



KENO HILL SILVER DISTRICT MINING OPERATIONS

SPILL CONTINGENCY PLAN

November 2020

Prepared for:

ALEXCO KENO HILL MINING CORP.

Prepared by:



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1. INTRODUCTION

The Keno Hill Silver District (KHSD) (operated by Alexco Keno Hill Mining Corp.) is a historical mining district located 354 km due north of Whitehorse, in the vicinity of the village of Keno City. Operations within the KHSD have been almost continuously from the early 1900s to present with the most recent mining activity being undertaken by Alexco Keno Hill Mining Corp (AKHM) from 2011 to 2013 when the District mining operations were put into temporary closure. Water Licence QZ18-044 was issued in July 2020 to include the Birmingham mine and Alexco is currently in the process of restarting operations in the District.

This Spill Contingency Plan (Plan) is an update to the previous Spill Contingency Plan, submitted in July 2018. The contents of this Plan are based on the Plan Requirement Guidance for Quartz Mining Projects (Yukon Government and Yukon Water Board, 2013). The purpose of this Plan is to provide all employees, contractors and suppliers with a framework and protocols for responding to spill events within the KHSD under operational control of AKHM. The framework of this Plan includes the following components:

- Definitions and classification of spills;
- Types of fuels, chemicals and other hazardous materials used, stored or transferred within the KHSD.
- Reporting thresholds for all materials.
- Types of spills as they relate to response (non-emergency, emergency, etc.).
- How to report a spill:
 - Internal protocols.
 - External protocols.
 - Emergency contacts.
- Spill action plans that will be implemented in the event of a spill;
 - Available spill response equipment.
 - Hazardous materials storage locations.
 - Steps for immediate response for all spill types.
 - Comprehensive clean up.
- Spill response and prevention training requirements; and
- Routine maintenance and monitoring of storage containers and areas.

AKHM is responsible for the procurement, handling, storage and transportation of hazardous materials and special wastes within the KHSD. Several hazardous materials are required for operations at AKHM sites and some are summarized in this plan while a more comprehensive list of hazardous materials can be found in the Hazardous Materials Management Plan. Also, this provides some information regarding storage of hazardous materials, however, for additional information regarding hazardous waste and materials storage, handling and transportation refer to the Hazardous Materials Management Plan and Waste Management Plan. For additional information regarding responding to emergency event and incidents refer to the Emergency Response Plan.

1.1 REGULATORY CONTEXT

In Yukon, the requirements of spill response are governed the *Yukon Environment Act* (YG, 2016a), the *Occupational Health and Safety Act* (YG, 20010), and the federal *Fisheries Act* (Canada, 1985). Applicable regulations include the Yukon Spills Regulations (YG, 1996), Special Waste Regulations (YG, 2014), and Dangerous Goods Transportation Act (YG, 2013). The Quartz Mining Act (YG, 2016b) and the Waters Act (YG, 2003) regulations also require mining proponents to develop Spill Response Plans as part of an application for Quartz Mining Licence or a Water Licence.

2. SPILL CLASSIFICATIONS AND SPILL REPORTING

2.1 SPILL CLASSIFICATIONS

As per the Yukon *Environment Act*, Part 11, spills in the Yukon are defined as a release of a substance in to the natural environment; from or out of a structure, vehicle, or other container; and 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 (YG, 2016a). The reportable quantities as per the Yukon Spills Regulations are provide in Table 2-1 below.

Table 2-1: Reportable Quantities as per the Yukon Spills Regulations

Hazard Class	Typical Products On Site	Reportable Quantity
Explosives (1)	ANFO	Any amount spilled outside of blast pattern
Flammable Gases (2.1)	Propane Acetylene	From a container larger than 100 Liters
Non-Flammable Gases (2.2)	Halon	From a container larger than 100 Liters
Poisonous Gases (2.3)		Any Amount
Corrosive Gases (2.4)		Any Amount
Flammable Liquids (3.)	Diesel Gasoline	>200 Liters
Flammable Solids (4.)		>25 kg
Oxidizers (5.1)	Sodium Hydroxide / Caustic Soda Lime Solution Sodium Nitrate Calcium Hypochlorite Ammonium Nitrate	>50 kg or 50 Liters
Organic Compounds (5.2)		>1 kg or 1 Liter
Toxic Substances (6.1)	Products or substances that are poisons of as defined in sections 3.19(a) to (e) and 3.20(a) of the Federal Regulations	5 kg or 5 L
Infectious substances such as biomedical waste (6.2)	Organisms that are infectious or that are reasonably believed to be infectious and the toxins of these organisms as defined in sections 3.19(f) to 3.20(a) of the Federal Regulations	Any Amount
Radioactive materials (7.)	Fixed gauges	Radiation Level exceeding 10 mSv/h at package surface and 200 mSv/h at 1 m from the package surface
Corrosive Materials (8.)	Hydrochloric / Muriatic	>5 kg or 5 Liters
Miscellaneous Dangerous Goods (9.1)		>50 kg or 50 Litres
Miscellaneous Dangerous Goods (9.2)		>1kg or 1 Litre
Miscellaneous Dangerous Goods (9.3)		>5kg or 5 Litre
Special Waste	Waste Oil Waste Antifreeze	>500 mL or 500 grams within a 24-hour period or

Hazard Class	Typical Products On Site	Reportable Quantity
	Waste Solvents Paint	5 Liters or 5 kg within a 30-day period.
Pesticide (Section 2) as defined by the Environment Act		5 kg or 5 Litres
Pesticides and Fertilizers (Sched. 4) of the Pesticide Regulations		Any Amount

Spills are categorized differently for reporting and response purposes. As per Type A WL – QZ18-044 all spills regardless of quantity will be recorded and cleaned up. Therefore, in the context of spill reporting, this plan categorizes spills that occur within the KHSD into two categories as described below.

Non-reportable Spills – A spill of a controlled substance to ground that is below the reportable quantity stated in the Yukon Spills Regulations as summarized in Table 2-1, below.

Reportable Spills – A spill of a controlled substance to ground that is equal to or above the reportable quantity stated in the Yukon Regulations as summarized in Table 2-1, below or a spill of any quantity of a controlled substance into a natural water body.

In addition, for the purpose of spill response, spills are categorized into three types of spills and are described below:

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. In general, emergency spills will trigger emergency response protocols for responding and clean-up.

Non-Emergency Spill - All spills that do not meet the criteria of an emergency spill 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.

Special Waste Spill – is defined as any release of special waste equal to or greater than (in a 24-hour period); 500 grams (g) of solid special waste; 500 millilitres (ml) of liquid special waste; 500 g or 500 ml, whichever is less, of mixed solid and liquid special waste; (In a 30-day period) 5 kilograms (kg) of solid special waste; 5 litres of liquid special waste; 5 kg or 5 l, whichever is less, of mixed solid and liquid special waste.

2.2 SPILL REPORTING

This section outlines the process for reporting all spills (include non-reportable and reportable spills) that occur under the operation of AKHM in the KHSD. Also included in this section are the applicable emergency contact for the AKHM site.

2.2.1 INTERNAL SPILL REPORTING (ALL SPILLS)

All spills occurrences regardless of size must be reported internally. The discoverer is to immediately notify their supervisor or the area manager. The supervisor or area manager is responsible for the reporting the spill internally to the applicable departments and initiating any actions.

A logbook will be maintained of all spills, including spills of less than reportable quantities. The logbook will be available at the request of an inspector. The logbook will include:

- a. date and time of the spill;
- b. substance spilt or discharged;
- c. approximate amount spilt or discharged;
- d. location of the spill;
- e. distance between the spill or discharge and the nearest Watercourse; and
- f. remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.

As per the WL, a summary of all spills will be reported as a part of the monthly report.

2.2.2 EXTERNAL REPORTING (REPORTABLE SPILLS ONLY)

If a spill is deemed to be of reportable quantity, the Area Manager/Supervisor will immediately notify the Site Manager who will in turn ensure that spill reporting is completed by designated personnel. As per the *Yukon Environment Act* and associated Spills Regulations, a spill of reportable quantity must be reported to an Environmental Protection Officer via the Yukon Spills Report Centre. This is to be completed by immediately notify the 24-hour Yukon Spill Report line: telephone number 867-667-7244. The spill will be reported by the Safety Manager or designate or the Area Manager or designate. If practical, the following information should be compiled prior to reporting the incident to the 24-hour Yukon Spill Report line or Safety Officer:

Name of person reporting incident	Quantity of product spilled
Phone number of person reporting incident	Distance to closest drinking water well
Product Spilled (Generic or Product Name)	Description of event that caused spill
Product Description (thin, viscous, solid, liquid)	Responsible party
Location of spill	Actions taken to contain the spill
Distance to closest water body	Current status of the spill event

If the spilled material enters a water way, AKHM will also notify the Environment Canada Enforcement Officer and if potential to impact downstream communities Mayo RCMP, Fire Department and the First Nation of Na-Cho Nyak Dun will also be notified. All spills that are of reportable quantity will undergo an incident investigation with an Incident Investigation Report being submitted to applicable parties and stakeholders as required. As per the WL, reportable spills will also be summarized and reported monthly to the YWB, within 30 days of the spill occurrence.

2.2.3 EMERGENCY CONTACT

Key contacts for AKHM is presented in Table 2-2 below:



Table 2-2:Key contacts for AKHM

AKHM	
President	Name: Brad Thrall Email: bthrall@alexcoresource.com Office: +1 604-633-4888 Mobile: +1 604-250-6501
VP – Operations, General Manager	Name: Wayne Zigarlick Email: wzigarlick@alexcoresource.com Office: +1 867-995-3113 ext. 2000 Mobile: +1 907-209-1616
Manager, Mill	Name: Roy Lee Email: rlee@alexcoresource.com Office: +1 867-995-3113 ext. 8001 Mobile: +1 719-216-9996
Manager, Projects	Name: Peter Johnson Email: pjohnson@alexcoresource.com Office: +1 867-995-3113 ext. 5905 Mobile: +1 250-309-1160
Manager, Health & Safety	Name: Jay Allen Email: jallen@alexcoresource.com Office: +1 867-995-3113 ext. 5912 Mobile: +1 306-228-9124
Manager, Human Resources	Name: Tanja Martinovich Email: tmartinovich@alexcoresource.com Office: +1 867-995-3113 ext. Mobile: +1 416-573-5709
Superintendent, Mining	Name: Joel Clark Email: jclark@alexcoresource.com Office: +1 867-995-3113 ext. 7002 Mobile: +1 907-209-6901
	Name: Jeff Lewicky Email: jlewick@alexcoresource.com Office: +1 867-995-3113 ext. 7002 Mobile: +1 705-280-6046



3. SPILL ACTION PLAN

This section provides information on the available resources that AKHM has to respond to a spill within the KHSD and areas where the majority of hazardous material and special wastes are stored. This section also provides protocols for immediate response to non-emergency, emergency and special waste spills that occur within the KHSD and offsite. Finally, this section will provide guidance on how spills can be cleaned up on the AKHM sites.

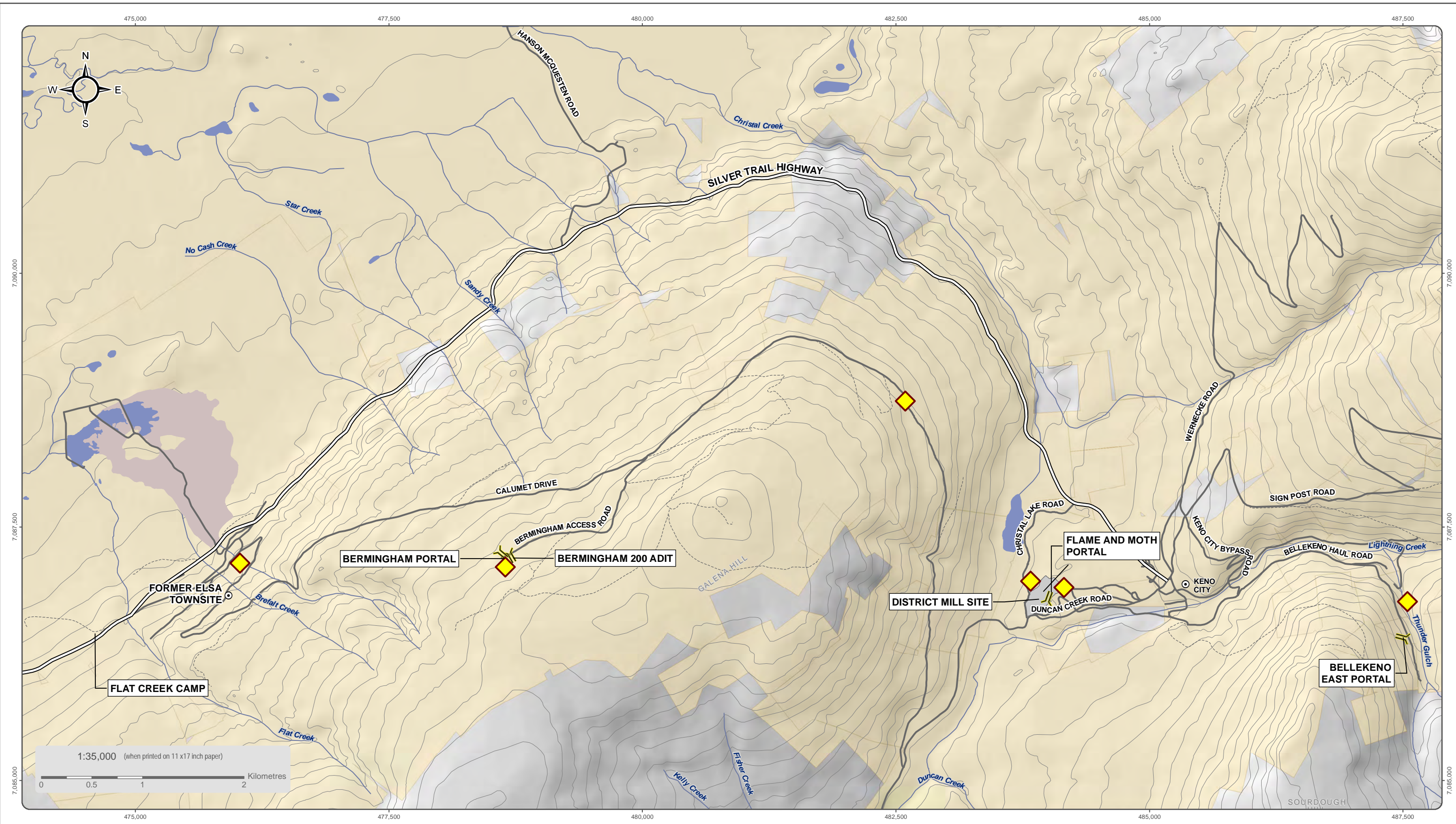
3.1 SPILL RESPONSE SUPPLIES AND EQUIPMENT

Spill kits are located around the site at key locations for rapid response and can be seen in Figure 3-1. All vehicles and equipment transporting hazardous materials and special wastes are required to have emergency spill kits for quick response. It is the responsibility of the Area Supervisor / Manager to ensure that the spill kits are located at the key locations and stocked to enough supplies to respond to a spill. Additional spill response materials can be removed from the warehouse. In general, spill kits will include absorbent material (i.e., gator, absorb all), oil absorbent pads, general absorbent pads, and booms for spill containment. Table 3-1 below lists the locations where spill kits can be found throughout the KHSD.

Table 3-1: Spill Kits and Supplies

Spill Response Supplies	Location	Contact
Spill Response Kit	Elsa fuel island Mill surface shop Mill fuel island Bellekeno fuel station (inactive) Birmingham fuel tank Portable kits on all heavy equipment Thaw shed Galkeno 300 Lime mix building in Elsa	Area Manager/Supervisor
Oil- Absorbent Pads	In Spill Kits	Area Manager/Supervisor
Oil- Absorbent Booms	In Spill Kits	Area Manager/Supervisor

Equipment that is owned and operated by AKHM employees that can be utilized during response and clean-up of spills within the KHSD are included in Table 3-2. For non-emergency spills that occur within the KHSD the equipment will be dispatched by the Area Supervisor / Manager. For emergency spills that occur within the KHSD the equipment may be dispatched by the Area Supervisor / Manager or Site Manager under the advisement of the Emergency Response Lead.



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Datum: NAD 83; Map Projection: UTM Zone 8N

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- ⊙ Place of Interest
- ⌵ Adit
- ◆ Approximate Spill Kit Locations

- Alexco/ERDC Quartz Claims
- Tailings Area
- Waterbody
- Watercourse

- == Silver Trail Highway
- Road
- - - Limited-Use Road



ALEXCO KENO HILL MINING CORP.

**FIGURE 3-1
SPILL KIT LOCATIONS**

NOVEMBER 2020

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Last modified by: amal@ensero.ca, 2020-11-09 12:21 PM

Table 3-2: Spill Response Equipment

Equipment Type	Location	Contact
Fire Truck	Keno City	Keno City Fire Department
Rubber Tire Backhoe	Keno District Mill	Site Service Supervisor
Excavator	Keno District Mill	Area Manager
Bulldozer	Keno District Mill	Area Manager
Haul Truck	Keno District Mill	Area Manager
Vacuum Truck	Keno District Mill	Area Manager
Water Truck	Keno District Mill	Area Manager

3.2 HAZARDOUS MATERIALS STORAGE AREAS

Hazardous materials and special waste will be generated and stored at Bellekeno and Mill.

3.3 IMMEDIATE RESPONSE TO NON-EMERGENCY SPILLS

The majority of spills that occur on the site will fall under the non-emergency spill category as they do not require additional safety protocols or emergency resources (i.e., ERT response) to contain, stop and clean up the spill. This type of spill can include but is not limited to spilled substances such as diesel, gasoline, blasting agents, oils, coolant, greases, other lubricants, Water Treatment Plant reagents, mill reagents, process water, tailings, and special wastes.

To respond to non-emergency spills, the discoverer should first conduct a scene assessment to identify any hazards that may hinder or complicate the response. Once the scene has been deemed safe and a non-emergency by the discoverer or area supervisor/manager, an attempt to control or eliminate the size of the spill should be undertaken. If safe to do so, the spill should be contained to limit the spread of contamination. Once the source of the spill has been controlled or eliminated and the spill area contained, clean-up plans will be developed and implemented. If the spill is concentrated in one area, the contaminated material may be excavated and disposed as per the clean/up and remedial action section of this plan. If the spill occurs over a large area with minor contamination, in-situ remediation (e.g., use of gator type substance) may be utilized.

3.4 IMMEDIATE RESPONSE FOR EMERGENCY SPILLS

Emergency spills include spills, that enter a water body or have the potential to cause significant danger to life, health or the environment. Emergency spills can include, but are not limited to, spilled substances such as diesel, gasoline, blasting agents, oils, coolant, greases, other lubricants, Water Treatment Plant reagents, mill reagents, process water, tailings, and special wastes in quantities or locations that hinder or complicate the ability of AKHM staff to respond and contain the spill. Emergency spills will trigger an emergency response under the AKHM Emergency Response Plan.

To respond to an emergency spill, the discoverer should first conduct a scene assessment to identify any hazards that may hinder or complicate the response. The discoverer or area supervisor/manager should



initiate emergency protocols. After the scene assessment has been completed and the emergency protocols have been initiated, an attempt to control or eliminate the source of the spill and/or contain the spill (stop from entering water body) should be undertaken only **if safe to do so**. If the scene assessment indicates potential hazards or the source of the spill can not easily be control or eliminated by the discoverer or area supervisor/manager than they should await further instructions through the emergency response protocols. The emergency response protocol flows chart for the immediate response and follow up are provided as Figures 3-2 and 3-3, below. Additional details regarding responsibility during emergency or serious incident is provided in Table 3-3. General precautions, PPE and response/clean-up methods are provided for commonly found substances at the AKHM sites in Table 3-4, below.

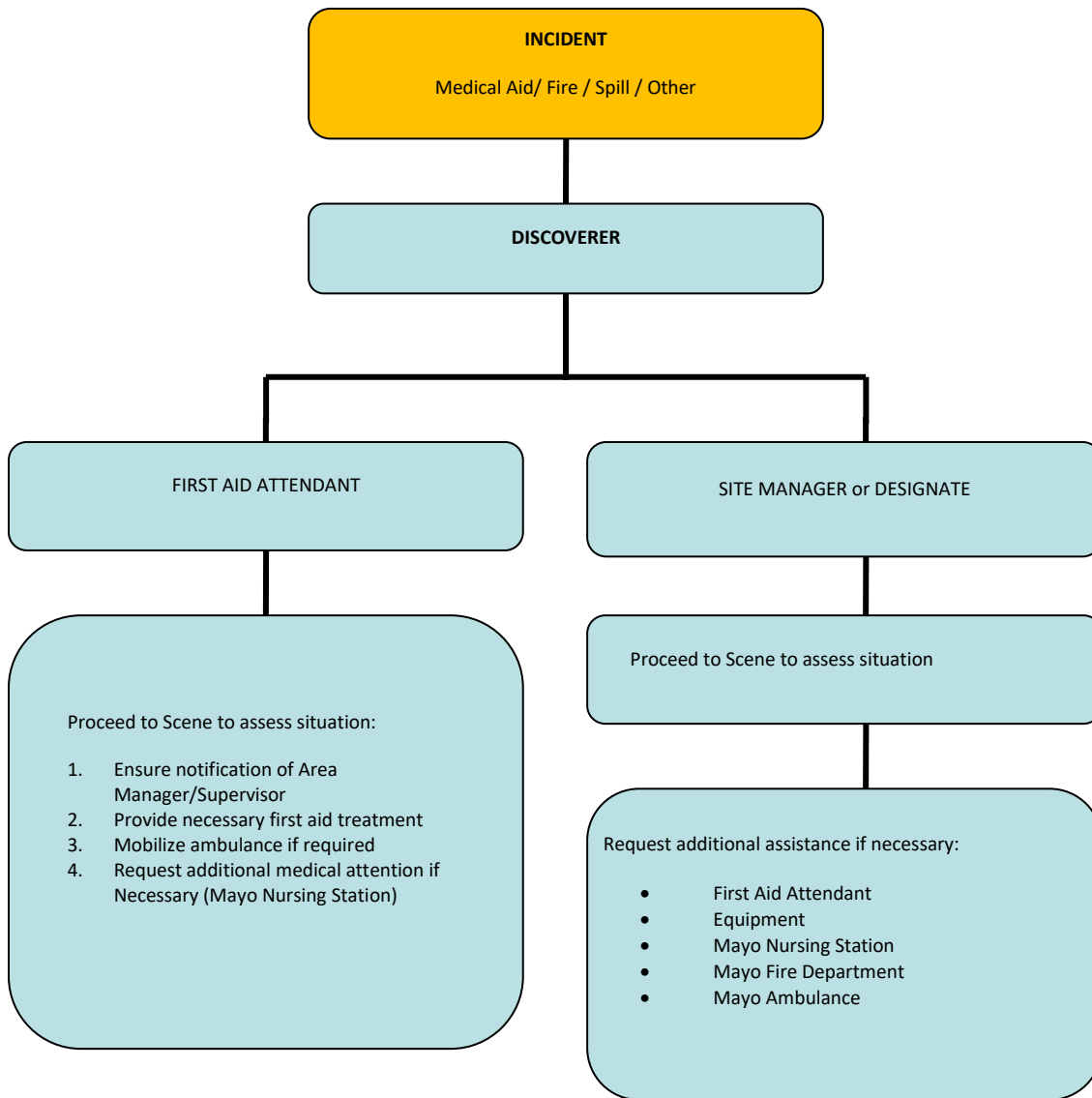


Figure 3-2: Immediate Response Flow Chart

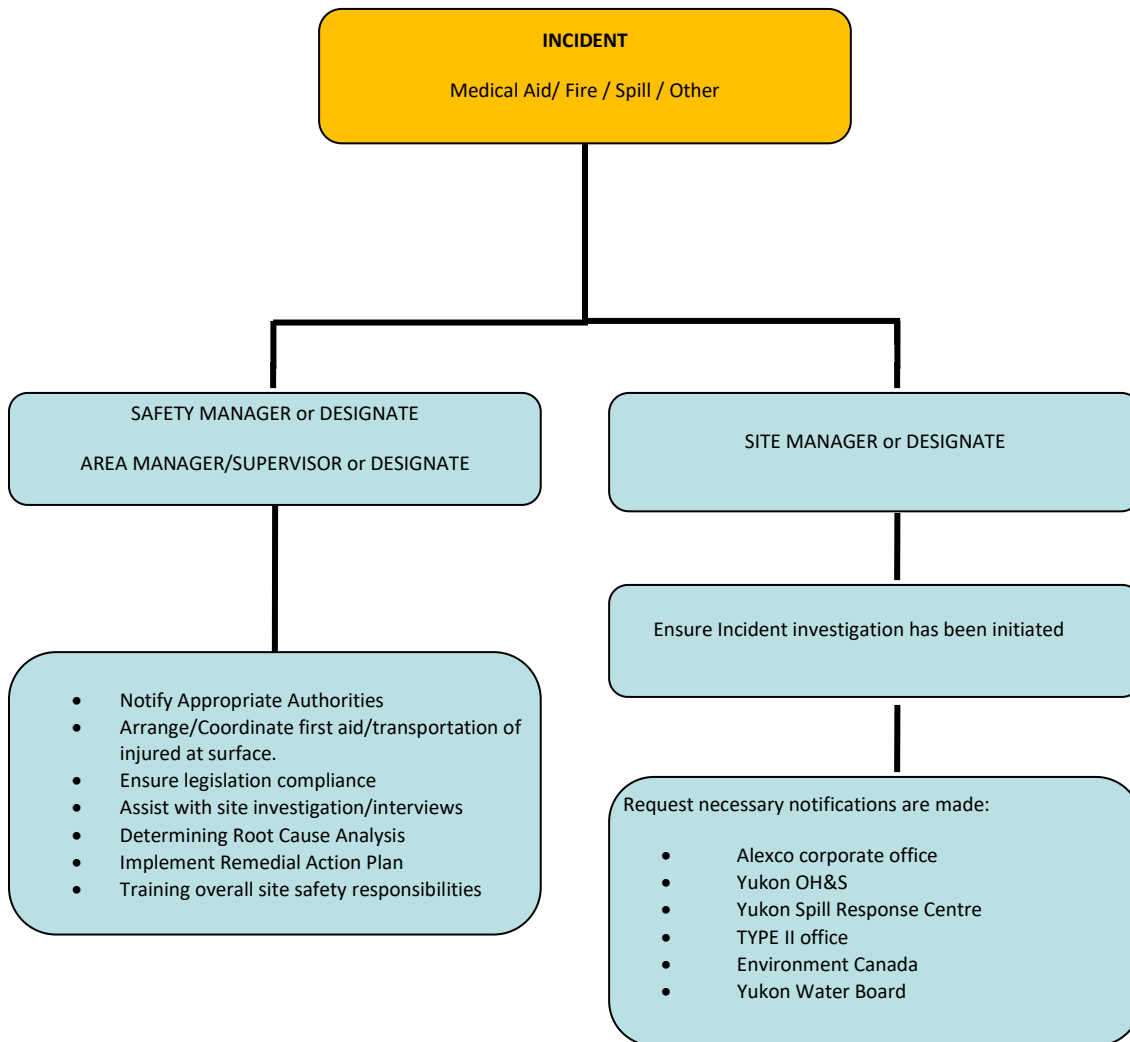


Figure 3-3: Follow-up Actions for Serious Incidents.

Table 3-3: Serious Incident Responsibility Matrix

Position	Responsibilities
Area Manager/Supervisor	<ul style="list-style-type: none"> • Coordinate initial response • 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 • Initial scene control • Responsible for investigation – determine contributing causes and take immediate proactive action • Request additional external resources as necessary • Coordinate recovery and investigative activity • Notify Site Manager • Ensure all government reporting has been completed • Organize and conduct post-incident debriefings • Prepare Incident Report and make recommendations
First Aid Attendant	<ul style="list-style-type: none"> • Ensure area supervisor has been notified of incident • Provide first aid treatment if necessary • Mobilize ambulance to scene, if required • Stand by to assist as required by scene coordinator
Site Manager	<ul style="list-style-type: none"> • Designate on-call senior personnel during weekends • Receive briefings on incident details • Provide direction as required • Notify regulatory agencies, government and Alexco corporate office of incident • Review Incident Reports • Attend at all incidents involving “serious injury” and “serious accident”, as defined in Sec. 33, OHS Act • Verify compliance with standards and government regulatory requirements • Forward necessary reports to regulatory agencies <ul style="list-style-type: none"> • Fire Chief – assume responsibility for fire investigation
Safety Manager	<ul style="list-style-type: none"> • Notify appropriate authorities • Arrange/Coordinate first aid/transportation of injured at surface • Ensure legislation compliance • Assist with site investigation/interviews • Determining Root Cause Analysis • Implement Remedial Action Plan • Training overall site safety responsibilities
Senior Environmental Coordinator	<ul style="list-style-type: none"> • Ensure resources are available • Liaise with Government and Regulators • Liaise with Alexco Management and Site Personnel • Report to spill line



Table 3-4: Common Hazardous Substances at AKHM

Common Name (Synonyms)	Phase	TDG Class	Reporting Threshold	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Acetone	Liquid	3	200 L	Extremely Flammable	Chemical goggles, gloves. SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Use absorbent to contain spill. Do not allow into waterway or drains. Contain spread of spill and soak up with absorb all, absorbent pads. Clean up using non-sparking tools. Place liquid and absorbents into tightly sealed container, label clearly and dispose of as special waste offsite. Place contaminated soils into container for shipment offsite.
Acetylene	Gas	2.1	any if container larger than 100 L	Extremely flammable, pressurized gas dissolved in an extremely flammable liquid (Acetone)	Goggles, gloves. 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 (See Acetone response above).
Ammonium Nitrate Emulsion	Liquid	5.1	any if spilled out of blasting pattern	Oxidizing material, does not burn but may contribute to combustion of materials that can burn	Safety Glasses, Gloves, chemical suits, SCBA may be required	Evacuate surrounding area. In event of spill, prevent from entering waterways. Under the direction of a certified blaster, use available non-combustible material to contain and soak up excess product. Consult certified blaster for clean-up instructions
Antifreeze/Coolant	Liquid	9	25 L	may be fatal by ingestion	Safety Glasses, Gloves	Contain spill using berms or booms. Small amounts can use absorb all or absorbent pads, saturated pads and booms shall be placed in containers and shipped off site as special waste. For larger spills use absorb



Common Name (Synonyms)	Phase	TDG Class	Reporting Threshold	Special Precautions	PPE Required	Special Cleanup and Disposal Info
						all, absorbent pads and place in plastic drums to be shipped off site for disposal. For clean-up of significant volumes of free-standing liquid, pump into empty plastic barrel or tote. If spill enters into water way attempt to control source of spill by all means necessary.
Caustic Soda (solid)	Solid	8	50 kg	very corrosive solid	Chemical goggles and gloves.	Sweep up free production into a plastic drum/container. Neutralize the residue with a dilute solution of acetic acid. Neutralized material will be excavated and placed in plastic drums for offsite disposal.
Caustic Soda (solution)	Liquid	8	50 L	very corrosive liquid	Chemical goggles and gloves.	Contain spill and pump to plastic barrel. Neutralize the residue with a dilute solution of acetic acid. Neutralized material can be disposed of in plastic drums for offsite disposal.
Diesel	Liquid	3	200 L		Safety Glasses, Gloves	Eliminate all sources of ignition. Ventilate area if required. Dike the spill and pump free liquid into containers for recycling or disposal. Use absorbents to soak up free standing liquid that cannot be pumped. Excavate waste absorbent and contaminated soils and place in drums for shipment offsite or place in onsite land treatment facility. If diesel enters water bodies, deploy oil absorbent booms to contain and capture spilled product.



Common Name (Synonyms)	Phase	TDG Class	Reporting Threshold	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Gasoline	Liquid	3	200 L	Extremely Flammable, Vapors are harmful and can be explosive. Non-sparking tools required. Vapors will pool in low areas and travel along the ground.	Goggles, gloves. SCBA if in confined space	Eliminate all sources of ignition. Ventilate area if required. Dike the spill and pump free liquid into containers for recycling or disposal. Use absorbents to soak up free standing liquid that cannot be pumped. Excavate waste absorbent and contaminated soils and place in drums for shipment offsite or place in onsite land treatment facility. If gasoline enters water bodies, deploy oil absorbent booms to contain and capture spilled product.
Grease	Semi-Solid		200 L		Safety Glasses, Gloves	Contain spill. Small amounts can use absorbent and excavated into drums for shipment offsite. Larger amounts can use absorbent material and excavated into plastic drums and shipped off site for disposal.
Hydraulic Oil	Liquid	3	200 L		Safety Glasses, Gloves	Contain spill using berms or booms. Small amounts can use absorb all or absorbent pads, placed in container and shipped off site as special waste. Larger spills can be pumped into plastic drums and shipped offsite for disposal. Contaminated soils can be shipped offsite for disposal or placed the land treatment facility. If oil enters water bodies, deploy oil absorbent booms to contain and capture spilled product.



Common Name (Synonyms)	Phase	TDG Class	Reporting Threshold	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Lime (Solution)	Liquid	5.1	50L	Will cause severe caustic burns. Avoid strong acids, and aluminum	Chemical goggles and gloves.	Neutralize with dilute acid and excavate contaminated area into plastic drums for shipment offsite.
Motor Oil	Liquid	3	200 L		Safety Glasses, Gloves	Contain spill using berms or booms. Small amounts can use absorb all or absorbent pads, placed in container and shipped off site as special waste. Larger spills can be pumped into plastic drums and shipped offsite for disposal. Contaminated soils can be shipped offsite for disposal or placed the land treatment facility. If oil enters water bodies, deploy oil absorbent booms to contain and capture spilled product.
Propane	Gas	2.1	any if container larger than 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.
Waste Oil	Liquid	3	500 mL or 500 g within a 5 day period		Safety Glasses, Gloves	clean-up equipment appropriate for the amount and type of special waste generated or stored on site (such as sorbent, shovel, broom, bucket, gloves, boots, etc.) is readily accessible at all locations where the special wastes are handled or stored. Put waste oil in drums to transport to incinerator if oil sample pass test analysis, otherwise, ship offsite for disposal.



Common Name (Synonyms)	Phase	TDG Class	Reporting Threshold	Special Precautions	PPE Required	Special Cleanup and Disposal Info
Waste Batteries	Solid	8	500 g within a 5 day period		Safety Glasses, Gloves	Stored batteries should be enclosed in a continuous sheet of plastic to protect the batteries from the elements and prevent any leaking acid from reaching the environment.
Waste Solvents	Liquid	6.1	5 L within a 30 day period		goggles, respirators, safety gloves, protective clothing	Ensure that a spill kit is available anywhere solvents are being used. If a spill occurs, evacuate personnel from the affected area. Label the hazardous waste container and ensure that it is disposed offsite as prescribed by the permit
Waste Aerosol Cans	Solid		500 g within a 5 day period		Safety Glasses, Gloves	Keep in drums or containers and transport offsite disposal
Waste Fluorescent Tubes	Solid	6.1	500 g within a 5 day period	Contains Mercury	Safety Glasses, Gloves	Be careful not to break fluorescent bulbs when transporting ; breaking them releases harmful mercury vapour. Keep items in the original packaging when possible so that the waste can be easily identifiable. If you break a fluorescent lamp, leave the room, and keep people out to the room during the clean-up process. Ventilate the room for at least 15min to ensure mercury vapour levels are reduced before cleaning. Label the hazardous waste container and ensure that it is disposed offsite as prescribed by the permit
Reagents	Liquid	8	500 mL within a 5 day period		goggles, safety gloves, protective clothing	Ensure that a spill kit is available anywhere reagents are being used. If a spill occurs, clean up the affected area. Label the hazardous waste



Common Name (Synonyms)	Phase	TDG Class	Reporting Threshold	Special Precautions	PPE Required	Special Cleanup and Disposal Info
						container and ensure that it is disposed offsite as prescribed by the permit

AKHM is registered with CANUTEC and will utilize their services if the spill is an emergency and outside of the realm of the site staff's capabilities to manage. CANUTEC is associated with Transport Canada and provides 24-Hour support for spill response for registered members. This service can also be utilized for emergency spills outside of the KHSD where site resources are not available for rapid response.

In the event of a spill in a water body that has the potential to impact downstream water users, AKHM will ensure that adequate notification is provided to impacted communities and users. Although the responsibility for downstream notification usually falls with the Yukon Government, AKHM will notify FNNND to issue warnings to members that will be potentially impacted.

3.5 IMMEDIATE RESPONSE FOR SPECIAL WASTE SPILLS

AKHM is permitted to handle, store and transport various special waste on the site, including waste oil, waste batteries, waste solvents, waste aerosol cans, waste fluorescent tubes, light bulbs, ballasts, antifreeze, and paint. Special waste spills that occur on site will generally follow the same immediate response for Non-Emergency and Emergency Spills depending on the situation. If the spill occurs while special waste is being transported offsite by a company driver and vehicle, then the following additional steps will be taken:

- If safe to do so, the driver will complete a scene assessment and initially secure the scene.
- If safe to do so, the driver will determine if it is of reportable quantities.
- If safe to do so, the driver will attempt to control or eliminate the source of the spill.
- If safe to do so, the driver will utilize the contents of the spill kit located in the vehicle to contain the migration of the spill.
- If safe to do so, the driver will grab the waste manifest and Spill Contingency Plan from the vehicle.
- The driver of the vehicle will notify AKHM Management immediately.
- If the spill is deemed reportable, the Environmental Coordinator will notify authorities immediately by calling the Yukon Spills Hotline and providing the Yukon Waste Manifest number and contents being carried.
- If the spill cannot be easily controlled or cleaned up and is within the jurisdiction of a municipality the local fire and police departments maybe notified.
- If the spill is classified as an Emergency and additional resources are required, the driver may notify CANUTEC for next steps.

3.6 CLEAN-UP/REMEDIAL ACTION

Clean-up and disposal methods for substances commonly found at AKHM have been summarized in Table 3-4. The general clean-up procedures for spills are summarized in Table 3-5, below. Actual cleanup or remedial action may vary depending on site conditions, substance spilled, proximately to sensitive environmental components, and operations.

Table 3-5: General Clean-up Protocols

Substance Spilled	Impacted Environment	Clean-Up Actions
Petroleum hydrocarbon (gasoline, diesel, oils) and Coolants (ethylene and propylene glycols)	Land (Soil)	<ul style="list-style-type: none"> - Free stand liquid will be pumped or absorbed using applicable spill pads, booms or absorbent material. - Contaminated area will be visual delineated. - Delineated area will be excavated to a depth that is deemed uncontaminated through visual or other means. - Contaminated material will be relocated to the land treatment facility for remediation or removed from site for final disposal. - If the spill was reportable, confirmation sampling as per Yukon Contaminated Site Regulations Protocol 3 will be undertaken to ensure the impacted area was adequately cleaned up.
Petroleum hydrocarbon (gasoline, diesel, oils) and Coolants (ethylene and propylene glycols)	Land (Rock)	<ul style="list-style-type: none"> - Free stand liquid will be pumped or absorbed using applicable spill pads, booms or absorbent material. - Contaminated area will be visual delineated. - Delineated area will be excavated to a depth that is deemed uncontaminated through visual or other means. Area is excavated to mitigate migration of substance from vehicle trafficking. - Contaminated material will be relocated to waste rock dump for final disposal.
Explosives	Land (Soil, Rock)	<ul style="list-style-type: none"> - All spilled explosives will be cleaned up under the supervision of a certified blaster. - Contaminated area will be visual delineated. - Delineated area will be excavated to a depth that is deemed uncontaminated through visual or other means. - Contaminated material will be disposed of as per the direction of the certified blaster.
Caustics or acids (liquids)	Land (Soil)	<ul style="list-style-type: none"> - Assess whether additional external resources are required to help safely clean up spilled substance. - Free stand liquid will be neutralized and pumped or absorbed using applicable spill pads, booms or absorbent material. - Contaminated area will be visual delineated. - Delineated area will be neutralized and excavated to a depth that is deemed uncontaminated through visual or other means. - Contaminated material will be placed in plastic drums for removal from site. - If the spill was reportable, confirmation sampling as per Yukon Contaminated Site Regulations Protocol 3 will be undertaken to ensure the impacted area was adequately cleaned up.
Caustics or acids (Solid)	Land (Soil)	<ul style="list-style-type: none"> - Assess whether additional external resources are required to help safely clean up spilled substance. - Free solids will be neutralized and swept up into a plastic container. - Contaminated area will be visual delineated. - Delineated area will be neutralized and excavated to a depth that is deemed uncontaminated through visual or other means. - Contaminated material will be placed in plastic drums for removal from site.



Substance Spilled	Impacted Environment	Clean-Up Actions
Other (substances not included above)	Land (Soil)	<ul style="list-style-type: none"> - Assess whether additional external resources are required to help safely clean up spilled substance. - Free stand liquid will be pumped or absorbed using applicable spill pads, booms or absorbent material. - For solids, free solids will be swept up into appropriate containers. - Contaminated area will be visual delineated. - Delineated area will be excavated to a depth that is deemed uncontaminated through visual or other means. - Contaminated material will be relocated to the land treatment facility for remediation or removed from site for final disposal. - If the spill was reportable, confirmation sampling as per Yukon Contaminated Site Regulations Protocol 3 will be undertaken to ensure the impacted area was adequately cleaned up.
Oil based products	Water	<ul style="list-style-type: none"> - Assess whether additional external resources are required to help safely clean up spilled substance. - Deploy oil absorbent booms and spill pads to contain spill. - On standing water move booms and absorbent pads around to collect the spill product. - Continue until no visual signs (e.g., sheen) are present. - Collect water samples to confirm product has been adequately cleaned up.
Special Waste (batteries, fluorescent bulbs, aerosol cans, waste solvents, waste reagents)	Land (Soil)	<ul style="list-style-type: none"> - Ensure proper special waste permit requirement is in place - Ensure clean-up equipment appropriate for the amount and type of special waste generated or stored on site (such as sorbent, shovel, broom, bucket, gloves, boots, etc.) is readily accessible at all locations where the special wastes are handled or stored - Assess whether additional external resources are required to help safely clean up spilled substance. - Free stand liquid will be pumped or absorbed using applicable spill pads, booms or absorbent material. - For solids, free solids will be swept up where applicable into appropriate containers. - Contaminated material resulting from a release, spill, unauthorized emission, discharge, or escape or any special wastes is properly handled

4. TRAINING REQUIREMENTS AND SPILL PREVENTION

Pollution prevention is the best strategy for avoiding potential harm to human health and the environment. However, once a spill occurs, the best approach for containing and controlling the spill is to respond quickly in a well-organized manner. A response will be quick and organized if response measures have been planned ahead of time.

Training programs are designed to ensure the continued competence in proper emergency response skills and in the procedures established by this plan are conducted on a continuing basis as outlined in Alexco safety directives.

All employees (and contractors) will receive training on safe and appropriate use as per Workplace Hazardous Materials Information Systems Regulations (WHMIS) of the Occupational Health and Safety Act. All employees will follow OH&S Regulations and use appropriate personal protective equipment (PPE) as well as proper handling procedures when using hazardous materials.

All new employees to site will receive an orientation at the administration office. Regular safety meetings with supervisors, safety officer and employees are mandated. Any changes in procedures, equipment, or hazards require immediate notification to employees.

A Safety Coordinator/Officer ensures that all workers are oriented to all aspects of the work site including hazard identification, personal protective equipment requirements, and that medical and health requirements are followed according to legislation. The Safety Coordinator/Officer position is also charged with ensuring continued training and skill development for all personnel and ensuring that the lists of hazardous materials on site are up to date, as are the corresponding SDS. Information on hazardous material storage, training requirements and signage is presented in Table 4-1

Table 4-1: Information on Hazardous material storage, Training and Signage requirements

Type	Information
Hazardous Materials Storage	<ul style="list-style-type: none"> • All hazardous materials will be stored safely and appropriately • All hazardous materials will be segregated and stored to ensure integrity of product containers, avoidance of accidental mixing, and safety from weather effects • Hazardous materials will be stored in locations with secondary containment measures in place to limit potential for spills • A complete listing of SDS sheets for all hazardous materials and spill response strategy protocol will be made available to all employees and will be located at the following locations: <ul style="list-style-type: none"> ○ Administration Office ○ Bellekeno East, Bermingham, Lucky Queen and Onek Shifters Office ○ Care & Maintenance Shop ○ First Aid Room(s) ○ General/Site Managers Workspace ○ Kitchen Medical Station ○ Mine Rescue Shed – Bellekeno East ○ Safety Coordinators Office ○ Keno District Mill Office ○ Explosives Magazines
Employee Training	<ul style="list-style-type: none"> • All employees involved with handling hazardous materials will receive training in safe and appropriate use as per Workplace Hazardous Materials Information Systems Regulations (WHMIS) of the Occupational Health and Safety Act.



Type	Information
	<ul style="list-style-type: none">• All employees will follow OH&S and regulations and use appropriate Personal Protective Equipment (PPE) and handling procedures when using hazardous materials
Signage and Monitoring	<ul style="list-style-type: none">• All areas which will be used to store hazardous materials will be clearly indicated with appropriate signage• Monitoring of areas which will be used to store hazardous materials will be monitored on a regular basis in order to ensure measures set out in this plan are complied with



5. ROUTINE MAINTENANCE AND MONITORING

The following areas and equipment will be inspected and maintained as part of monthly inspections conducted at site

- Fueling areas;
- Waste Management Areas;
- Waste Oil 1m³ totes located at the mill;
- Equipment (Preventative Maintenance);
- Spill Kits; and
- Fire extinguishers.

6. REFERENCES

Government of Canada. 1985. *Fisheries Act*. R.S.C., 1985, c. F-14.

Yukon Government. 1996. *Spills Regulations*. O.I.C. 1996/193.

Yukon Government. 2003. *Waters Act*. SY 2003, c.19.

Yukon Government. 2010. *Occupational Health and Safety Act*. SY 2010, c.12.

Yukon Government. 2013. *Dangerous Goods Transportation Act*. SY 2013, c.11.

Yukon Government. 2014. *Special Waste Regulations*.

Yukon Government. 2016a. *Environment Act*. SY 2016, c.5.

Yukon Government. 2016b. *Quartz Mining Act*. SY 2016, c.12.

Yukon Government and Yukon Water Board, 2013. *Reclamation and Closure Planning for Quartz Mining Projects*. Plan requirements and closure costing guidance, August 2013.