the scene and conduct an initial assessment and assume command of the scene. Command will be declared on the radio and instructions to response team Captain including staging location. If Safety Coordinator/Medic is required to treat patients, command is transferred to an alternate member of the Health and Safety Department or Mine Rescue Team Captain. **Any transfer of command requires a detailed verbal report of the incident and activities conducted and underway and a formal communication to all responders.**
9. Unified Command Support will be initiated once the Health and Safety Superintendent, General Manager and Area Manager are on scene. Incidents involving an Environmental release will include the Environmental Lead in the Unified Command Support. **Unified Command Support is a cooperative effort for the purpose of support to the Safety Department Incident Command. If Unified Command Support is deemed not to be required on the scene, the support team will report to the Emergency Communications Center (ECC) to monitor radio and provide for support from the EEC location.**
10. An update on the response will be provided to the Mill control room within 30 minutes of initial arrival to the scene and a decision to allow non-hazardous critical work will be made by Incident Command. This may include resumption of crusher feed at half speed or two members of Mill Operations to conduct floor patrol or

operating area. Updates will be provided to the Mill control room every 30 minutes of the response.

11. Only Safety Department personnel can release the Code One by declaring an "all clear" for employees to return to regular work.

3.2. Minto Incident Command Structure

Minto Incident Command Structure



3.3. Code 1 Procedure for Control Room

1. When a Code 1 is called, listen for Site Safety to respond to the Code 1 on channel 1.
2. Once Site Safety has confirmed the details of the Code 1, they will direct the control room operator to activate the ERT pagers and call "Code 1, Code 1, Code1" on channels 5,8,14 &16. Operator will also call Code 1 on the Telephone Paging System. To do so pick up the receiver and dial 499 you will hear one ring then announce the Code 1 as you would on the radio.
3. If no reply heard from Site Safety, activate ERT pagers; announce event and location (if known), e.g.; "Code 1 –Medical emergency in kitchen", call "Code1, Code1, Code1" on channels 5,8,14 & 16, and then attempt to contact Site Safety on channel 1.
4. Confirm that all Mill personal are aware and have moved to the lunchrooms or muster station if mill involved. (Except control room operator who remains if safe, to provide for critical monitoring and controlled equipment shut down as required.)

5. If control room deemed unsafe, control room operator can request permission from IC to relocate to Tailings or Crusher control room to provide for critical monitoring and controlled equipment shut down as required. Must take radio and Satellite phone with him.
6. Confirm on all channels that the Code 1 has been heard by calling Code 1 a second time channels 5,8,14 & 16.
7. Monitor the radio during the Code 1 as emergency crews may use the control room as a communications resource. Have emergency contact list ready in case external resources are required to be contacted.
8. Complete a time and event log of activity on the emergency ground to the best of your ability.
9. Site Safety will take responsibility for instruction to clear the Code 1 on all channels and the telephone paging system.

3.4. ECC detail

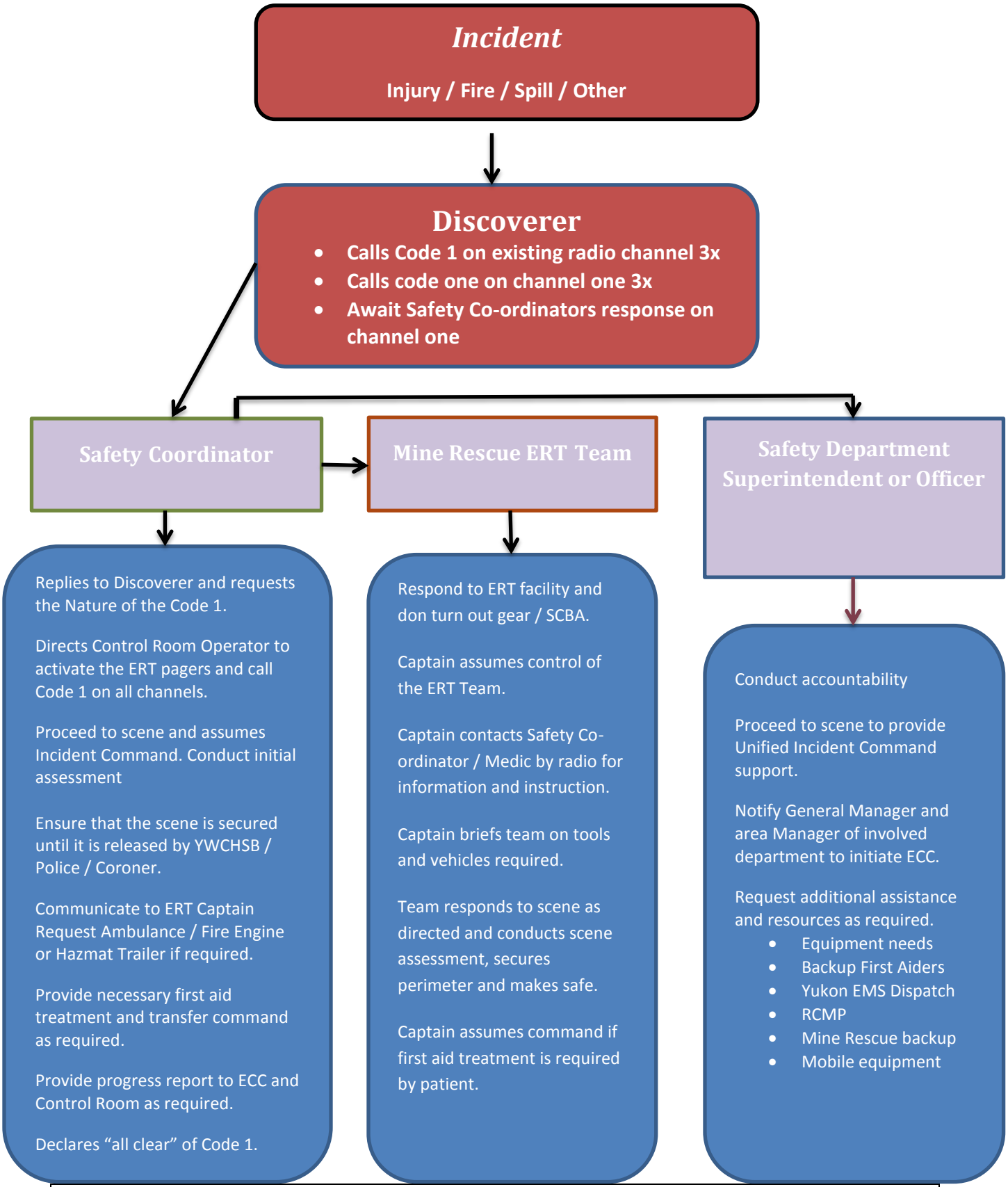
- Where - GM office or Safety Superintendent Office if Mill involved. Phone, Lync, Radio, Sat Phone for use available to these locations.
- Who –GM, H&S Superintendent, Manager of area involved (Planning), HR (Logistics), Manager of Administration (Finance),Manager of Environment (if not on scene)
- What –
    - Control communications off site; maintain communications with IC, communications off site as required such as corporate, regulators, support agencies, media, neighbors, etc.
    - Notify families when warranted.
    - Source materials, supplies, mutual aid, resources.
    - Arrange for evacuation and general transportation and logistics.
    - Develop business continuity plans.
    - Advise and support scene IC as required.
    - Provide updates to site

3.5. Major Power Failure

1. In the event of a major power failure affecting any portion of the operating facilities at the mine, the employees within the working areas need to be aware of the hazards of unexpected loss of power and safely retreat to the nearest control room, lunch room or office to be accounted for by their supervisor.
2. Electrical supervisor needs to be contacted as soon as reasonably possible to assess the reason for the outage, provide alternate power if able and to contact YEC to report outage if applicable. Control room has satellite phone available for this reason.
3. Minimizing radio traffic is essential during a Power failure so the bulk of communication related to accountability should be done face to face.
4. Supervisors will attempt to locate and account for all workers under their control and be available to report the accountability check to Site Safety when requested for it.
5. Ambulance and Fire bay doors need to be manually opened by Safety department personnel.

6. Safety Department Personnel will coordinate a sweep through the affected operating area with a source of light to ensure no workers are trapped in a location they could not safely retreat from or are injured from the power failure event and that there is no sign of fire.
7. Safety Department Personnel will make contact with area supervisor to confirm accountability of the respective workers.
8. Any missing or identified as injured workers will require search and rescue efforts. **This would require initiation of Code 1.**
9. Once all people are accounted for and it has been confirmed that there is no risk to life by the power outage operating supervisors will be advised and work can continue or reassigned depending on the job and the location of power failure.
10. Once the power has been restored safe start up procedures must be followed and all work must be directed by the supervisor in charge of the affected areas.
11. If a major power failure occurs underground, all work stops and workers will report to refuge station or surface and report to the shift boss for accountability purposes.
12. UG workers will remain in the safe refuge locations until instructed to proceed back to work by shift boss.
13. Any coordination of emergency information related to the power failure will be provided to the shift boss by the Safety Department.

3.6. Discovery and Activation of Code 1 Protocol



4. INITIAL INCIDENT RESPONSIBILITY MATRIX

POSITION	RESPONSIBILITIES
Safety Coordinator/Medic	Initial scene assessment and Incident Command Coordinate initial response Provide first aid treatment if necessary Mobilize ambulance to scene, if required E.R.T. and specialized resources mobilization & consultation Attend and coordinate response for all incidents involving “serious injury” and “serious accident”, as defined in Sec. 33, OHS Act Notify Area Supervisor, Health and Safety Superintendent, Request additional external resources as necessary and provide history and assessment for medical evacuations
Mine Rescue Team	Maintain team safety as priority Rescue and protect human life Protect and mitigate loss to mine property Assist with rehabilitation of mine property and equipment
Area Supervisor	Coordinate evacuation of work area Account of workers under his/her responsibility Be available to Incident Command for information and assistance requests. Participate with Incident Investigation
Department Manager	Respond to scene and provide Unified Command Support Attend at all incidents involving “serious injury” and “serious accident”, as defined in Sec. 33, OHS Act Coordinate and participate in incident investigation process. Ensure follow up action is completed
H&S Superintendent	Notify General Manager and Department Manager and provide follow up report of progress Assist with accountability Provide for unified incident command support Provide direction as required Coordinate recovery and investigative activity Ensure all government reporting has been completed Provide follow up reports to regulatory bodies as required Organize and conduct post-incident debriefings Assist with Incident Investigation
General Manager	Receive briefings on incident details Provide for unified incident command support Provide direction as required Verify notification of regulatory agencies, government and Minto Explorations Ltd. corporate office as required Verify scene remains secure until released by regulators (if applicable) Verify compliance with standards and government regulatory requirements Follow up communication to corporate and media Responsible to authorize all off site communication

5. FOLLOW UP RESPONSIBILTY MATRIX
Incident – Injury / Fire / Spill / Other

Health & Safety Superintendent	Maintain Scene Security at incident. Instruct ERT / Mine rescue of further requirements or stand down / all clear. Notify Authorities. Ensure legislative compliance. Assist with site incident investigation and evidence gathering. Report progress to GM and Department Manager. Co-ordinate plan to get all rescue equipment back to a state of emergency preparedness. Debrief rescue team.
Safety Co-ordinator / Medic	Roll out plan to ERT to get all rescue equipment back to a state of emergency preparedness.
Mine Rescue Team / ERT	Support debrief of incident. Ensure all rescue equipment is back to a state of emergency preparedness. ERT complex clean up. Captain to ensure that all team members are provided the time and assistance needed to recuperate from the response. Captain to release the team upon completion.
General Manager	Ensure necessary notifications are made. Minto Explorations Ltd. Corporate Office / Yukon OH&S Mines Inspector / External Family / Media.
Department Manager	Organise and participate in the incident investigation and gathering of evidence.
Environmental Representative	Ensure necessary notifications are made. Yukon Spill Response Line
Human Resources	Arrange for transportation of site personnel if required.

6. MEDICAL EMERGENCY EVACUATION

Yukon EMS dispatch is a critical resource in the event of a medical evacuation. Safety Coordinator/Medic will inform Yukon EMS dispatch every instance that there is a change to the site access such as barge removal, ice bridge closure, or the initiation of Ice Bridge or barge operation.

1. Minto Explorations Ltd. Medic will control all medical / trauma emergencies.
2. Upon patient assessment, Medic will determine course of action, including return to work or further medical assessment and evacuation.
3. If medical evacuation is deemed necessary, the Medic will contact Yukon EMS Dispatch @ 867-667-3333 and provide history and assessment findings. EMS dispatch call is a two element call and Medic will need to provide history and assessment twice. The first element dictates the triage of the transfer and the second element is directly to a medical professional responsible for the transfer. These two elements should be available back to back. Yukon EMS Dispatch is responsible for transfer method decision.

Yukon EMS Dispatch	(867) 667-3333
Pelly Crossing Nursing Station	(867) 537-4444
Carmacks Nursing Station	(867) 863-4444
Whitehorse General Hospital	(867) 393-8700

4. All Yukon EMS transfer either by road, air or combination is provided with nursing and paramedic personnel. Air transport is provided flight nurse and flight paramedic. Triage decisions will be made based on patient condition and other emergencies taking place in the area. We are a high priority community as deemed by Yukon EMS and all efforts to supply our needs will be made. One hour plus flight time is the mandate for response by EMS so medic needs to consider that as part of his treatment and care. EMS dispatch provides all patch call information to receiving facilities if they are involved in the transfer in any way.
5. In the event that a transport decision is made without or outside of consultation with Yukon EMS Dispatch, they need to be notified as soon as reasonably possible to provide for additional transport from destination and/or to document transfer decisions made.

6.1. Non-Emergency Transfers

Ice Bridge + Minto Barge available

1. Non-critical, stable patients that require further medical assessment and do not require medical attention during transfer will be taken off site by a designated Minto Explorations employee at the first available time.
2. Non-critical, stable patients that require further assessment and medical attention during transfer must be taken off site via Ambulance. EMS dispatch must be contacted prior to departure to coordinate the transfer, receiving facility and the possibility of further transfer requirement. If EMS dispatch will not be involved in the actual transfer operation, a call to the receiving facility by Minto Medic is required (patch). If EMS dispatch is involved in any way with the actual transfer they will make the patch calls.
3. Emergency, unstable patients will be evacuated off site through coordination between Minto Medic and Yukon EMS Dispatch. In cases of extreme weather that does not permit landing at the Minto Air Strip, the government Air Strip may be utilized on the east side of the Yukon River.

Alternate helicopter services if required (500ft ceiling, daylight only), only after exhausting options through Yukon EMS dispatch.

- HeliDynamics: 867-668-3536
- TransNorth Helicopters: 867-668-2177 (Whitehorse) 867-863-5551 (Carmacks)

6.2. Site or Camp Evacuation

In the event of requiring partial or total evacuation of site, several options are available and must be considered depending on the time of year and availability of transport company provision.

With the exception of medical aid incidents, external resources including evacuation arrangements will be authorized by the General Manager or his designate. Travel arrangements should be coordinated through the travel department or HR and Purchasing department should be involved in all decisions that will result in costs being associated. Designated travel coordinator needs to begin arranging connecting flights or hotel accommodations as soon as evacuation is suspected.

Options for evacuation are by road or air, depending on the time of year and availability of barge or Ice Bridge. Air transportation is dependent on weather and availability of aircraft. Early notification of airlines is critical for preparation of staff and aircraft.

Accurate weather assessment from site is critical to incoming aircraft. Designated person to provide must be arranged.

Road accessible

- Transportation by Coach (47passenger/bus) – Whitehorse (Yukon Alaska Charters)
- Transportation by Van – Pelly Crossing (Tom Gill)
- Transportation by onsite bus – Carmacks (on site)
- Transportation by air – Pelly Crossing/Whitehorse (Alkan Air, Air North, Combination)

Staging of people can be accommodated at Yukon Alaska Tours Recreation Facility, Whitehorse airport or local hotels as available. Arrangement for staging needs to be planned and documented to provide a location to communicate further travel or housing options for individuals once arranged by travel coordinator. Consider supplying food and drink to people in staging and ensure communication is available. Documented list of who is where needs to be maintained.

Road not accessible

- Transportation by air – Pelly Crossing/Carmacks/Whitehorse (Alkan Air, Air North, Combination)
- Transportation by air/road combination – Air to Carmacks and Air/Coach to White horse. Fuel may need to be arranged to be delivered to Carmacks to refuel planes for multiple flights. The designated air agency will arrange for fuel transfer. Mackenzie Petroleum -867-668-4441 or 867-332-3755 cell, Pace Setter – 867-633-5908, North of 60 – 867-633-8820.
- Bus to river crossing and helicopter (Trans North Helicopters) transfer across river to Coach (Yukon Alaska Charters).

Staging of people can be accommodated at Carmacks Air Terminal. Consider supplying food and drink to people in staging and ensure communication is available. Documented list of who is where needs to be maintained.

7. MILL/TAILINGS FIRE ALARM PROCEDURE

1. Activation of Code 1by Control Room Personnel
2. All non-control room personnel in Mill/Tailings are to proceed to nearest exit point and proceed to MUSTER STATION located at mine office complex.
3. Control Room will advise Incident Command of Alarm location.
4. Incident Command will advise Control Room personnel on whether or not to evacuate Control Room.
5. Control room operator can request to be repositioned at either Tailings or Crusher Control room to monitor operations on terminal and complete controlled shut down operation. to provide for critical monitoring and controlled equipment shut down as required. Incident Command to allow based on safety of initial scene assessment.
6. Once evacuated from Mill, all personnel are to proceed to MUSTER STATION.
7. All personnel are to remain located at MUSTER STATION unless advised by Safety department designate.
8. ERT will operate under the direction of Incident Command. Team Captain responsible for team tactical operation and direct accountability of team.
9. No personnel are to block Emergency Response vehicles, Ambulance or Equipment.
10. Health and Safety Superintendent will request accountability report from all area supervisors responsible for work within the affected area.
11. Only Incident Command can advise Control Room to disengage Fire Alarm after investigation of cause.
12. No personnel will be allowed back into Mill or Tailings complex without authorization of Incident Command.
13. Failure to evacuate Mill will result in disciplinary action, which may result in termination.

8. CAMP FIRE ALARM PROCEDURE

1. Activation of Code 1 by Kitchen Staff or first person recognizing alarm
2. All personnel in Camp affected by alarm are to proceed to nearest exit point and proceed to Muster Station.
3. Camp unit manager will bring accountability sheets to Muster Station and meet Health and Safety Superintendent/Officer to assist with roll call (roster sheets are updated daily and are located on the board just inside kitchen entrance). Area supervisors will assist as required and directed by camp unit manager or H&S Superintendent/Officer.
4. Employees working in camp (site services, Sodexo, maintenance) will report to muster station and be accounted for by their supervisor or most senior worker on crew. The supervisors will advise H&S Superintendent/Officer of any missing people.
5. H&S Superintendent will relay accountability information to Incident Command (Safety Coordinator or ERT Captain).
6. ERT will respond to the ERT facility and don turnout gear and prepare SCBA. Once sufficient number of team members is prepared, ERT captain will contact Safety Coordinator/Medic on radio Chanel 1 for response and staging instructions.
7. ERT will respond to defined staging area with the fire truck and ambulance in a safe manner.
8. ERT Captain will utilize accountability tag board maintaining control the team. ERT Captain will report to IC the status and location of the alarm.
9. IC will develop plan of action with the ERT captain. ERT captain will direct team in conducting interior search, rescue and firefighting operations.
10. ERT captain will inform IC of standard benchmark fire ground activities such as entering building, time under air, smoke/fire found, victims located, fire stop, etc.
11. IC will delegate the documentation of a time and event log to the best of their ability. (Control room operator, ECC or on scene team member)
12. All employees will remain at Muster Station until “All Clear” is given by Site Safety or instructed to move to alternate location.
13. Failure to evacuate Camp will result in disciplinary action, which may result in termination.

9. "Serious Injury" and "Serious Accident" under OH&S act

(Excerpt from Occupational Health & Safety Act)

"**Serious Injury**" means:

i) an injury that results in death,
j) fracture of a major bone, including the skull, the spine, the pelvis, or the thighbone,
k) amputation other than of a finger or toe,
l) loss of sight of an eye,
m) internal bleeding,
n) full thickness (third degree) burns,
o) dysfunction that results from concussion, electrical contact, lack of oxygen, or poisoning, or
p) an injury that results in paralysis (permanent loss of function);

"**Serious Accident**" means:

(l) an uncontrolled explosion,
(m) failure of a safety device on a hoist, hoist mechanism, or hoist rope,
(n) collapse or upset of a crane
(o) collapse or failure of a load-bearing component of a building or structure regardless of whether the building or structure is complete or under construction,
(p) collapse or failure of a temporary support structure,
(q) an inrush of water in an underground working,
(r) fire or explosion in an underground working,
(s) collapse or cave-in, of a trench, excavation wall, underground working, or stockpile,
(t) accidental release of a controlled product,
(u) brake failure on mobile equipment that causes a runaway,
(v) any accident that likely would have caused serious injury but for safety precautions, rescue measures, or chance. (As amended by SY 1988, c.22, s. 5; SY 1989, c. 19, s.6)

Reprinted from "Occupational Health and Safety with Mine Safety Regulations."
Yukon Workers' Compensation Health and Safety Board. Department of Justice, Government of the Yukon. 1992

10. Reporting the Emergency

Where an EMERGENCY exists that may affect mine personnel, evacuation procedures must be initiated.

10.1. Underground Emergency – Other than Fire

Any person discovering an emergency shall:

1. If safe to do so try to rectify the situation with the tools you have at the scene
2. Perform first aid if safe to do so
3. Rope off or barricade the area if possible
4. Escape to nearest refuge station following up cast ventilation or out of the mine and warn all others along the way.
5. Report the emergency by calling the appropriate numbers from the Emergency Contact Number sheet located in the refuge station
    - When reporting the incident it is of extreme importance that you include the following information.
    - Who is calling and who is involved?
    - What happened and what have you done?
    - When did this happen?
    - Where are you and where is the emergency?
    - Who and what do you need for a response? First aid, rescue stench gas, other assistance?
    - Stand by the phone and wait for further instructions

10.2. Underground Emergency - Fire:

Where a fire exists that may affect other personnel working in the area, evacuation procedures must be initiated:

Anyone discovering a fire shall:

1. Activate fire suppression system if fire is on equipment.
2. If safe to do so, use nearby fire extinguishers to extinguish the fire.
3. Warn all personnel in the immediate area (voice, radio, and phone) to evacuate to a safe location.
4. Initiate the Stench Warning System.
5. Do not expose yourself to unnecessary risk and keep a clear area of retreat behind you.
6. If the fire is too big, do not hesitate, leave the area immediately and evacuate.
7. Proceed in up cast direction to nearest refuge station, fresh air base or out of the mine if safe to do so.
8. Utilize self-rescue device to protect from smoke exposure.
9. If unable to travel safely to refuge station, take refuge in heading and utilize compressed air header and any available material – vent tubing, clothing, etc. to construct a shield around yourself. Remain in the location until mine rescue team arrives.
10. Once you have reached the refuge station or fresh air base follow refuge station protocols and provide for accountability.

10.3. Under Ground Emergency Evacuation

Upon being notified of a mine emergency evacuation either by radio, phone or stench warning system:

1. Stop work immediately,
2. Note the time you received the warning
3. Calmly proceed in an up cast direction to the nearest refuge station or out of the mine
4. Utilize self-rescue device at the first sign of smoke or fire.
5. Once safely at the refuge station or central muster location, follow the refuge station protocol and provide for accountability.
6. Review the refuge station emergency procedures posted inside the refuge chamber.
7. Check the mine phone for operation and call outside the mine. Report the following information:
    - Your name and name of others in refuge.
    - Refuge Chamber location.
    - Outside conditions.
    - That you are safe in refuge.
8. Remain in the refuge station, even if communication is cut off.
9. Stay calm, conserve energy and cap lamps, sit down on benches.
10. Have one person walk around room periodically to stir up the air.
11. Do not be tempted to wander about the mine seeking safe passage out.
12. Remain in the refuge until you are rescued by mine rescue personnel or contact is made declaring it safe to leave the refuge station by mine official in charge of the emergency.

10.4. Refuge Stations

Portable and permanent refuge stations are maintained in locations of mine development to include refuge < 15 minute travel time by foot. All underground personnel will follow fresh air and escape to surface or take refuge in a refuge station during all emergencies that affect the underground. Refuge station posted “code of conduct” must be followed by all in the refuge station.

10.5. Main Ventilation Control in Event of a Fire

In the event of an underground fire, efforts will be undertaken to ensure ventilation to the mine is maintained.

Operation of the main ventilation fans in will be guarded and monitored to ensure continuous operation of the fans at all times.

The effects of the alteration to the main ventilation fans shall be clearly understood before any changes are made.

During a mine fire:

There will be no alteration to the operation of the main fans without the authorization of the Mine Manager or Designate and Notification to YWCHSB Safety Officer as defined under the regulations.

11. Underground Emergency Response

Underground Emergency – System of response

1. Initiate mine rescue/emergency response notification procedures as directed by UG Shift boss or designate.
2. Upon completion of the emergency response notification procedure:
    a) Assign designate to initiate and maintain a log of events.
    b) Establish the EMERGENCY COMMUNICATION CENTER (ECC).
    c) Keep all Communication Equipment on Standby.
    d) Direct operations personnel to ECC.
    e) Confirm Incident Command (IC) has been initiated.
    f) Complete the EMERGENCY DATA SHEET by obtaining the following information:
        - Name of person reporting the emergency
        - Nature and severity of injuries and/or incident
        - Assistance required
        - Location of emergency
        - Number of people involved
3. Operations personnel will delegate a mine official in charge of the rescue operation and develop a preliminary plan.
4. Mine rescue team will respond to the mine rescue room
5. Mine rescue team captain will assume command of the team
6. Team will don all protective gear and bench test SCBA
7. Team will prepare all equipment needed to respond UG
8. Team will await instructions by Mine Rescue Coordinator (Safety Coordinator/Medic/Health and Safety Superintendent)
9. Team will be advised of plan
10. Back up Mine Rescue team respond to mine rescue room for briefing and preparation for back up assistance.
11. Tertiary back up mine rescue team(s) must be considered and depending on the initial assessment of situation contact needs to be made for mutual aid as soon as reasonably possible.

12. Mine Ventilation Action Plan

In the event of fan failure due to a malfunction, accident, power failure, or other such unplanned or unscheduled event, this action plan applies to all underground employees and contractors whose work areas are affected by the temporary interruption of the operation of the main, booster, or auxiliary fans in the mine.

Main Ventilation Interruption Procedure:

Less Than 2 Hours:

1. Diesel mobile equipment, mucking operations, will cease in all active production and development headings supplied by mechanical ventilation until the main ventilation system is restored. ... OR ... The active heading is continually monitored for air quality and is maintained in compliance with the applicable standards.
2. All other work relevant (scaling, clean-up, maintenance, etc.) to the active heading may continue per normal operations provided the air quality remains in compliance with the applicable standards.
3. Diesel mobile equipment for access to, or egress from, the mine will continue per normal mine operations provided air quality remains within compliance of the standards. **If the ventilation is forced the diesel equipment must be shut down until ventilation is re-established.**

Two Hours or More:

1. Air quality testing will be performed by Supervision in all active headings affected by the ventilation interruption. Where air quality is not within compliance of the standards for mine ventilation, all personnel shall be withdrawn from the active heading affected.
2. Ventilation to the affected active headings shall be restored to normal and the air quality in the affected active workings shall be tested by Supervision to ensure the air quality meets the requirements of the standards prior to the return to work in the area.
3. Prolonged ventilation interruption will require air quality testing in the affected active workings at least every four hours until ventilation has been restored.
4. In areas where air quality prevents continued testing, normal ventilation shall be restored for a minimum of two hours before persons enter the area to test air quality ... OR ...Suitable self-contained breathing apparatus and procedures consistent with YWCHSB Regulations will be followed by competent persons to perform air quality testing the affected area.
5. Diesel mobile equipment for access to, or egress from, the mine on the main haulage ways will continue per normal mine operations provided air quality remains within compliance of the standards.
    a. **This is contingent on the mine having flow through exhaust. If the ventilation is forced the diesel equipment must be shut down and the mine evacuated until ventilation is re-established.**

13. MINE RESCUE

Minto Mine will retain a compliment of trained surface and underground mine rescue personnel on site at all times. This will include two full UG teams as a minimum. A required third UG team would consist of a mutual aid response from YWCHSB and neighboring mines with a mutual aid agreement in place.

The mine rescue unit consists of a minimum of three mine rescue teams summoned to a mine disaster; if the operation extends beyond 6 to 8 hours, the additional third team must be called in. In order to reduce fatigue, the teams are rotated to allow one team at work, one team on hand as backup and the third team at rest.

A typical rotation for a three team unit is as follows:

Team Working/Backup Team/ Team at Rest (2 hour maximums)

A team/ B team/ C team

B team/C team/ A team

C team/A team/ B team

Teams have approximately 4 hours rest prior to working for 2 hours.

13.1. Mine Rescue Personnel

Name	Company	Capacity
Bissell, Keith	Minto Mine	Surface Mine Rescue/ERT/ Hazmat Op.
Christian, Tyler	Minto Mine	UG/Surface Mine Rescue/ERT/ Hazmat Op.
Crottey, David	Minto Mine	Surface Mine Rescue/ERT/OFA 3/ EMR / Hazmat Op.
Daley, Mike	Minto Mine	UG/Surface Mine Rescue Instructor/OFA 3
Dunfield, Steve	Minto Mine	ERT / Hazmat Op.
Emerson, Phil	Minto Mine	ERT / OFA3 / Hazmat Op.
Goebel, Mark	Minto Mine	UG/Sur. Mine Rescue Instructor/OFA 3/PCP/Hazmat Tech
Henry, Garth	Minto Mine	Surface Mine Rescue/ERT/EMR / Hazmat Op.
Jimmo-Dixon, Anna	Pelly Construction	ERT
Kerr, Dan	Minto Mine	Surface NWT
Moloney, Brendan	Minto Mine	ERT
Monteith, Tyrone	Minto Mine	Surface Mine Rescue/ERT/ Hazmat Op.
Moretti, Troy	Minto Mine	ERT
Silverfox, Ryan	Minto Mine	Surface Mine Rescue/ERT
Spruit, Arjen	Minto Mine	Surface Mine Rescue/ERT/OFA 3/EMR/ Hazmat Op.
Stewart, Mike	Minto Mine	UG/Surface Mine Rescue/ERT/OFA 3
Sutton, Rob	Minto Mine	UG/Sur. Mine Rescue /ERT/OFA 3 Instr./PCP/ Hazmat Tech
Taylor, Steeve	Minto Mine	UG/ NWT / ERT/ OFA3/ Hazmat Op.
Vandenhoek, Craig	Fountain Tire	ERT/ Hazmat Op.
West, David	Pelly Construction	ERT / Hazmat Op.
Wettstein, Curtis	Minto Mine	Surface Mine Rescue/ERT

13.2. EMERGENCY RESPONSE EQUIPMENT

Emergency Response Equipment	Location	Use Authorized By:
Minto Mine Ambulance	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Minto Mine Fire Engine 8 Emergency / Rescue / Tender	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Minto Mine Hazmat Trailer	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Minto Mine 4 Wheel Drive Tundra	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator

		Safety Superintendent / Officer ERT Captain
Medical Jump Kits	ERT Complex First Aid Room Medics room Ambulance	Safety Coordinator-Medic
2 Automatic External Defibrillators	Minto Ambulance First Aid Room	Safety Coordinator-Medic PCP
Oxygen Airway Adjuncts (OPA) Nasopharyngeal Airway King Extraglottic Airways	First Aid Room Jump Kits Ambulance	Safety Coordinator-Medic PCP ERT Captain
Spinal Precautions Spine Boards & Head Blocks Stiff Collars Spider Straps KED – Vehicle extrication device	Minto Ambulance First Aid Room	Safety Coordinator/Medic PCP ERT Captain
Splints Regular Sager traction splint	Minto Ambulance First Aid Room	Safety Coordinator/Medic PCP ERT Captain
Wound Management Burn Dressings Sterile Water Bandages & Dressings	First Aid Room Jump Kits Ambulance	Safety Coordinator / Medic PCP ERT Captain
EPI Pens Anaphylactic Shock / Allergies Additional Medications Entonox Vent Olin Nitro SL Epi SC Narcan SC, IV D10W IV 0.9% NaCl IV	First Aid Room Jump Kits Ambulance First Aid Room Jump Kits Ambulance	Safety Coordinator/Medic EMR PCP PCP PCP PCP PCP PCP PCP
SCBA 6- Scott 2.2 2 – Scott 4.5 12 – Spare bottles	ERT Complex & Fire Engine 8	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
3 Lifting/Moving Bags & Manifold	Fire Engine 8	Safety Coordinator – Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Chain Saw- Roof Saw –Recipro. Saw	Fire Engine 8	Safety Coordinator – Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Hydraulic Spreaders & Jaws	Fire Engine 8	Safety Coordinator – Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain

Ground Monitor – Piercing Nozzle and PPV Fan	Fire Engine 8	Safety Coordinator – Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Generator and Flood Lights	Fire Engine 8	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Gas Detection 4- BW Gas Alert Micro 5 Multi Gas 1 Draeger Bellows multi gas detector	ERT Complex Electronics Room	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Radios 10 – Motorola Hand Held Radios 1 VHF Air Band Transceiver Radio 2 Satellite Radios	ERT Complex Electronics Room	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Rope Rescue Equipment 2 complete rope rescue bags 8 – Rescue Ropes Compliment of hardware including descending devices, pulleys, mechanical advantages, rope grabs, harnesses, helmets, etc.	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
NFPA Turn Out Gear 16 sets including boots, gloves, Helmets and balaclavas.	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Hazmat Response Equipment Protective clothing, sorbents, booms, Over pack, hand tools.	Minto Mine Hazmat Trailer	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Confined Space Rescue Gear SKED Stretcher /Oregon Spin Splint Rescue Tripod / Ventilation Fan Stokes basket with spider straps / Mule Litter Wheel	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer ERT Captain
Underground Rescue Equipment	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer Mine Rescue Captain
6 Draeger BG 4 SCCBAs and all equipment to clean / test / refill	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer Mine Rescue Captain
6 Ocenco EBA 6.5 Self Rescuers (1 trainer)	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer Mine Rescue Captain
12 MSA W65 Self Rescuers **12 Underground Camp Lamps** **12 Miners Belts**	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer

12 Link Lines		Mine Rescue Captain
1 Stretcher Basket fully equipped	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer Mine Rescue Captain
Rope Rescue Equipment 1 complete rope rescue bag	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer Mine Rescue Captain
1 Multi Gas Detector	ERT Complex	Safety Coordinator - Medic Emergency Response Coordinator Safety Superintendent / Officer Mine Rescue Captain

13.3. BACK UP MINE RESCUE

13.3.1. Back up Mine Rescue Teams

If the operation extends beyond 6 to 8 hours, additional mine rescue teams must be called in. A mutual agreement with other mines will have to be drafted to ensure backup if required. A list of local mine rescue personnel could serve as back up in the event these individuals are on their rotation off and are in fact home.

Minto Mine has in place cooperative agreements with the Alexco Resource Corp. at the Bellekeno Mine as well as divisions of Procon Mining and Tunnelling.

If the incident requires Mine Rescue back up response the YWCHSB Mine Inspector and Alexco Resource Corp must be notified immediately, advised of the situation and to prepare to respond immediately pending available resources.

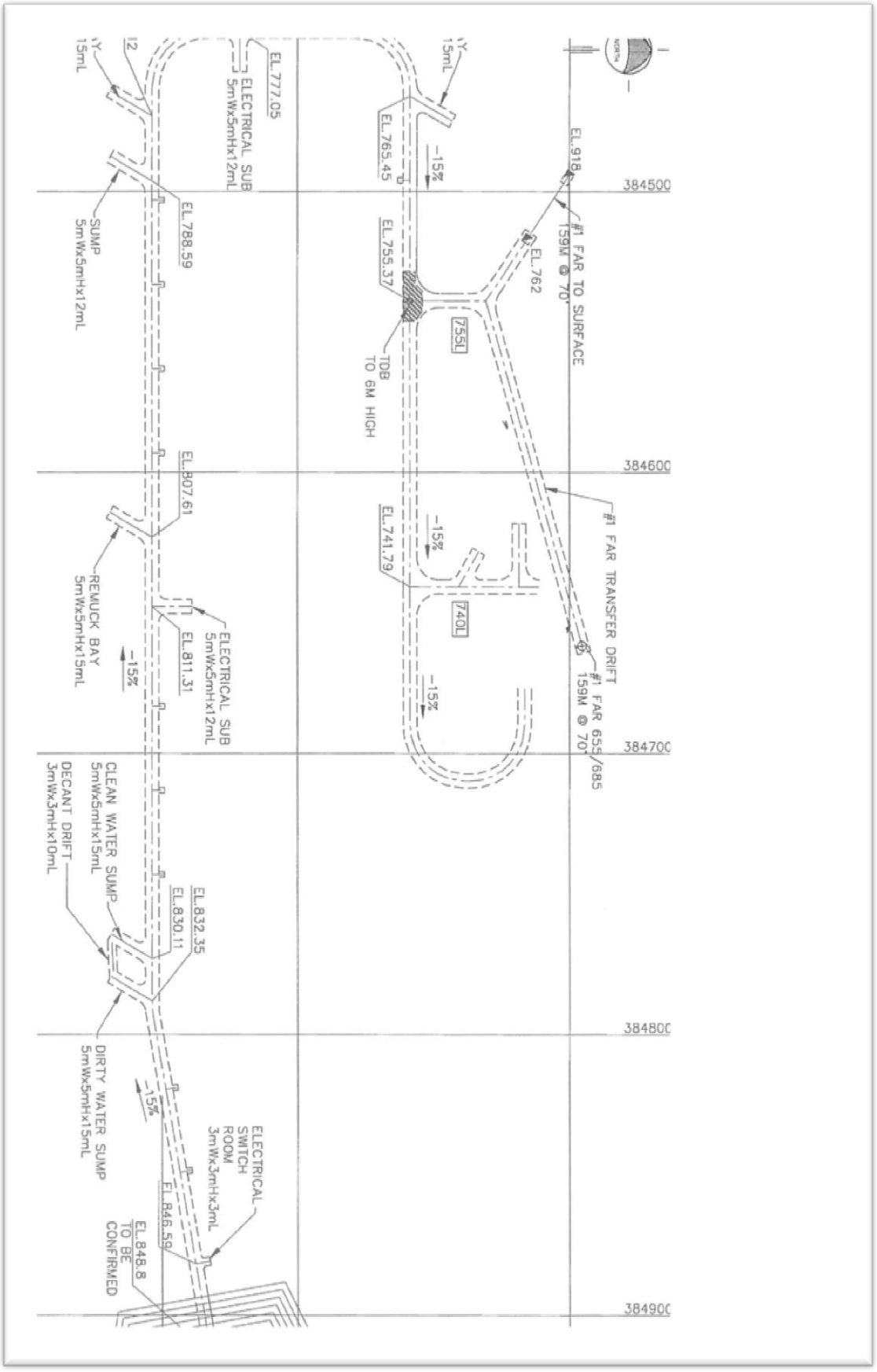
Agency	Contact Personnel	Office Contact Number	Home Contact Number
YWCHSB	Bruce Milligan	867-667-8739	1-800-661-0443 (toll free)
Alexco Resource Corp	formal plan in place	867-996-2330	
Procon Mining	formal plan in place	604-291-8292	

Reference Mutual Assistance Agreement for more details

14. Minto Mine Underground Decline Capital Development

14.1. Mine Safety Plan for first 4500 meters

The Minto Mine Capital Decline will be of a five by five meter dimension by 4500 meters in dept. Safety bays and sumps will be set up on the right side of the drift with all the remucks on the left side. The drift will be driven by an experienced rotating work crew of 16 miners. Work crews will be all ticketed and experienced mine rescue personnel. Each work crew will consist of four men and will have a ticketed shift boss in addition to the four man crew. At any given time there should only be two men working at the face. The target is to advance 100 to 125 meters per month.


384500
384600
384700
384800
384900
EL.918
#1 FAR TO SURFACE
159M @ 70°
EL.762
#1 FAR TRANSFER DRIFT
#1 FAR 655/685
159M @ 70°
EL.765.45
-15%
EL.755.37
755L
TDB
TO 6M HIGH
EL.741.79
740L
-15%
-15%
EL.777.05
ELECTRICAL SUB
5mWx5mHx12mL
EL.788.59
SUMP
5mWx5mHx12mL
EL.807.61
REMUCK BAY
5mWx5mHx15mL
-15%
ELECTRICAL SUB
5mWx5mHx12mL
EL.811.31
CLEAN WATER SUMP
5mWx5mHx15mL
DECANT DRIFT
3mWx3mHx10mL
EL.832.35
EL.830.11
DIRTY WATER SUMP
5mWx5mHx15mL
-15%
ELECTRICAL
SWITCH
ROOM
3mWx3mHx3mL
EL.846.59
EL.848.8
TO BE
CONFIRMED

Safety

A single ***vent fan*** set up at the portal entrance a safe distance away will provide adequate ventilation for the first phase of the drift. A standard stench gas warning system will be tied into the surface ventilation system with the ability to manual activate from surface. A back up Alimak vent raise 3 meters by 5 meters will eventually be driven to the surface as development progresses. This vent raise will be equipped with ladders and metal landings and will also serve as the back-up emergency escape route. A firefighting hose station will be set up in proximity of the portal. Safety bays will be located along the drift every 30 meters equipped with reflective signs for identification and scaling bars. The safety bay closest to the working face will be equipped with an industrial sized metal "Job Box "with emergency equipment inside. Basic contents;

- Six Ocenco EBA 6.5 Escape breathing apparatuses good for 8 hours each.
- Six spare MSA W65 Self –Rescuers
- One level 3 first aid kit
- One oxygen therapy unit
- Splints, c-collar, six spare emergency blankets
- Five gallon jug of fresh water
- Mainstay Freeze dried dehydrated food bars (good for 5 years)
- Back up emergency lighting
- Toiletries as required.

Communication will be via Leaky Feeder or Fiber Optics. Upon reaching the 250 meter mark in the drift a **C-CAN Refuge Station** will be stationed to protect miners in the event of dangers. The refuge station will be equipped with posted emergency procedures, telephone emergency communication systems, firefighting equipment, piped‑in fresh air, piped in water, stretcher, spine board, trauma kit, emergency blankets, first aid supplies, emergency breathing apparatus, drinking water and such other emergency supplies as circumstances at the mine may dictate.

Rescue

The contractor responsible for the mining of the decline will provide 6 certified underground mine rescue personnel. In addition six existing Minto Mine employees presently possess valid underground mine rescue certification. This will bring the total to 26 ticketed underground mine rescue personnel. Mine Rescue training and instruction will be conducted in a cooperative effort between the contractor and Minto Mine utilizing underground certified mine rescue instructors.

Rescue Equipment are stored on surface and consist of 6 Draeger BG4 self-contained closed circuit breathing apparatuses, 2 fully equipped stretcher baskets, picks, shovels, scaling bars, rechargeable saws, rope, tackle, mechanical advantage hardware, foam fire suppression equipment, fire hoses, nozzles, axe, hammers, nails, etc.

A firefighting hose station will be set up in proximity to the portal. The design will be that of a 2.5 inch water valve with ability run several lengths of 2.5 inch fire hose off of it to a gated "Y". The gated "Y" reduces from 2.5 inches to 1.5 inches and splits to two 1.5 inch fire lines to the fire, foam nozzles utilized if required. A supply of AFF foam, nozzles, hoses and extinguishers will be stored in the hose station and readily available. A wheeled foam machine will be available for filling a drift in the event of equipment fires underground.

15. MISSING PERSON ACTION PLAN

Potential exists where persons may become lost on or traveling to and from the property. Such incidents can occur under the following circumstance:

- Employee or Contractor personnel engaged in surface exploration, travel or any other activities are overdue and cannot be located or contacted.

Upon notification that personnel are unaccounted for on the property you should:

1. Immediately advise the Area Supervisor, Safety Department Personnel and Area Manager
    - Designate a mine official in charge of the search and communications/planning.
    - Assess and determine the level of response required.
    - Gather all available information about the missing persons including last known location.
    - Advise the RCMP of the circumstances and request further assistance
    - Designate ERT/Mine Rescue to stand-by and assist the RCMP in search efforts as directed
    - Any search activity needs to be coordinated through the mine official in charge of the search. Search by vehicle should be conducted with two people in each vehicle, in coordination with RCMP and have effective communication and plan in place prior to conducting search.
    - Survival gear, rescue tools, tow straps, fuel, etc. should all be considered and taken along during search activities.
2. Stand-by to provide further information and assistance as required.
3. Once search is complete follow up notification to all involved must be conducted including RCMP.
4. Provide for follow up investigation to identify contributing factors and recommend future prevention actions.

16. OUTBREAK OF SICKNESS/GASTROENTERITIS ACTION PLAN

(Yukon Center for Communicable Disease Guideline)

Case Definition for Outbreak:

- At least one of the following must be met: Two or more liquid or watery
- stools above what is normal for the person within a 24-hour period, OR
- Two or more episodes of vomiting in a 24-hour period, OR
- Both of the following: (a) lab confirmation of a known enteric pathogen and (b) At least one symptom compatible with gastrointestinal tract infection (I.e. nausea, vomiting, diarrhea, abdominal pain or tenderness)

Outbreak definition:

- Three or more cases of gastroenteritis infection (as defined above), potentially related, occurring within a four day period, within the facility.

Case characteristics:

- Abrupt onset of diarrhea and vomiting
- Fatigue and occasional low-grade fever
- Average duration 18-24 hours, rapid recovery

Suspected etiology:

- Noro type virus. Confirmation by obtaining sample and sending in for analysis. Sample kit available in first aid and instructions are attached.

Response measures:

1. Sick bay and isolated washroom facilities needs to be provided. Minto Manor and Exterior Wash car need to be readied for service by Sodexo.
2. A second area made available for post-acute, recovering patients.
3. Communication to site informing of the situation and requesting people to report illness and use strict personal hygiene practices.
4. Cleaning of the quarantine areas undertaken by people informed of the risks and trained in the protection required. Food must be delivered, provisions for hydration need to be ensured. Electrolyte replacement fluids should be provided. Squincher is currently being placed into warehouse stock.
5. Cleaning of all other areas using Virox or bleach solution: 3x per day bathrooms and corridors and common rooms.
6. Kitchen and dining areas are cleaned on a continual basis
7. Discontinue communal food dispensing (salads, etc.) All food portions individually wrapped.
8. Contact Yukon Communicable Disease Control to advise of outbreak.
9. Consider notification of offsite personnel that may be scheduled to come into camp during outbreak and decide on travel restrictions, interruptions during the period

16.1. Recommendations for ongoing management of outbreak

If decline in case numbers to sporadic or nil:

- Laundering of all bedding: sheets, pillow cases, and quilts or blankets
- Laundering of all clothes used by or exposed to sick individuals.
- Cleaning of all surfaces with standard veridical disinfectants (bleach or Virox).
- Clothes that have been stored and unexposed to sick persons can be left in place
- Any drawers, shelves, etc. used by sick individuals should be cleaned.

If sporadic new cases (1 to 2 per day):

- Continue use of Sick Bay and isolation area
- Continue food preparation precautions
- Allow new staff in but with briefing on situation and need for vigilant personal hygiene

When no new cases reported for at least 48 hours:

- Terminal cleaning of isolation areas, cleaned as above with Virox or bleach solution. Designate and maintain a smaller isolation area for possible new cases over next 2 to 4 weeks
- Allow new staff to come in for normal tour of duty
- Return to normal food preparation

If continued high numbers (more than 3 new cases per day) or escalation of cases:

- Continue isolation/sick bay area with appropriate cleaning regimen
- Continue daily monitoring of new cases and their origin (bunk house)
- If more than one new case per bunk house, undertake intense cleaning of entire affected bunk.
- Close non-essential common areas
- Allow no in-rotation in of new personnel
- Consider camp closure according to demands on personnel

If continued high or increasing numbers despite measures in B. being followed:

- Close camp with clean out of entire camp: bunkhouses, food preparation and consumption areas, offices, common rooms and all non-industrial sites.
- Allow reopening of site following clean up.

If apparent cessation of outbreak followed by new cases after 48 hours or more:

- Follow recommendations as in B and C above.

17. EMERGENCY CONTACT INFORMATION

CAPSTONE MINING CORP.
MINTO MINE

MINTO MINE – MLU PERMIT #LQ00004

EMERGENCY CONTACT INFORMATIO

LOCATION

LEGAL DESCRIPTION: N 62.37.210 E 137.14.042

NAD 83 EASTING 385371 NORTHING 6945190

DIRECTIONS

FROM WHITEHORSE, HEAD WEST ON ALASKA HIGHWAY, TURN NORTH (RIGHT) ONTO HIGHWAY #2, TRAVEL TO APPROXIMATELY KILOMETRE 430, and TURN WEST (LEFT) ONTO ROAD MARKED BY MINTO MINE SIGN. WAIT FOR RIVER BARGE ENTER ON MINE ROAD AT KM27. BARGE OR BRIDGE CREW WILL PROVIDE ROAD RADIO PROTOCOLS AND FURTHER INSTRUCTIONS.

FREQUENCIES

RADIO FREQUENCY	CHANNEL	RECEIVE	TRANSMIT
Access Road	16	162.075	167.055
Emergency	1	162.03	167.01

Amb Sat Phone 011-881-651-434-147 Control Room Sat Phone – 011-881-641-436-239 Spare Sat Phone – 011-881-622-452-217

ALL EMERGENCIES ANNOUNCE 'CODE 1, CODE 1, CODE 1' ON CHANNEL 1

MEDICAL

DEPARTMENT	PERSONNEL	COMPANY	PHONE #	EXT.	E-MAIL	RADIO
Dispatch	Control Room	Minto Ex.	604-759-0860	458		7
Safety /Medical	Arjen Spruit	Minto Ex.	604-759-0860	444	arjens@mintomine.com	1
Safety/Medical	David Crottey	Minto Ex.	604-759-0860	444	davidc@mintomine.com	1

OFF-SITE MEDICAL CONTACTS

AGENCY	PHONE NUMBER	ALTERNATE PHONE #
Nursing Station - Pelly Crossing	867-537-4444	24 hrs/day
Nursing Station - Carmacks	867-863-4444	After hours call forwarding
Whitehorse General Hospital	867-393-8700	24hrs/day
Yukon Communicable Disease Control	867-667-8178	
Poison Control Centre	867-393-8700	CANUTEC – 613-992-4624 (collect)

EVACUATION / RESCUE

Yukon EMS Dispatch – All medical transfers here	867-667-3333	24hrs/day
Air North	867-456-8300	867-335-1210 24hrs/day
Trans North Helicopter	867-668-2177	
Alkan Air	867-668-2107	24hrs/day
Yukon Alaska Tours – Coach Transportation	867-668-5944	24hrs/day
Search and Rescue (RCMP)	867-537-5555	867-667-5555
RCMP - Pelly Crossing	867-537-5555	867-667-5555
RCMP - Carmacks	867-863-5555	867-667-5555

MINE

DEPARTMENT	PERSONNEL	COMPANY	PHONE #	EXT.	E-MAIL	RADIO
General Manager	Ron Light	Minto Ex.	604-759-0860	439	ronl@capstonemining.com	
Health and Safety	Mark Goebel	Minto Ex.	604-759-0860	441	markg@mintomine.com	1
Mine Manager	Sebastien Tolgyesi	Minto Ex.	604-759-0860	453	SebastienT@mintomine.com	
Mill Manager	Ted Kenney	Minto Ex.	604-759-0860	477	tedk@mintomine.com	
Environmental	Jennie Gjertsen	Minto Ex.	604-759-0860	462	jennieg@mintomine.com	
Mill General Forman	Barrett/Johnston	Minto Ex.	604-759-0860	454	daveb@mintomine.com	8
Maintenance/Project	Martin Mann	Minto Ex.	604-759-0860	457	martinm@mintomine.com	
Site Services	Steven Maunder	Minto Ex.	604-759-0860	224	stephenm@mintomone.com	16/5
Human Resources	TJ Silliker	Minto Ex.	604-759-0860	448	tjs@mintomine.com	
Explorations Group	Brian Willet	Minto Ex.	604-759-0860	228	brianw@mintomine.com	
Pelly Superintendent	Declan McGovern	Pelly Const.	604-759-0860	466	declan@pelly.net	14
Pelly Superintendent	John Garvice	Pelly Const.	778-785-3184	466	john@pelly.net	14
Sodexo Manager	Michel Bourget	Sodexo	604-759-0860	230	Minto.Noram@sodexo.com	
Dyno Supervisor	Dale Wearmouth	Dyno Nobel	403-775-6143		dnns.minto@am.dynonobel.com	14
Dyno Supervisor	Rene Mercereau	Dyno Nobel	403-775-6143		dnns.minto@am.dynonobel.com	14
Assay Lab Manager	Bella Ocampo	SGS	604-759-0860	447	bella.ocampo@sgs.com	
Assay Lab Manager	Erin Slack	SGS	604-759-0860	447	Erin.slack@sgs.com	
Satellite Phones	Ambulance – 011-881-651-434-147		Control Room – 011-881-641-436-239		Spare – 011-881-622-452-217	

OTHER

Superior Propane	867-334-1627	
Yukon Energy	1-800-676-2843	24hrs
Yukon Spill Response Line	867-667-7244	
YTG Disaster and Emergency	867-667-5220	
Yukon WCB	800-661-0443	
Forest Fire Reporting	888-798-3473	Carmacks Duty Officer – 867-332-1989
Conservation Officer	867-996-2202	867-335-2327 cell
Coroner	867-667-5310	
WCB Mines Inspector	867-667-8739	867-334-2002 cell or 867-667-5450 24hr

Appendix A

Attached copy of Mutual Assistance Agreement for UG Mine Rescue

MINTO EXPLORATIONS LTD.

A Subsidiary of Capstone Mining Corp.

MINTO MINE

SPILL CONTINGENCY PLAN

June 6, 2012

Spill Contingency Plan

Minto Project, Yukon Territory

Submitted by:

Minto Explorations Ltd.

DISTRIBUTION LIST

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3 Copies + 1 PDF	Government of Yukon, Energy, Mines and Resources, Minerals Management Branch
3 Copies + 1 PDF	Selkirk First Nation
1 Copy + 1 PDF	Government of Yukon, Environment, Water Resources Branch
1 Copy + 1 PDF	Yukon Water Board
3 Copies + 1 PDF	Access Consulting Group
3 Copies + 1 PDF	Minto Explorations Ltd.

* PDF = digital version of report on CD

PROJECT CONTACTS

MINTO EXPLORATIONS LTD. *A subsidiary of Capstone Mining Corp.* Suite 900, 999 West Hastings Street Vancouver B.C. V6C 2W2 Telephone: (604) 684-8894 Site: (604) 759-0860 Fax: (604) 688-2180 www.capstonemining.com	**Colleen Roche** General Manager Email: ColleenR@capstonemining.com **Mark Goebel** Health and Safety Superintendent Email: markg@mintomine.com **Jennie Gjertsen** Environmental Coordinator Email: jennieg@mintomine.com **James Spencer** Environmental Coordinator Email: jamess@mintomine.com

* Additional copies of the plan can be obtained by contacting the company using the above contact information

TABLE OF CONTENTS

1.0 INTRODUCTION

Minto Explorations Ltd. (MEL) has prepared this Spill Contingency Plan (SPC) for operational activities being undertaken at the Minto Property within the Minto Creek drainage basin. The Minto Property, shown in Figure 1, is centered at approximately 62°37'N latitude and 137°15'W longitude (NAD 83, UTM Zone 8 coordinates 6945000N, 384000E). The Project is located on the west side of the Yukon River on Selkirk First Nation (SFN) Category "A" Settlement Land under the Selkirk Land Claims Agreement.

2.0 DEFINITIONS

1. **"Deposit out of the normal course of events"** means a deposit that can reasonably be expected to occur at the mine and that can reasonably be expected to result in damage or danger to fish habitat or fish or the use by man of fish , and the identification of the damage or danger. (*Metal Mining Effluent Regulations, Part 3, SOR/2002-222)*

2. "**Spill"** means a release of a substance in to the natural environment that is abnormal in quantity or quality in light of all circumstances of the release; or is in excess of an amount specified in the regulations (*Yukon Environment Act, Part 11*)

    i) "**Emergency Spill"** A release of a hazardous product where there is potential for that product to enter a waterway or cause significant danger to life, health or environment

    ii) **"Non-Emergency Spill"** all spills that do not meet criteria of i) or a spill of any diesel product, blasting agent, oil, lubricant or coolant that the responsible party is competent to manage safely and efficiently in terms of assessment, prevention, containment and clean-up.

3. **"Discoverer"** means the person that discovers an incident that could possibly result in a spill or has resulted in a spill

4. **"Substance"** means a hazardous substance, pesticide, contaminant or special waste often referred to as a "**deleterious substance"**

5. **"Spill Contingency Plan"** means a plan devised for an exceptional risk that, though unlikely, would have catastrophic consequences**.**

6. **"Dangerous Good**" means a product , substance or organism included by its nature or by the regulations in any of the classes listed in the schedule to the act (*Transportation of Dangerous Goods Act)*

3.0 PURPOSE AND SCOPE

This Spill Contingency Plan is prepared in accordance with MEL's Type "A" Water Use License QZ96-006 (WUL):

> *"The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the spill contingency plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report."*

As well as *Part 3 – Deposits Out of the Normal Course of Events*, Section 30 of the Metal Mining Effluent Regulations (MMER):

> *"The owner or operator of a mine shall prepare an emergency response that describes the measures to be taken in respect of a deleterious substance within the meaning of subsection 34(1) of the Act to prevent any deposit out of the normal course of events of such a substance or to mitigate the effects of such a deposit."*

And finally to satisfy the requirements of the Quartz Mining License QML-0001 Schedule B:

> *"A plan that describes the measures designed to minimize the potential impact to the environment following a fuel or chemical spill."*

This Plan will apply to Minto Mine and the main access route for one year, whereby the owner or operator shall update and test the Plan to ensure it continues to meet the requirements of both the WUL and subsection 30(2) of the MMER.

3.1 Purpose

The purpose of this plan is to outline a general set of procedures to be followed to assess, prevent, contain and clean-up (APCC) a spill at the Minto Mine. For that procedure to be effective MEL must ensure that employees and contractors through either their experience or training possess the skills necessary to safely APCC a spill or potential spill. These procedures are necessary to ensure continuity and develop the foundation for a robust and effective Spill Contingency Plan. The plan is also designed to establish clear reporting and clean up procedures as they apply to emergency vs. non-emergency spills and incidents. The *Minto Mine Emergency Response Plan* details the specific spill response procedures though the Emergency Response Team (ERT) Guidelines to Hazmat Spills. It is beyond the scope of this document to define the specific Spill Response Procedures and decision loops involved in an ERT response. Any details pertaining to a response from ERT to APCC at a spill incident is the responsibility of the Site Safety Department. Only general procedures for Spill Response to emergency spills will be discussed.

This document also begins to address opportunities to improve spill preparedness, response, and mitigation for deposits out of the normal course of events (DONCE) that have the potential to impact the Yukon River and its tributaries within the project site.

All MEL employees and contract staff must be familiar with the general spill reporting procedures outlined in this document and will be introduced to them as part of their site orientation. Hazmat and Transportation of Dangerous Goods training will be required to the National Fire Protection Association (NFPA) 472 Awareness Level for all departments and major contractors. Employees will understand the potentially hazardous situations that spills can create to the health and safety of workers and the environment. They will understand their responsibilities as employees to APCC as well as report any spills. This document will be made available for viewing by all employees. MEL will advise employees of revisions or changes to the Plan.

An Emergency Response Team (ERT) has been established to, among other duties, respond to emergency spills. The Emergency Response Team will receive training to the NFPA 472 Operations Level Responder and be required to thoroughly understand this document in order to immediately respond to spills or incidents of a specific nature. This training is required as a foundation to developing site specific contingency planning for response tactics, for areas specific to the activities associated with the project that present a risk to the Yukon River and its tributaries.

MEL through its carriers of dangerous goods has contracts in place with Spill Responders including Quantum Murray Emergency Response and Enviro-Hazmat. These are full service response agencies that have commitments to mobilize fully trained Emergency Response Teams and equipment 24 hours a day 7 days a week.

3.2 Scope

The objectives of the Plan are to:

- identify potentially hazardous materials located on site;
- identify spill prevention measures;
- establish a high order of preparedness in the event that a spill occurs;
- ensure an orderly and timely decision-making, response and reporting process; and
- detail the steps MEL is taking to develop a detailed action plan specific to an emergency spill involving Minto Creek, Big Creek, the Yukon River and its tributaries and to assess ERT tactics and equipment to respond to such an event.

Maps of the project site are provided as follows: Figure 1 provides a general location map for the Minto property and Figure 2 depicts a project area overview. The areas covered by the Plan are the access road from the highway to the mine including the barge, ice bridge and the Big Creek bridge plus the mine, mill, ancillary facilities and site services.

Figure 1. General Location Map

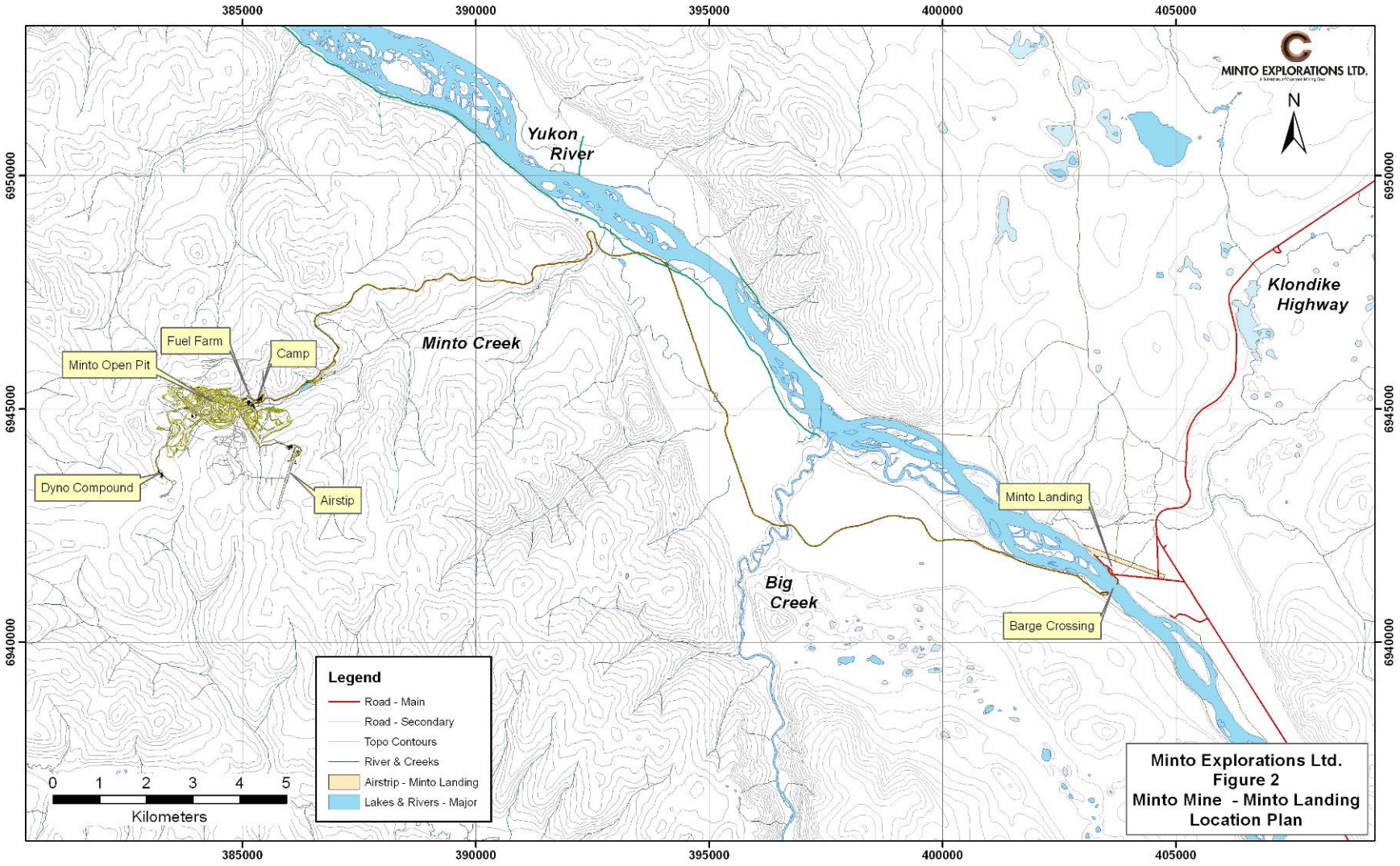

Figure 2. Project Area Overview

3.3 Statutory and Regulatory Responsibilities

There are several regulatory requirements and guidelines that are directly or indirectly linked to spill contingency planning. Related regulatory requirements are:

- Type A Water Use License (Section 5-10)
- Yukon Quartz Mining Production License (Section 17.1 and Schedule C – Related Documents and Plans)
- Metal Mining Effluent Regulations (Section 30)
- Yukon Environment Act (Part 11)

MEL will ensure that all requirements related to APCC and reporting within these regulated documents are implemented throughout the property for the life of mine. These statutory and regulatory responsibilities may change over time and will therefore result in the updating of this Plan.

3.4 Emergency Spill Response Equipment

Spill kits are located throughout the Minto Mine Property at locations indicated in Figure 4. The contents, which are described below in Table 1, are contained within re-sealable blue and yellow barrels. Contractor supervisor trucks have spill kits permanently affixed to the truck body. All Minto trucks have spill kits in yellow truck bags. All contract trucking agencies coming to the mine are required to carry spill kits within or affixed to the truck.

Minto Explorations Ltd. has a 1991 Chevrolet Top Kick Fire truck with an 840 gpm pump with 1000 gallon supply tank and 800 gallon drop tank. This truck would support all spill response activities with SCBA, Class A and B foam capabilities, decontamination needs as well as fire suppression/protection tools and equipment common to a truck of this nature. All ERT members are trained to competency on the operation of this fire truck and related equipment in accordance with NFPA standards. After consultation with ERAP providers Minto Mine will be better positioned to assess equipment needs but anticipates procuring sufficient containment boom and related

equipment to deal with a catastrophic diesel spill. Further training and skill development will take place in Spill Response Evolutions that will be staged in 2012. Minto Explorations Ltd. is also investigating the opportunity to join in with the Yukon Government's annual coordinated Spill Response training exercise (Arrell, 2011).

Earth moving and other equipment located at Minto Mine are listed in Table 2. All contractor equipment is available for use in spills and clean-up operations.

Table 1. Contents of Spill Kits

Spill Kit Item	Yellow Barrel	Blue Barrel	Yellow Truck Bag
Tyvek splash suits	2	2	
Chemical master gloves	2	2	1
Garbage bags with ties	10	5	3
Oil only booms (5" x 10')	4	2	1
Oil only mats (16" x 20")	100	100	
Universal sorbent mat	20	20	10
Sorbent socks	20	20	
Sorbent pads (pillows)	10	10	
Absorb-all pellet bags	2	2	
Tarp	2	1	
Duct tape	1	1	
Utility knife	1	1	
Field notebook and pencil	1	1	
Rake	1		
Pick axe	1		
Aluminum scoop shovels	2	2	
Instruction binder	1	1	1

Table 2. Spill contingency equipment located at Minto Mine

Quantity of units	Equipment	Future acquisitions
1	416 Backhoe	Containment Boom
1	1000 Gal. Vacuum Truck	Oil/Fuel skimmer
13	Dozer (various)	Emergency Fuel Storage
9	Excavator (various)	Response Vessel
7	Loader (various)	Transfer Pumps/hose
1	769C Truck	
1	740 Wagon	
4	773DTruck	
9	777 Truck	
2	Hazmat trailers (14' and 20')	
1	Top Kick fire truck	
500'	Sorbent Boom (various sizes)	
1	Storage Sea Can at Landing	
250'	2" layflat hose	
3	Trash pumps	

Table 3: Commonly transported hazardous materials

Deleterious Substance	Maximum transported volume	Frequency of exposure
Ammonium Nitrate Prill	43 500 Kg	High
Bagged Ammonium Nitrate Prill	39 000 Kg (26 bags x 1500 kg)	High
Ammonium Nitrate Emulsion Explosives	20 000 Kg	Medium
CFE Conditioner	30 000 L	Low
Nitric Acid	14 400 L (72 Drums)	High
All other mill reagents*	20 000 Kg (Super sacks ~1000 Kg)	High
Diesel	50 000 L	High
Gasoline	6 000 L	Low
Copper concentrate	40 000 Kg	High

*MIBC-Frother, AM28-Collector, PAX, Potassium Hydroxide, Nitric Acid, Sodium Sulfide.

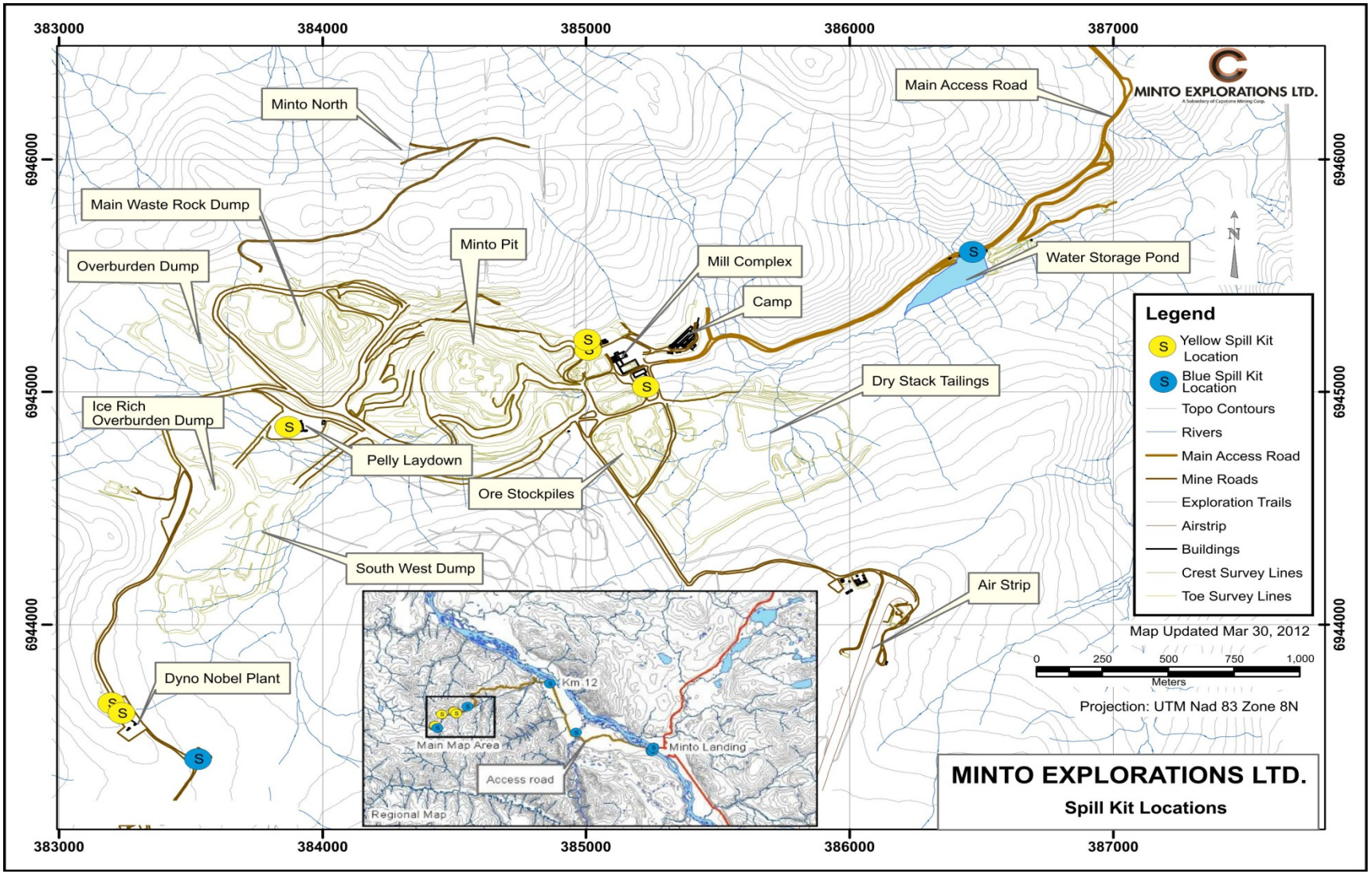

Figure 3. Spill Kit Locations

3.5 Hardcopy and Electronic Copy Locations of Plan

Copies of this Plan are kept on-site at all times in the following locations; Mill Control Room, Site Safety Office, Environmental Office, General Manager's Office, Site Service's Office and on the Copper Queen Tug. A copy is also held at Capstone Mining Corporation's head office in Vancouver, B.C and the Yukon Water Board head office. Electronic copies can be obtained from the head office of Capstone Mining Corporation. Contact information is provided on Page ii of this document.

4.0 COMMUNICATION AND SPILL REPORTING

Under federal and territorial regulations, the environmental lead will call the 24-hour Yukon Spill Report line should a spill of a reportable quantity occur (Table 4). Any spill of an amount greater than those listed in Table 4 or a spill of any amount that enters the Yukon River or a tributary of the river is a "reportable spill". Minto Explorations Ltd. is registered with CANUTEC for 24 hour Spill Response support and information to deal with emergency situations.

The Selkirk First Nations' Lands Director will also be contacted in the event of a reportable spill at 867-537-3331.

A spill in excess of the following thresholds or any spill that is abnormal in quality or quantity is considered a spill under the *Yukon Spill Regulations* (O.I.C. 1996/193), pursuant to the Environment Act. In this table, the listed regulations, "Federal Regulations" mean the *Transportation of Dangerous Goods Regulations* (Canada) Sor/85/77 of January 18, 1985.

Table 4. Reportable Spill Quantities

Product	TDG Code	Quantity
All petroleum products		> 200 liters
Waste discharges		Any quantity exceeding license
Explosives	1	Any amount
Flammable gases	2.1	> 100 liters
Non-flammable gases	2.2	> 100 liters
Poisonous gases	2.3	Any amount
Non-poisonous gases	2.2	> 100 liters
Corrosive gases	2.4	Any amount
Non-corrosive gases	2.2	> 100 liters
Flammable liquids	3	> 200 liters
Flammable solids	4	> 25 kg
Spontaneously combustibles	4	> 25 kg
Dangerous when wet	4	> 25 kg
Oxidizers	5.1	> 50 kg or 50 liters
Organic peroxides	5.2	> 1 kg or 1 liter
Poisonous substances	6.1	> 5 kg or 5 liters
Infectious substances	6.2	Any amount
Radioactive material	7	Surface : > 10 mSv/h At 1 meter : >200 Sv/h
Corrosive materials	8	> 5 kg or 5 liters
Miscellaneous Dangerous Goods	9.1	> 50 kg
“Hazardous to Environment” material		> 1 kg
Dangerous wastes	9.3	> 5 kg or 5 liters

4.1 Internal Reporting and Contact Information

Spills must be reported by the discoverer to their immediate supervisor and then to either Site Safety or the Environmental Department by radio or telephone after the scene has been assessed. Under the discretion of the Environmental Lead the General Manager will be notified.

Minto Mine – Communications Contact Information

Arjen Spruit / Dave Crottey, Safety Coordinators
Office Tel. (604) 759-0860 ext. 444

Ryan Herbert/Phil Emerson, Environmental Officers
Office Tel. (604) 759-0860 ext. 463

Alternate #1 James Spencer, Environmental Coordinator
Office Tel. (604) 759-0860 ext. 462

Alternate #2: Jennie Gjertsen, Environmental Coordinator
Office Tel. (604) 759-0860 ext. 462

Responsible department heads will be required to document the spill on an Environmental Incident Report (EIR), available through the Environmental Department.

4.2 External Reporting and Contact Information

Table 5 provides a summarized list of external contacts.

Table 5. Spill Related Resources and Contact Numbers

Resource	Contact Number
Yukon 24- Hour Spill Line	**(867) 667-7244**
Nursing Station - Pelly	**(867) 537-4444**
Fire Department – Pelly (Emergency)	**(867) 537-3000**
Police – Pelly	**(867) 537-5555**
Hospital – Whitehorse	**(867) 667-8700**
Fire Department – Whitehorse	**(867) 668-8699 or (867) 668-2462**
Quantum Murray – Parkland Spill Response	**1-800-251-7773 (24/7-Emergency Number)**
Enviro-Hazmat – Wiebe Spill Response	**1-866-249-7583 (24/7-Emergency Number)**
CANUTEC – 24 hour TDG Support	**(613) 996-6666**
Police – Whitehorse	**(867) 667-5555**
Access Consulting Group	**(867) 668-6463**
YG Department of Environment, Water Resources Branch	**(867) 667-3227**
YG Environmental Protection Branch	**(867) 667-3436**
Selkirk First Nation, Lands Director	**(867) 537-3331**
YG EMR, Carmacks Natural Resource Officer	**(867) 863-5271**
YG EMR, Client Services and Inspections	**(867) 667-3199**

4.3 Yukon Department of Environment

Although several government agencies at the federal, territorial and municipal levels may ultimately be involved, only one government contact is required for mine site spills:

YUKON TERRITORIAL 24-HOUR EMERGENCY SPILL RESPONSE NUMBER
Telephone: 1 - 867 - 667 - 7244

4.4 CANUTEC (TDG)

The Safety Department may also call CANUTEC for assistance in handling dangerous goods emergencies. One of the responsibilities of this organization is the sharing of resources, consumables, equipment and personnel in the event of a spill. This organization is a branch of Transport Canada that provides 24 hour help on Dangerous Goods.

CANUTEC - Dangerous Goods Help
Telephone Collect: 0 - 613 - 996 - 6666

A "dangerous occurrence" is defined as:

- Any loss of dangerous goods in excess of specified amounts or which represents a danger.
- Damage to any container of dangerous goods.
- A transportation accident in which radioactive goods are involved.
- An unintentional explosion or fire involving dangerous goods.

Notification must also be reported immediately to the owner of the transport trucks and the owner or consignor of the dangerous goods. It is the responsibility of the transporter of the goods to report this type of incident, and is the responsibility of the Area Manager to ensure it has been carried out properly.

4.5 Selkirk First Nation

The Environmental Department Lead will inform the Selkirk First Nation Lands Department if a spill or the potential for a spill of a reportable quantity occurs. The Lands Department will contact the Chief and leaders of the SFN. The Environmental Department Lead or General Manager will keep SFN informed of the situation.

Selkirk First Nation Lands Department
Telephone: (867) 537 - 3331

4.6 Surrounding and Downstream Communities

Notification of downstream water users if required is normally the responsibility of the Yukon Government, Environmental Protection Branch. Minto Explorations Ltd. will engage the Yukon Government in the upcoming year to provide guidance in this regard should such notification be required.

4.7 Public Relations

The General Manager is the designated spokesman for MEL. The General Manager may delegate his responsibility for public relations if forced to do so by the scale of the incident.

The following are key elements of a public relations strategy:

a. Provide information to the news media and the public on a timely basis;
b. Co-ordinate the release of information with a release by a government official to avoid duplication and/or confusion. Inform the RCMP if necessary;
c. Provide facts only;
d. Avoid potentially controversial subjects; and
e. Ensure that next-of-kin have been informed before the name of an injured person or a casualty is released.

5.0 EMERGENCY SPILL RESPONSE GENERAL PROCEDURES

When a spill is discovered the first step is to assess the scene for safety and **if safe to do so** immediately control and contain the spill, by any means necessary, if the "Discoverer" of the incident does not have the training, resources or equipment to do so then it is policy that the individual report a "Code 1" callout. This protocol will initiate response of the Safety Department, Environmental Lead and the Emergency Response Team. The "Code 1" callout procedure is defined in the *Minto Mine Emergency Response Plan*, March 2011 while the Emergency Spill Response Command Structure and General Spill Procedure are detailed in Figures 4 and 5. If the scene is safe

and the "discoverer" of the incident and the immediate supervisor has the means necessary to control, contain and recover the spill then they will mitigate the spill.

The Safety Coordinator/Medic will respond to the scene and conduct an initial assessment and assume command of the scene. If Safety Coordinator/Medic is required to treat patients, command is transferred to Health and Safety Superintendent/Officer or Emergency Response Team Captain. Unified Command Structure will be initiated once the General Manager, Area Manager, or Environmental Lead is on scene. Unified Command is a cooperative effort command between the General Manager, Health and Safety Superintendent/Officer, Area Manager of involved Department and the Environmental Lead. Transfer of command includes a detailed verbal report of the incident and activities conducted and underway.

A Code One Protocol initiated by an emergency spill or incident will trigger the Specific Spill Response Procedure based on the product type, quantity and environmental and safety conditions. A review of deleterious substances transported to/from the Minto Mine Site and specific response procedures are covered in the following section.

Initial spill response will be conducted in accordance to Transport Canada's 2008 Emergency Response Guidebook (Transport Canada, 2008). This Guidebook will assist incident command (IC) with information to identify the material, use the guide to reference potential hazards, public safety and emergency response information. The Table of Initial Isolation and Protective Action Distances will be used to dictate isolation and protection for large and small spills. However this is not a comprehensive spill mitigation and response document and will only assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. The Emergency Response Guidebook does not address all possible circumstances that may be associated with a dangerous goods incident.

Consultation with MSDS, CANUTEC, Transport Canada, The Yukon Department of Environment and a professional spills consultant will help define our capabilities, preventative tools, specific equipment and response tactics and additional training and education.

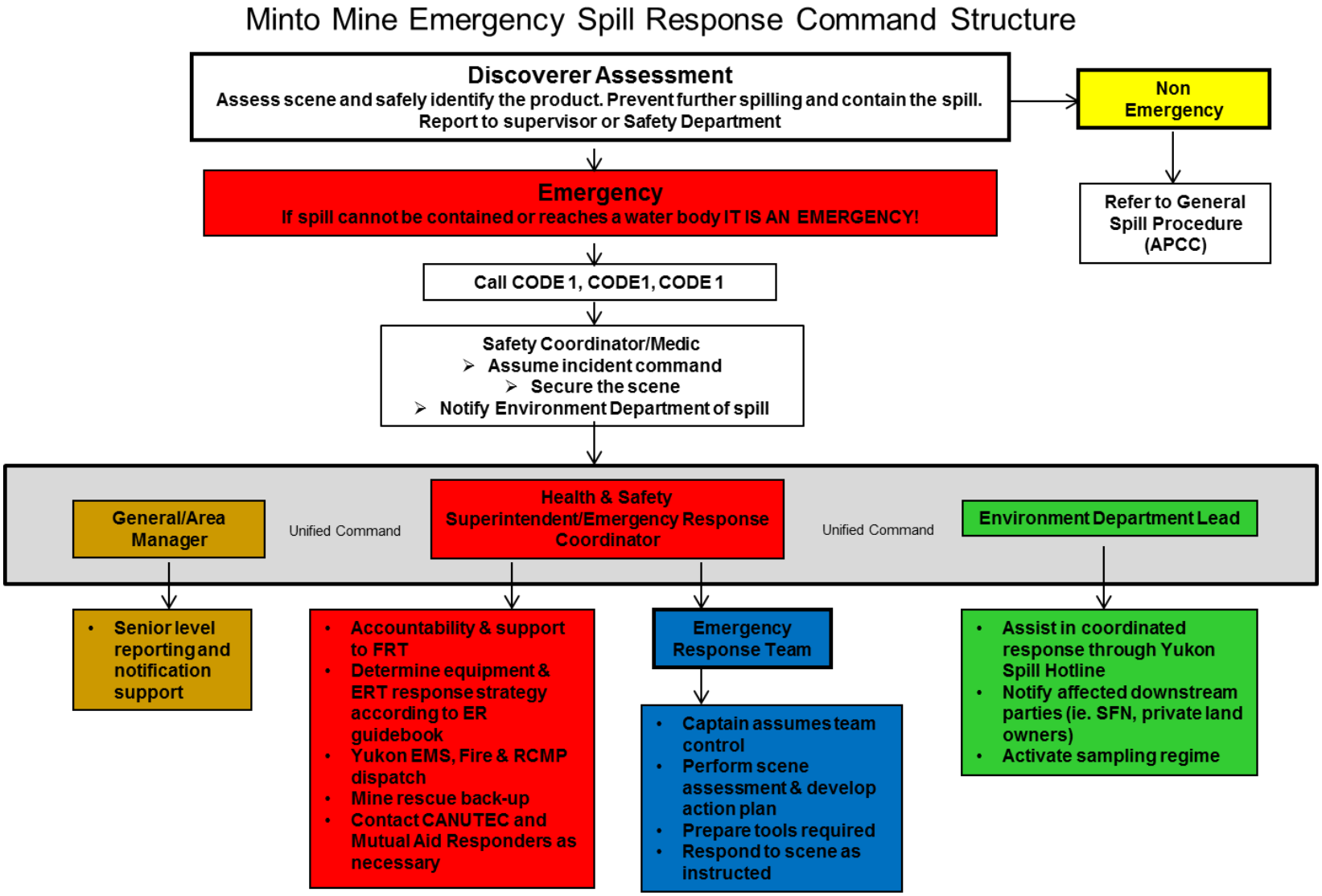

Figure 4. Minto Mine Emergency Spill Response Command Structure

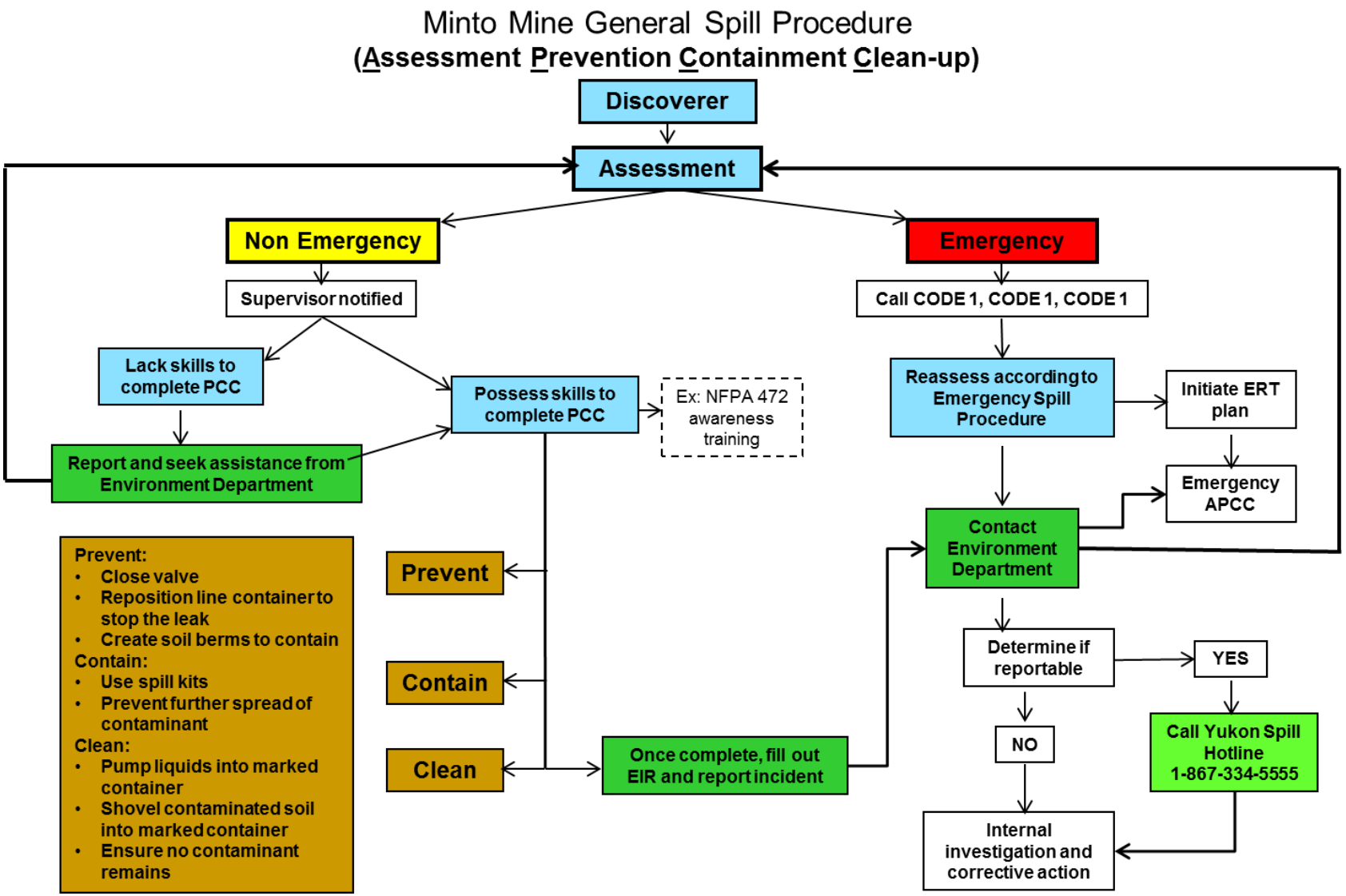

Figure 5. Minto Mine General Spill Procedure

6.0 NON- EMERGENCY SPILL RESPONSE GENERAL PROCEDURES

The majority of spills that are likely to occur on the Minto Mine Site will include a simple stepwise process initiated by the discoverer. If the safety at the scene is in doubt then it is imperative that Site Safety is notified immediately. A non-emergency spill is defined as a spill of any diesel product, blasting agent, oil, lubricant or coolant that the responsible party is competent to manage safely and efficiently in terms of assessment, prevention, containment and clean-up. Once the scene is assessed for safety by the discoverer or supervisor and deemed non-emergency, they should prevent, contain and clean-up (PCC) and contact the environmental team as soon as practical. If they are unable to deal with the incident and PCC, the environmental team will be notified by radio/telephone immediately.

Major contractors have personnel trained to NFPA 472 Awareness level and are able to respond to non-emergency spills.

7.0 SPILL RESPONSE BEST MANAGEMENT PRACTICES

This section will serve to provide managers with the tools and materials available at the Minto Mine site necessary to adequately contain and clean-up a spill. Site supervisors and managers will be required to thoroughly understand and have knowledge of specific spill response procedures outlined within this report.

7.1 Containment of Spills

Spills containment on the property will require specific spill responses based on the location and surface composition. This section will focus on general spill containment practices on land, water and snow. The primary focus should always be in stemming the source of the spill, containing and recovering the product to minimize environmental damage.

7.2 Containment of Spills on Land

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, thus spills on soil are generally less serious than spills on water as contaminated soil

can be more easily recovered. However, larger spills have the ability saturate land and flow across land, making containment measures as described below very important. It is important that all measures be undertaken to avoid spills reaching open water bodies.

Dykes

Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled fuel. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of fuel that may reach it. A plastic tarp can be placed on and at the base of the dyke such that fuel can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly a dyke may not be necessary and sorbents can be used to soak up fuels before they migrate away from the source of the spill.

Trenches

Trenches can be dug out to contain spills as long as the top layer of soil is thawed. Shovels pick axes, an excavator or a loader can be used depending on the size of trench required, fuel can then be recovered using a pump or sorbent materials.

7.3 Containment of Spills on Water

Spills on water such as rivers, streams or lakes are the most serious types of spills as they can negatively impact water quality and aquatic life. In addition the water resources have other user groups involved.

Booms

Booms are commonly used to contain fuel floating on the surface of lakes or slow moving streams. They are released from the shore of a water body to contain the spill. If a spill is located offshore booms can be used to contain and prevent from reaching the shoreline. More than one boom may be used at once. Booms may also be used in streams and should be set out at an angle to the current. Booms are designed to float and have sorbent materials built into them to absorb fuels at the edge of the boom. Fuel contained within the circle of the boom will need to be recovered using sorbent materials or skimmers/pumps and placed into barrels or bags for disposal.

Weirs

Weirs/underflow dams can be used to contain spills in streams and to prevent further migration downstream. Plywood or other materials found on site can be placed into and across the width of the stream, such that water can still flow under the weir. Spilled fuel will float on the water surface and be contained at the foot of the weir. It can then be removed using sorbents, booms or pumps and placed into barrels or plastic bags.

Barriers

In some situations barriers made of netting or fence material can be installed across a stream, and sorbent materials placed at the base to absorb spilled fuel. Sorbents will need to be replaced as soon as they are saturated. Water will be allowed to flow through. This is very similar to the weir option discussed above.

7.4 Containment of Spills on Ice

Spills on ice are generally the easiest spills to contain due to the predominantly impermeable nature of the ice. For small spills, sorbent materials are used to soak up spilled fuel. Remaining contaminated ice/ slush can be scraped and shoveled into a plastic bag or barrel. However, all possible attempts should be made to prevent spills from entering ice covered waters as no easy method exists for containment and recovery of spills it reaches the water under ice.

Dykes

Dykes can be used to contain fuel spills on ice. By collecting surrounding snow, compacting it and mounding it to form a dyke down slope of the spill, a barrier is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel can then be pumped into barrels or collected with sorbent materials.

7.5 Containment of Spills on Snow

Snow is a natural sorbent, thus as with spills on soil, spilled fuel can be more easily recovered. Generally, small spills on snow can be easily cleaned up by raking and shoveling the contaminated snow into plastic bags or empty barrels, and storing these at an approved location.

Dykes

Dykes can be used to contain fuel spills on snow. By compacting snow down slope from the spill, and mounding it to form a dyke, a barrier or berm is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel/snow mixture can then be shoveled into barrels or bags, or collected with sorbent materials.

7.6 Procedures for Transferring, Storing, and Managing Spill Wastes

In most cases, spill cleanups are initiated once the spill is contained. Sorbent socks and pads are generally used for small spill clean-up. A pump with attached fuel transfer hose can suction spills from leaking containers or large accumulations on land or ice, and direct these larger quantities into empty drums or tanks. Hand tools such as cans, shovels, and rakes are also very effective for small spills or hard to reach areas. Spill response equipment mentioned in this section, including the mentioned tools, are available in spill kits deployed at designated areas. A vacuum truck with 1000 gallon tank is available for recovery of bulk fluids. In addition there are two 2” transfer pumps and one 3” transfer pump available to assist with product recovery. Spilled petroleum products and materials used for containment will be placed into empty waste oil containers or plastic bags and sealed for proper disposal at an approved disposal facility. Following clean up, any tools or equipment used will be properly washed and decontaminated to prevent the spread of contamination to other areas of the site. Contaminated soil will be moved to the onsite land treatment facility and will be sampled for contamination characterization as per the Environment Act Contaminated Sites Regulations.

8.0 SPILL PREVENTION AND MONITORING

Spill prevention strategies are the first line of defense to avoid potentially catastrophic spills and costly clean-ups. Some strategies for prevention and monitoring relevant to our site are listed below.

8.1 Containment Strategies

The storage areas for diesel fuel and gasoline are lined with impermeable liners and bermed with 110% containment. Planking is used to protect the liner from the fuel drums and cylinders. Spill kits are located wherever fuel is stored or dispensed and at several other strategic locations.

Portable drip trays and appropriately sized fuel transfer hoses with pumps are used when refueling aircraft or other motorized equipment, to avoid any leaks/drips onto the land. Site Services Department conducts weekly visual inspections to check for leaks or damage to the fuel storage containers, as well as for stained or discolored soils around the fuel storage areas and adjacent motorized equipment. Regular maintenance and oil checks of all motorized equipment are also undertaken to avoid preventable leaks.

8.2 Tug and Barge Improvements

A complete refit of the Copper Queen was undertaken to prepare it for service in 2012. New control systems and a complete rewiring of the major instruments and controls including an electronic control package. Now propellers and steering upgrades to the rudders will provide for better steerage and control. Ramp service upgrades are also scheduled as part of the safety and prevention initiatives. The tug and barge staff completed their Vessel Operator Proficiency training as well as Marine Emergency Duties.

8.3 Monitoring of Affected Area

Once the spill is contained, trained personnel in sampling procedures will sample areas thought to be contaminated. Once area is excavated conformation samples will be taken to ensure the extent of the contaminated area has been cleaned up. Immediately after a spill is discovered to reach a

waterway, trained personnel in sampling procedures will sample water downstream of the contaminate discharge point.

8.4 Transportation of Dangerous Goods (TDG)

Transporter Qualifications

Transporters will be carefully selected, and are required to have Department of Transport certification, acceptable spill response programs, hazardous materials safety and handling procedures (including material safety data sheets [MSDS]), and driver training programs. Each approved transporter will be periodically reviewed to assure that they continue to carry valid Department of Transport certification.

Delivery Scheduling

The potential for spills will be minimized to the greatest extent possible by scheduling deliveries to avoid any regular or temporary congestion that may occur along routes leading to Minto Mine. Transporters will be required to advise the operations of any delays or schedule changes that occur. Deliveries will be timed during daylight hours to coincide with warehousing hours and to minimize offloading problems.

Regulatory Compliance

Transporters making deliveries to Minto Mine will be required to follow all federal and territorial Department of Transportation regulations for the transportation of dangerous goods, as defined in the Transportation of Dangerous Goods Act (TDGA). This will include all placarding, packaging, manifests, etc.

Radio Controlled Main Access Road

The main access road into Minto Mine is controlled by radio. Each transporter will be required to program their in-truck radios to the Minto Mine frequencies at Omega Communications Ltd. Transporters will call out their kilometers as per signs located at the sides of the Minto access road.

8.5 Workplace Hazardous Materials Information System (WHMIS)

Employees that will be handling potential hazardous materials will require WHMIS training. The training will identify hazardous materials in their section. Classification of hazardous material, supplier labels, work site labels and Material Safety Data Sheets will be covered in the training. Employees will have updates to the system and MSDS information every year or when new products are to be used.

8.6 In-Bound Freight

MEL regularly purchases goods from a number of suppliers and these goods are delivered to the mine by truck. The most important products delivered are fuel such as diesel fuel, and propane in bulk, ammonium nitrate in bulk, various lubricants and reagents in drums and packaged explosives (Class 1.1 and 1.5).

MEL has identified the most significant volumes of deleterious substances that are transported to the mine site (Table 5). Using experimental eco-toxicity data based on lethal doses, and estimated flow volumes MEL is provided with guidelines for what type of spill in a chosen water body could exceed CCME standards. It is the policy of MEL, in its contractual arrangements with suppliers, to take possession of goods only upon delivery to the mine. It is further the policy of MEL to purchase goods only from suppliers who have the resources to respond to a spill and have filed Spill Contingency Plans under the Transportation of Dangerous Goods Act for designated substances. Therefore, although MEL will assist with communication and the clean-up of a spill which may occur along the access road between the highway turnoff and the mine, MEL will not assume liability for a spill which is the result of an incident which occurs before goods have been delivered to the mine.

8.7 Out-Bound Freight

The concentrate is loaded into trucks at the mine under the supervision of the concentrate shed operator. Each truck holds approximately 48 tonnes. The loaded trucks are hauled to Skagway, Alaska under contract with Lynden Trucking. Responsibility for the concentrate is accepted by

Mineral Services Incorporated once loading had been completed. It is expected that on average six to twenty loads of concentrate will be hauled per day depending on the season.

Lynden Trucking is responsible for notification and clean-up in case of a concentrate spill as per the Spill Contingency Plan filed by Lynden. Therefore, although MEL will assist with communication and the clean-up of a concentrate spill which may occur along the access road between the mine and the highway turnoff, MEL does not accept liability for a spill which is the result of an incident which occurs after the truck has left the mine.

8.8 Spills On-Site

If a spill does occur on site, it will be the responsibility of the discoverer, their supervisor or manager, environmental department and site safety to ensure that APCC measures and reporting procedures are conducted in strict accordance with this plan. Non- emergency spill containment will utilize BMP's outlined in Section 7.0. Emergency spill response will be activated through the Emergency Response Plan and in sensitive areas through a detailed action plan (ie. Big Creek, Minto Creek, Yukon River).

8.9 Spills Off-Site

Offsite spills will most often be caused by transportation companies and therefore will be the responsibility of the transportation company; however, MEL will be available for support if requested by the transportation company in the form of spill reporting and spill communication. MEL will not be responsible for clean-up of spills but may assist on a case by case basis in the emergency response phase.

9.0 SPILL RESPONSE TRAINING AND CONSULTATION

Hazmat and Dangerous Goods Response training will be provided to site personnel with the objective of achieving satisfactory targets for all departments and contractors to the NFPA 472 Awareness Level. Emergency Response Team, Incident Command Personnel, Environmental Department Team Leaders and Mitigation/Clean up Team Leaders will be trained to the NFPA 472

Operations Level Responder. A Contractor has been identified to provide this training. Reference material has been sourced and time/date planning is underway.

Emergency Response Team (ERT) personnel are trained to the BC Mine Rescue – Surface standard which includes Standard First Aid with CPR-C. Once trained to this level, they will keep their certification current through practical and theory scenario training. Training exercises for the ERTs are organized by the Minto Health and Safety Superintendent. A list of names, training modules, and specialized simulations completed are maintained by the superintendent. .

A contractor will be sourced for site specific spill action plans within the project area specific to the Yukon River, and its tributaries, paying particular attention to our dangerous goods products. The contractor will also further develop portions of the spill plan that require more specific procedures and identification of risk areas including recovery of product and or vessels and vehicles. This will require identification of additional equipment and tools specific to the planned responses and recommendations regarding the staging and location of such response equipment and tools at the most strategic locations for rapid, safe and effective spill response.

In 2012 through consultation with Emergency Response Assistance Plan providers (ERAP) as well as through consultation at the corporate level for risk management the company will be better positioned to assess in more detail the risks and liabilities involved and develop more refined response prevention and clean-up procedures. It is anticipated that through cooperation with our material goods providers and with government agencies such as the Environment Canada Environmental Emergencies division we will be continually improving our state of readiness.

10.0 REFERENCES

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