SD 22

Emergency Response Plan
AGC-PLN-HS-001 (2020)

Tailings Management Facility Emergency Preparedness and Response Plan – Proposed Plan Updates (July 2021)

REPORT SECTION	UPDATE	RATIONALE
1.0 Introduction	General text does not require update.	
1.1 Scope	Scope to be expanded to include the exhausted open pit to be used for tailings disposal once the TMF capacity is exhausted.	Report needs to address ongoing operation of the TMF as well as future in-pit tailings disposal.
1.2 Definitions	Minor update to add the Open Pit.	
2.0 Project Information	-	
2.1 Facility Access	Update to incorporate the Open Pit as a second TMF	
2.2 Facility Description	Update the facility description to add the Open Pit as the tailings disposal site, and describe tailings and water management for the Open Pit.	
2.3 Effects of Inundation	Incorporate updated dam breach and inundation analysis including updated inundation mapping.	The TMF will still operate even after it stops receiving pit water and tailings. There is no potential for emergency release from the Open Pit.
3.0 Responsibilities	N/A	No need for updates due to proposed modifications to the Approved Project.
4.0 Emergency Contact List	N/A	No need for updates due to proposed modifications to the Approved Project.
5.0 Organization	N/A	No need for updates due to proposed modifications to the Approved Project.
6.0 Emergency Response	Section 6 will be reviewed and updated as necessary to include potential emergencies related to the new infrastructure, in-pit disposal, monitoring triggers etc. This includes updating trigger events and alert levels, response plans, resources and supplies, and incident investigation and documentation.	Updates need to be inclusive of both the current operations of the TMF and proposed in-pit disposal.
7.0 Training and Document Control	N/A	No need for updates due to proposed modifications to the Approved Project.
Appendix A – Maps and Figures	All maps require updates, with new mapping required for in-pit disposal infrastructure. Inundation mapping will also be updated to reflect the most recent analysis.	
Appendix B – OPRP	Update required due to proposed modifications to the Approved Project.	
Appendix C – TMF Dewatering Plans	Update required due to proposed modifications to the Approved Project.	
Appendix D – Emergency Preparedness Supplies	Will be updated as applicable based on any additional emergencies identified in Section 6.0	

Tailings Management Facility Emergency Preparedness and Response Plan – Proposed Plan Updates (July 2021)

REPORT SECTION	UPDATE	RATIONALE
Appendix E – TMP EPRP Forms	N/A	Emergency response and incident reporting forms remain valid. No need for updates due to proposed modifications to the Approved Project.

ATLANTIC GOLD

ATLANTIC GOLD CORPORATION

Emergency Response Plan

AGC-PLN-HS-001

See APPENDIX 2 for High Level Procedures for Site Emergencies

REVISION DATE

August 17, 2020

DOCUMENT REVISION RECORD

Pages affected by the current revision are listed in the table below and are identified by hash marks (lines) on the right side of the affected pages.

Table to be completed by AG GM (or Assistant) Only					
Revision Level	**Revised By**	**Date MM/DD/YYYY**	**DC Approved**	**DC Release Date**	**Pages Affected**
0	Leah Byrne	10/19/2017			
1	Leah Byrne	01/15/2018			All
2	Leah Byrne	07/26/2018			Final edits – All
3	Leah Byrne	08/16/2018			Appendix 5 added
4	Paul Harnish	08/17/2020			Contact information updated by T Paugh

Table of Contents

1. Introduction

1.1 Purpose

This Emergency Response Plan identifies potential environmental, health and safety emergencies that could arise at the Moose River Consolidated operation. This Plan establishes the framework for responding to these situations and to all aspects of the operation. All Atlantic Gold Corporation (AGC) employees and contractors are required to comply with the requirements of the Emergency Response Plan.

1.2 Scope

Emergency events or situations are characterized by immediate threat to life, health, safety, environment, or property. The Emergency Response Plan and its supporting Plans are designed to address these characteristics using the following principles:

- Ensure safety and well-being of personnel, the environment, and property.
- Identify the types of emergencies that may occur and the procedures to respond, intervene, stop, or limit the emergency situation.
- Ensure effective communication between personnel and the Emergency Response Team.
- Ensure that personnel responding to emergencies are properly trained and have adequate resources for the response.

2. Definitions

Term	
Civil Aid	Refers to external stakeholders who provide resource support in the form of expertise in response to emergency situations. eg. fire departments, emergency health services, police, etc.
Corporate Response Team (CRT)	Senior corporate management group responsible for providing corporate coordination and support during a crisis or emergency.
Crisis	A sudden event or set of circumstances that could significantly impact MRC's ability to operate, damage to AGC reputation.
Crisis Management Plan (CMP)	A plan that defines the roles and responsibilities of the SMRT and CRT in the event of a crisis.
DNR	Department of Natural Resources
Emergency	A serious unplanned event that poses potential harm to health, safety, production, equipment or environment that requires immediate action. An "Emergency, Emergency, Emergency" announcement on channel 8 of the 2-way radio system signifies an emergency situation requiring activation of the emergency response team.
Emergency Response Coordinator (ERC)	Person responsible for the management of incident activities at the site of the emergency.
Emergency Response Plan (ERP)	A course of action developed to mitigate the potential damage of serious sudden or unplanned events that have the potential to endanger health, safety or business continuity.

Term	
Emergency Response Team (ERT)	A group of employees trained in emergency response and rescue that provide the field response activities to an emergency.
Incident Action Plan	An organized course of events that address all phases of incident control including timelines, goals and objectives, and strategy as defined by incident command. This plan is developed in response to a need arising from a specific event or incident.
LAE NS OHS Division	Labour and Advanced Education Nova Scotia, OHS Division. Occupational Health and Safety regulatory body.
Natural Event	An adverse event resulting from natural process of the earth. eg. hurricanes, floods, etc.
NSE	Nova Scotia Environment. Environmental regulatory body.
Site Management Response Team (SMRT)	A group consisting of department managers and/or supervisors that provide internal resources (people, equipment, materials) to support the emergency response activities.
Unified Command	An authority structure in which the role of incident commander is shared by more than one person each with different accountabilities. The ERC will always play a role in the unified command which may also include department or site leadership.

3. Responsibilities

General Manager	• Ensure appropriate resource availability for ERT and SMRT • Responsible for timely and effective communication of events as per reporting and notification structure • Liaise with regulatory agencies when required (incl. NSE, LAE NS OHS Division, DNR, etc.)
Department Manager	• Provide timely and effective communication of ERP to department personnel • Participate in timely and effective communication during an event as per reporting and notification structure and procedures
Emergency Response Coordinator	• Act as liaison between ERT and H&S Manager • Provide scene control and direction in the event of an emergency • Establish response plans for emergency events • Act as ERT team lead and provide resource support in the form of training, information and guidance for ERT members • Ensure ERT is adequately prepared and trained to respond to emergency events • Establish inspection protocols for ERT controlled supplies and equipment ensuring sufficient supplies are on site in preparedness for a potential emergency event • Provide secondary assistance as medical first responder if necessary • Maintain direct oversight of site ERT programming • Properly don supplementary PPE when working in hazardous areas during an emergency

Emergency Response Team	• Act as first responders in the event of an emergency • Provide area control in specific emergency circumstances • Work under the direction and oversight of the ERC • Participate in training and emergency response professional development as deemed necessary by the ERC • Respond in a timely manner and as directed to emergency calls while on site • Ensure ERT equipment inspections are completed and documented routinely • Properly don supplementary PPE when working in hazardous areas during an emergency
Health & Safety Department	• Act as liaison between ERC and site management; chiefly the site General Manager • Provide situational updates to the SMRT and CRT as necessary and as per notification and reporting procedures • Liaise with external regulators • Provide secondary assistance to ERC in regards to scene control and ERT direction as necessary • Maintain functional oversight of site ERT programming, training and development • Provide resource support to ERC and ERT as requested • Properly don supplementary PPE when working in hazardous areas during an emergency
Security Department	• Establish area or boundary control as requested during an emergency event • Communicate with emergency services providers as requested (situationally dependent) • Properly don supplementary PPE when working in hazardous areas during an emergency
Environment Department	• Act as liaison between ERC and site management as required in any type of environmental event • Provide situational updates to the SMRT and CRT as necessary and as per notification and reporting procedures related to environmental events • Liaise with external environmental regulators • Provide secondary assistance to ERC in regards to scene control and ERT direction as necessary during environmental events • Assist as subject matter experts related to spills and remediation
Human Resources Department	• Provide personnel information to emergency services if necessary
Superintendent / Supervisor	• Ensure availability of ERT members in the event of an emergency (in a timely manner) • Act as liaison between ERC, H&S Manager and Department Manager if necessary • Provide area subject matter expertise as requested during an emergency event; provide direct support if requested
Employees / Business Partners	• Review and acknowledge requirements and procedures outlined in Emergency Response Plan

	• Actively participate in AGC safety programing to ensure due diligence is practiced in the prevention of emergency events • Properly don supplementary PPE when working in hazardous areas during an emergency • Evacuate as directed in a fast, safe manner and await further instructions including “All Clear” in the event of an emergency

4. Requirements

4.1 Regulatory Requirements

This Emergency Response Plan has been developed and implemented to ensure that Atlantic Gold Corporation respects all applicable laws, regulations, and requirements from federal and provincial authorities along with the permits, approvals, and authorizations required for the operations.

The guiding principles for the creation of this plan are found within the Underground Mining Regulations of Section 82 of the Nova Scotia Occupational Health and Safety Act Part 4 – Emergency Preparedness and Mine Rescue.

4.2 Post Incident Documentation and Incident Reporting

Completion of all associated requirements within the Incident Report Management Program (AGC-PRO-HS 006) must be fulfilled once all activities related to the response of any emergency situation are completed. This requirement must be fulfilled in a timely manner as to maintain the accuracy of all events, witness statements and follow up information.

4.3 Training

All personnel shall be informed of their responsibilities as they pertain to the emergency response plan by their supervision during the onboarding process. Department Managers shall inform their employees of their responsibilities when job roles change.

Those personnel required to participate in activities related to the ERP shall undergo specific training related to these requirements.

Every year, employees are required to either commit to (sign off) or complete training on the ERP.

All active members of the Emergency Response Team (ERT) shall be provided with and participate in specialized training to ensure competency in effective response to site wide emergencies.

Training for local civil aid shall be provided on an annual basis by the MRC Emergency Response Coordinator (ERC) to ensure continued understanding of response requirements, plans and hazards by all civil aid stakeholders.

4.4 ERP Posting Locations

- Main Administration Building Health and Safety Office
- Mine Operations Facility Lunchroom
- Mill Operations Facility Lunchroom

- Exploration Geology Facility Safety Board
- Lab Facility Safety Board
- Truck Shop Safety Board
- First Aid Room
- Crusher Control Room
- Mill Operations Control Room

All updates made to the ERP must be communicated to personnel and the most up to date version of the ERP document must be available at the above stated locations.

4.5 Warning Systems

The mill facility is to be outfitted with appropriate emergency warning systems which provide an audible alarm notifying personnel of hazards and the need to evacuate. The mine facility utilizes the radio communication system as a means of emergency warning. Personnel are to be trained in required responses appropriate for warning systems in their specific work areas.

Warning systems are to be tested as a part of regular preventative maintenance programs at minimum every 6 months. Warning systems are not to be overridden without specific authorization from the ERC and/or H&S Manager

4.6 Drills

Each facility will develop an emergency evacuation procedure for specific types of hazard exposures, e.g. Fire, chemical release, etc. to which the area personnel may be exposed. This procedure must be understood by all personnel working in the area and drills for related evacuations will be conducted on an annual basis. All drills must be documented, and a copy is to be retained by the Health & Safety department.

4.7 Maps

Please refer to Appendix 2 for maps and line diagrams of the following item locations:

- Fire Extinguishers
- Fixed Fire Suppression
- Fire Hydrants
- First Aid Stations
- SCBA cashes and self- rescue equipment

4.8 Emergency Supplies

Please refer to Appendix 3 for a listing of all available emergency supplies, quantities and details on use. All supplies maintained and controlled by the ERT are separate to the above mention listing.

4.9 Post Emergency Activities

Where required, trauma counselling shall be provided to personnel affected by the emergency to the extent that such counselling is considered to be required. The Employee Assistance Program is also available for staff to utilized following an incident (or at anytime during their tenure with AGC).

Following an emergency, a full investigation shall be carried out as per the AGC incident reporting management program. At the completion of the investigation, the emergency response plan shall be revised and amended if necessary.

Debriefing will be conducted in both hot wash (immediate after action reporting) and more detailed cold wash (post incident report) format. Hot washes will be conducted with all active incident members immediately post incident while cold wash debriefing will be conducted upon the conclusion of the incident investigation; this will be participated by all ERT and support members whether or not they were active in the event.

5. Emergency Preparedness

Establishing a format for emergency preparedness is critical. Specific emergency response plans are identified in this document.

Site emergencies covered by this plan are:

- Evacuation
- Surface Mine Rescue
- Medical Emergency
- Emergency Transportation
- Fire Fighting
- Vehicle Incident (on site)
- Cyanide Exposure
- Hazardous Chemical Exposure (other than cyanide)
- Entrapment/Confined Space Rescue
- Radiation Exposure
- Explosion
- Pit Wall/Ramp Failure
- Ground Collapse
- TMF Failure
- Sever Electrical Storm
- Forest Fire
- Natural Event
- Flooding
- Tire Fire
- Hazardous Substance Release
- LPG Release
- External Emergency
- Bomb Threat
- Security Breach
- Power Failure

5.1 Radio Channels (on site – Touquoy Mine)

Radio Channel	Department/Area
1	Health & Safety
2	Mine Operations/Pit
3	TMF Operations
4	Warehousing (shared with ERT for training)
5	Mill Projects
6	Mill Operations
7	Security
8	EMERGENCY

5.2 Emergency Call-Out

In order to effectively communicate the need for assistance in an emergency the following procedure is to be followed when conducting an emergency call out via radio:

1. Contact Security on Channel 7 first stating EMERGENCY, EMERGENCY, EMERGENCY. Inform them of the type of emergency, location and if ERT is requested.

2. Security will call out the emergency evacuation (if necessary) on the channel specific to the work area, as noted above. They will state EMERGENCY, EMERGENCY, EMERGENCY and give very brief instructions on muster requirements.

3. Security will contact the ERC or delegate via channel 1 to inform of the emergency.

4. ERT members will be contacted by the ERC or delegate on their respective radio channels informing them to muster at the ERT facility for further briefing prior to response.

5. Should the emergency or evacuation require a site wide response, Security will provide the required information via the all-call Emergency channel 8.

6. Organization

6.1 Level of Emergency

In order to effectively manage emergency response, MRC has adopted a classification system that includes three levels of emergencies. Each level of emergency, based on the significance of the event, requires varying degrees of response, effort and support. The impact on normal business operations will also differ as will the requirements for investigation and reporting. Please refer to the Organization Response Matrix below for further clarification:

	Level 1 (Moderate)	Level 2 (Major)	Level 3 (Catastrophic)
Response	Local Site Response (ERT)	ERT & SMRT Response	ERT, SMRT & CRT Response
Personal Injury	Injury involving hospitalization	Single fatality or multiple injuries	Multiple fatalities
Missing Personnel	One or more people unaccounted for	One or more people confirmed missing	One or more people confirmed missing >24hrs
Environmental Event	Incident confirmed contained on site – regulatory notification required	Incident potentially resulting in offsite contamination and requiring regulatory notification	Significant incident – or incident involving mercury or cyanide – with potential implications across the company
Community Event	Local issue with no immediate likelihood of sustained media interest (not more than 2 consecutive news cycles) or disruption to operations	Immediate or ongoing issue involving sustained media coverage (more than 2 consecutive news cycles) or adverse impacts to operations	Significant or ongoing issue attracting significant media attention (more than 3 consecutive news cycles) and disruption to operations
Technical Incident	Technical failure requiring work to halt in an area	Technical failure requiring significant remediation and evaluation of impact to production	Technical failure impacting production such that it would require revising market guidance
Production Loss	Reduction of expected capacity for a period of up to one month	Reduction of expected capacity for more than one month	Total loss of production for more than one month
Natural Disaster	Forecast Natural Disaster / threat of significant infectious disease	Natural Disaster impacting site / site affected by significant infectious disease	Natural Disaster / infectious disease affecting multiple sites
Terrorism Event	Unconfirmed threat against individuals or structures requiring further investigation	Confirmed threats against individuals or structures requiring intervention	Actual kidnap or extortion demand or actions involving harm and / or significant damage
Sabotage	Sabotage < $10,000 damage	Sabotage > $10K-100K damage	Sabotage > $100,000 damage
Civil Unrest	Local civil disruption with no imminent threat to site	Local civil disruption with possibility of affecting operations or workforce	Civil unrest or hostile threat with impact on operations and/ or workforce
Labour Unrest	Local labour disruption affecting operations / production for short period	Labour disruption for extended period	Long term labour disruption affecting multiple operations

Note: Categories are to be considered mutually exclusive

6.2 Response Plans

The Emergency Response Plan is the overarching document to describe the organization, roles, responsibilities and resources for responding to emergencies at MRC. However, in some cases specific regulatory requirements require separate emergency response plans; these may include responses found within the Nova Scotia Emergency Measures Act. Appendix 6 includes MRC's TMF Emergency Preparedness and Response Plan, Appendix 7 includes MRC's Propane Response Plan and Appendix 8 includes MRC's Spill Contingency Plan.

6.3 Notification and Communication

6.3.1 Emergency Event Notification

Please refer to Appendix 1 for emergency event notification tree and related stakeholder contact information.

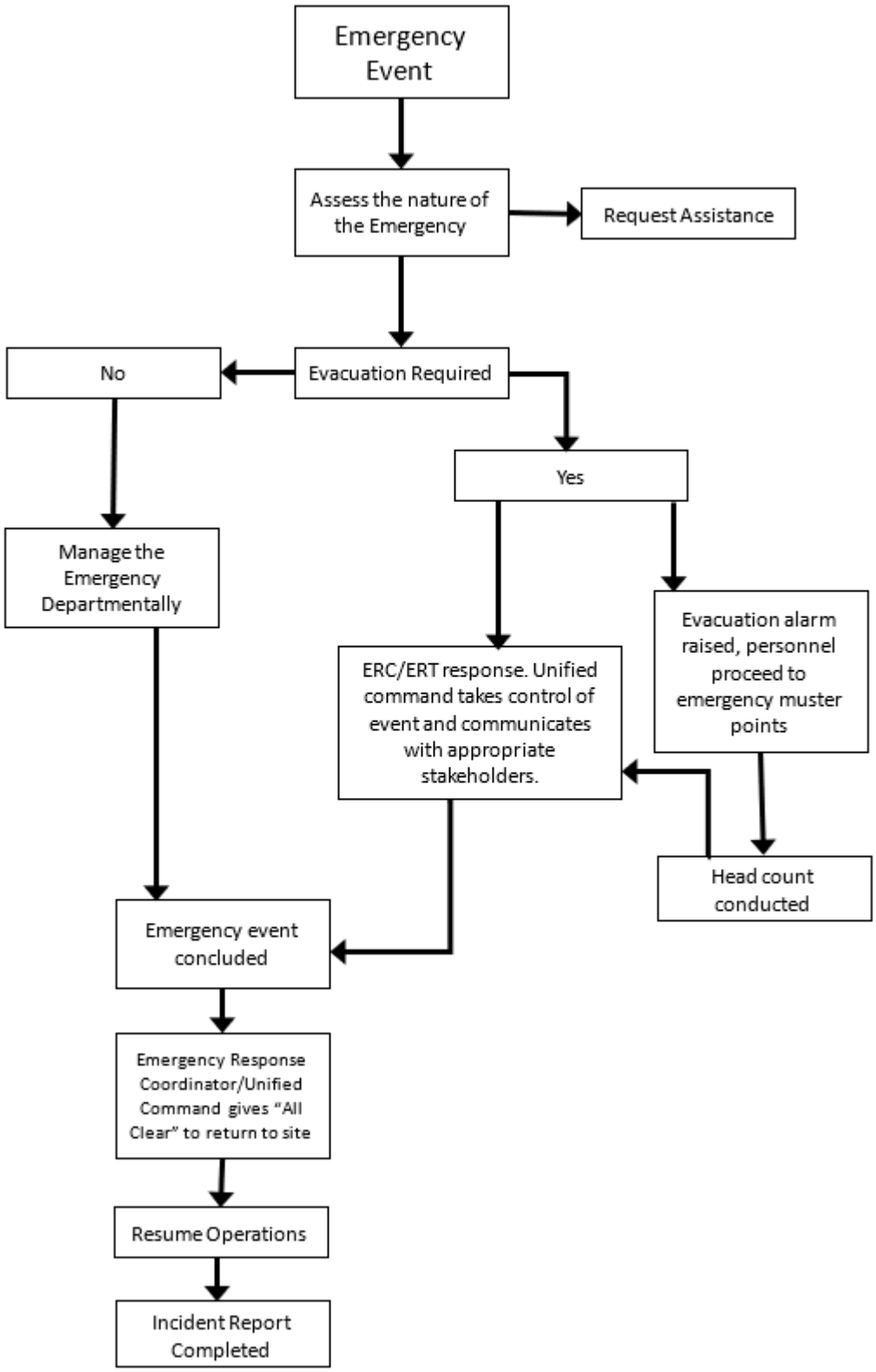
6.3.2 Emergency Communication

Please refer to Appendix 1 A for emergency communication plan relating to emergency contact and call out on site.

6.3.3 Emergency Command Structure

Please refer to Appendix 1 B for emergency command structure.

6.4 Emergency Response Flowchart



7. Emergency Response Team

7.1 Membership

Membership of the ERT is comprised of team members from both mine and mill operations. These members are trained in emergency response and mine rescue techniques and are required to maintain a current first aid credential of emergency first responder or higher while acting as a member of the ERT.

All members will undergo a pre-screening interview as well as medical assessments to determine fitness for role.

7.2 Equipment

Emergency equipment includes emergency response vehicle, water truck (if necessary), first aid equipment, breathing apparatus, gas detection equipment and absorbents and neutralizing agents.

Please see Appendix 3 A for a listing of all ERT response equipment.

7.3 Maintenance

ERT members are responsible for the care and maintenance of all response equipment with the exception of the emergency response vehicle which falls under the scope of the mobile maintenance department.

All equipment must be captured in a preventative maintenance program as well as maintained and replenished post event.

8. Related Documents and Records

- AGC - HS FRM – 006 Incident Report Management
- AGC - HS FRM - 004 Incident Report
- AGC – HS FRM – 033 Bomb Threat Information Form

9. Review and Continuous Improvement

This Emergency Response Plan will undergo annual review and any changes or continuous improvement will be updated within this document. The changes will subsequently be communicated sitewide and distributed to any required support stakeholders in a timely manner.

Appendix 1

Emergency Event Notification

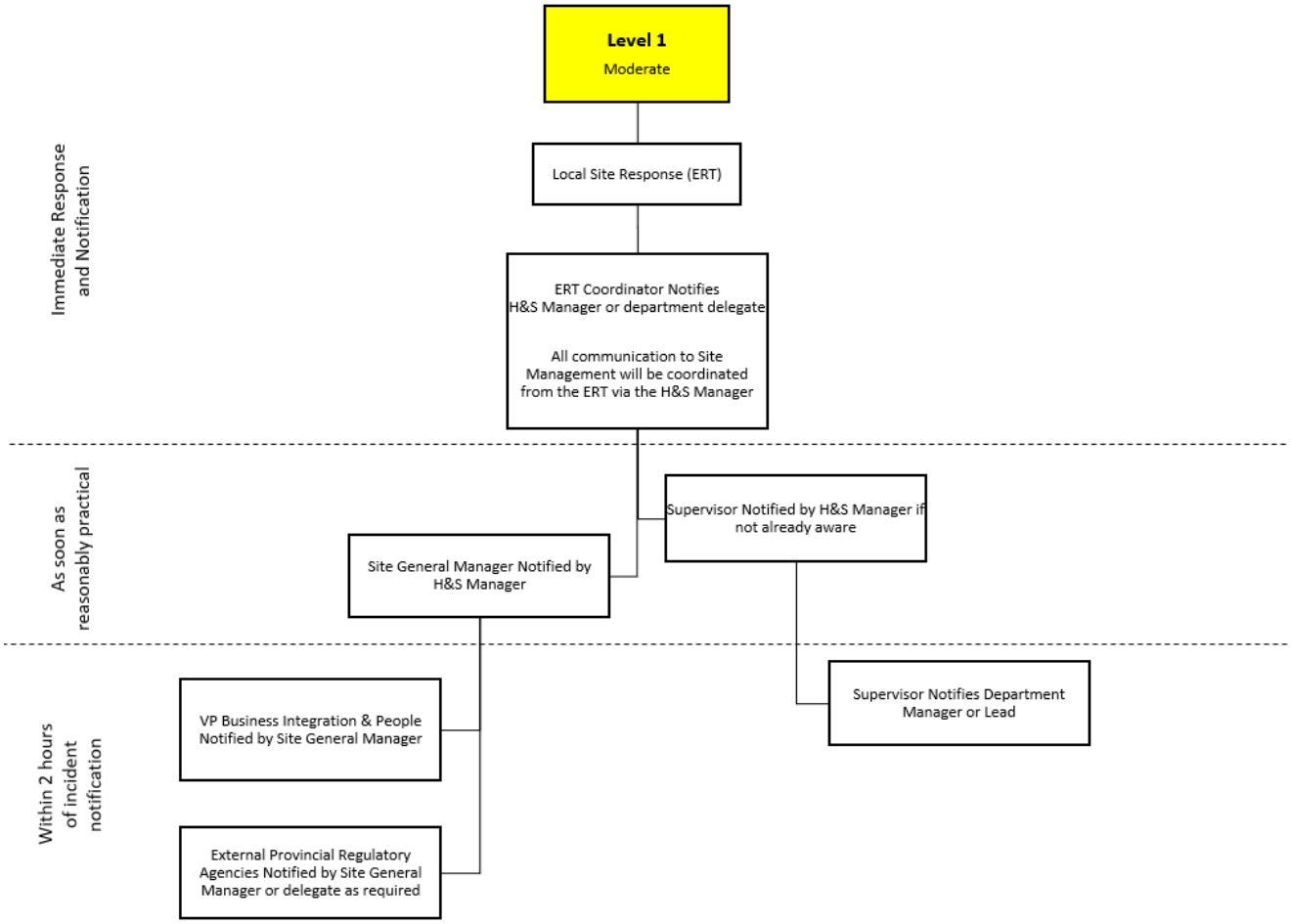
Table 1 – Injury Reporting

Reporting	Supervisor	Superintend.	Dept. Manager	Health & Safety Manager	General Manager	VP Business Integration & People	COO
First Aid	Immediately	Business Hours	Business Hours	Business Hours	Business Hours	Weekly Report	Weekly Report
Medical Treatment Injury	Immediately	Immediately	Immediately	Immediately	Immediately	Business Hours	Business Hours
Alternate Duties Injury	Immediately	Business Hours	Business Hours	Business Hours	Business Hours	Business Hours	Business Hours
Potential Lost Time Injury	Immediately	Immediately	Immediately	Immediately	Immediately	Business Hours	Business Hours
Fatality	Immediately						
Incident Moderate Risk Level	Immediately	Business Hours	Business Hours	Business Hours	Business Hours	Business Hours	Business Hours
Serious Incident High / Extreme Risk Level	Immediately	Immediately	Immediately	Immediately	Immediately	Business Hours	Business Hours
Reportable Incident	Immediately	Immediately	Immediately	Immediately	Immediately	Business Hours	Business Hours
Damage - > 20K	Immediately	Immediately	Immediately	Immediately	Immediately	Business Hours	Business Hours

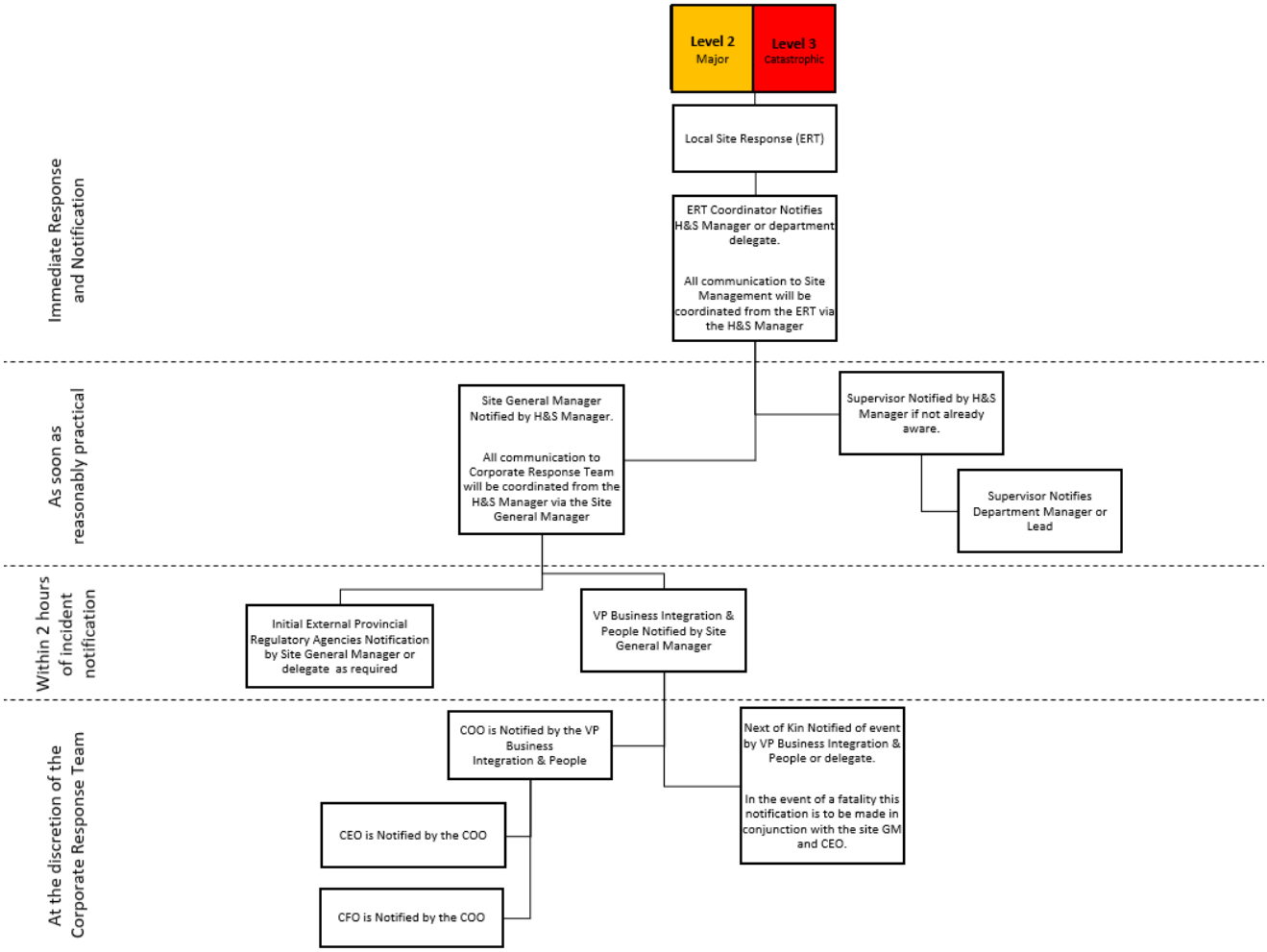
Notes

Weekly Report – Details recorded in weekly report

Flow Chart 1 – Reporting Notification Flow Charts



Flow Chart 1 – Reporting Notification Flow Charts



Appendix 1A

Stakeholder Contacts

24 Hour Emergency Contact Numbers

Fire/Police/Emergency Health Services (Ambulance)	911
Nova Scotia Environment	1-800-565-1633
Occupational Health and Safety Nova Scotia	1-800-952-2687
Poison Control	1-800-565-8161
Environment Canada	1-800-565-1633
Irving Oil (Propane)	1-888-310-1924
Nova Scotia Power	1-800-428-6230
Halifax Regional Fire and Emergency (non-emergency)	902-490-5530

AGB Stakeholders

Department	Function	Name	Phone
All	General Manager	Laird Brownlie	902-391-0700
Health & Safety	H&S Manager	Keith Closen	902-384-3691
Environment & Permitting	Manager Environment & Permitting	James (Jim) Millard	902-403-1337
Security	Security Superintendent	Terry Moser	902-957-5729
Mine	Mine Superintendent	Les Cook	902-240-7238
Mill	Mill Manager	Andrew Taylor	705-626-9519

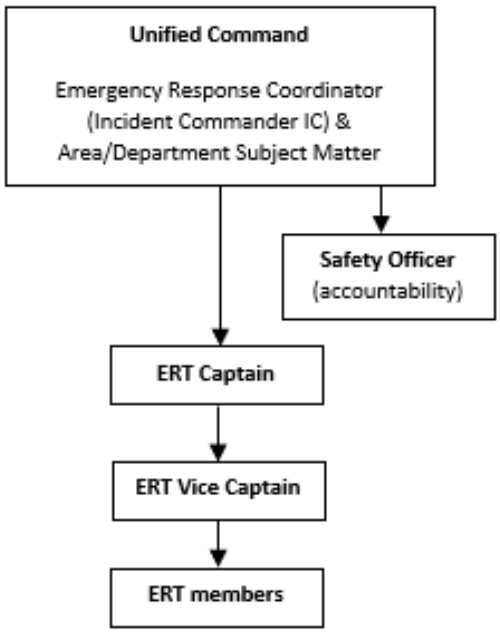
Local Stakeholders

Middle Musquodoboit RCMP (non-emergency)	902-384-3401
Musquodoboit Rural High School	902-384-2320
Parker's Esso	902-384-2844

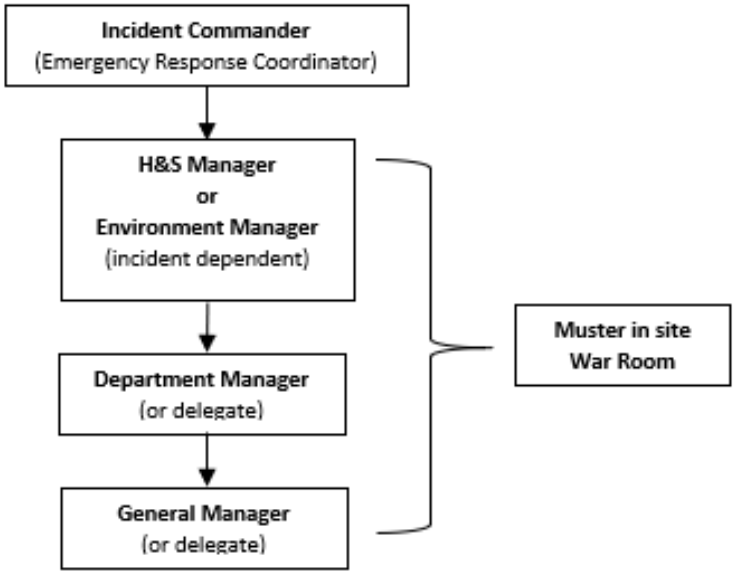
Appendix 1B

Emergency Command Structure

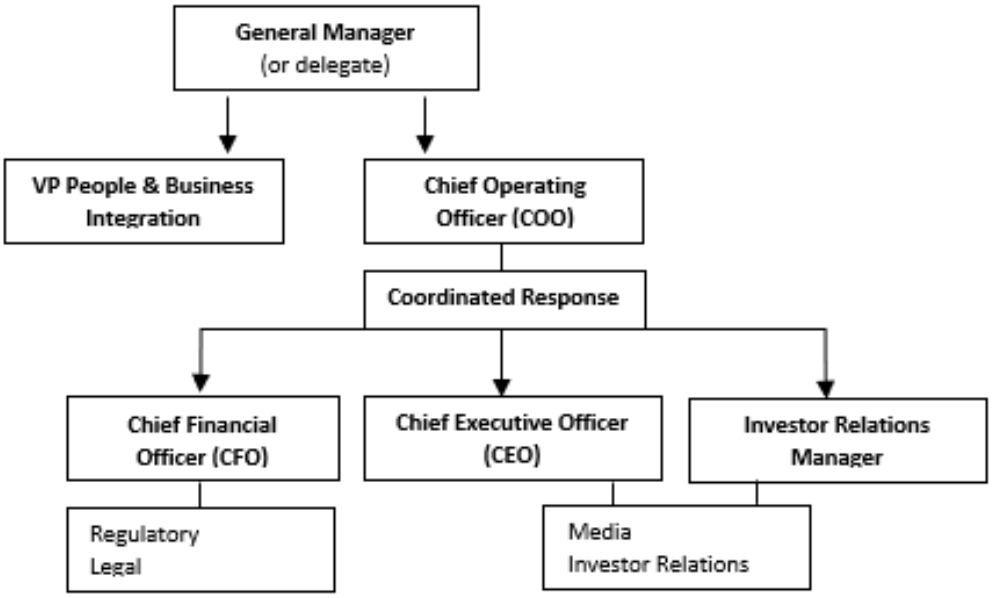
Emergency Response Team



Site Response Team



Corporate Response Team



Appendix 1C

Responsibilities & Accountabilities During Critical Events

In the event of an emergency which requires Level 2 (SMRT) and/or Level 3 (CRT) response which necessitates site control and response. There may be a need for augmented site report which would utilize all available personnel including management team members as well as others. To ensure appropriate tasks are being conducted, records maintained and appropriate controls in place personnel assisting in the event of an larger scale or more severe event a folder system has been created which identifies roles and responsibilities of all personnel assisting during the event.

The folders are kept in a cabinet located in the Admin Board Room and will be distributed as personnel arrive to the "war room" location following the occurrence of an event.

Though skill set and role are taken into consideration during an event, the system is based practically on availability of personnel during the event rather than job position.

Appendix 2

High Level Procedure – Site Emergencies

A2.1 Evacuation

The evacuation of personnel is to provide a safe area to muster in the event of an emergency or threat.

Threat	Potential for injury of those you don't evacuate when alarm is raised.
Notification	**ERT, SMRT**
Alarm	**Area Evacuation Alarms,** **Radio,** **Direct Notification,** **External Agency (Halifax Fire, EHS, RCMP as required)**
Response	**On Notification of Possible Evacuation** • Secure confidential and valuable items if time permits, shut down electrical equipment and critical plant process' if safe to do so. • Proceed to the designated Muster Point • Follow instructions of the Person In Charge (Warden) The PIC (warden) will arrange for evacuation. If area is unattended contact Department Manager **via the RADIO system** and provide particulars of the emergency. i.e. location, people involved and type of emergency. **On Notification to Evacuate – shelter in place will be communicated if applicable** **Mine/Mill Personnel**: Immediately leave building, work area, via the nearest safe exit and proceed to the Muster Point **All staff**: remain at the muster points until otherwise directed by the PIC in conjunction with the ERT Unified Command. PIC / Wardens will notify the Emergency Response Coordinator on the head count to determine if any all persons have been accounted for. If people have been identified as missing the Emergency Response Coordinator, General Manager and Emergency Services must be alerted. Situational reports will be communicated to personnel through the PIC / Wardens. **All Clear** will be communicated through the PIC in conjunction with the ERT Unified Command. **Note:** If the emergency involves hazardous substances, evacuation will need to be up wind of the incident to prevent possible exposure to toxic vapours.
External Response	Halifax Fire RCMP EHS

A2.2 Surface Mine Rescue

Depending on the location and nature of a failure, rescue may be required from the open pit mine facility.

Threat	• **Injury** • **Disruption to Production**
Notification	**ERT, SMRT, CRT**
Alarm	• **Direct** • **Radio Channel 2** • **Radio Channel 7**
Response	**If People Injured, Trapped or Missing: Raise the Alarm, via the RADIO system, stating "Emergency, Emergency, Emergency"**, and then provide particulars of the emergency. i.e. location, people involved and type and request ERT response. **Response**: Emergency response (first-aid/ medical/ search /pit evacuation/ rope rescue etc). The Emergency Response Coordinator or delegate with the Chief Mine Engineer and Senior Geologist will assess the failure and determine the response The Emergency Response Coordinator will determine if Emergency Services are required. If personnel are not accounted for, rescue plans will be developed and implemented. The area is to be secured using Emergency Response Team or other site personnel to prevent personnel entering the danger zone Emergency Response Coordinator will notify the H&S Manager who will communicate with the Chief Mine Engineer and General Manager regarding the failure. The General Manager or delegate will conduct the initial notification of the failure to LAE NS OHS Division. **Rescue:** Medical response may be required and is to be lead under the direction of the rescue plan developed in coordination with the ERC. Supplementary site response procedures may be required during response. Maintain security of affected area/s until PIC in conjunction with the ERT Unified Command gives "All Clear".
External Response	EHS RCMP NSE LAE NS OHS Division Project Management (if contractors involved) Geotechnical Experts (advice on recovery)

A2.3 Medical Emergency

Medical event requiring urgent medical treatment and transport to a medical facility.

Threat	Serious Injury / Illness
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Direct** • **Radio Channel 7**
Response	Assess the scene quickly for any threatening situations (if safe to do so) and number of casualties Remain with the casualty and provide appropriate support and treatment if safe to do so. **Raise the Alarm**, **via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and extent of injuries. Request assistance. Response: First aiders to coordinate and administer first aid to the injured person(s), advanced first aid to be administered by trained ERT personnel upon arrival on scene. Notify Emergency Response Coordinator that an ambulance is required. The ERC or delegate shall call for an Ambulance by calling 911, and give site location, incident details, number of casualties and injuries. Isolate any existing or potential hazards, eg – electrical power, source hazardous substances, crane operations, etc. Protect the patient first aider and bystanders by isolating the area from traffic or any other hazards and make the area safe. Reassure the injured person(s) that help is on the way and keep the casualty warm and avoid leaving the injured person (s) on his or her own. A designate of the ERC will notify security to allow ambulance through entrance gate. The ERC will delegate someone to meet EHS and direct to location of the casualty. **Note**: Never leave the casualty alone. Do not move the casualty unless exposed to life threatening dangers. Provide support and appropriate assistance to casualty until emergency help arrives.
External Response	EHS RCMP LAE NS OHS Division

A2.4 Emergency Transportation

Transportation to an emergency medical facility.

Threat	Serious Injury / Illness
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Direct** • **Radio Channel 7**
Response	**Raise the Alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and extent of injuries. Request assistance. Response: First aiders to coordinate and administer first aid to the injured person(s), advanced first aid to be administered by trained ERT personnel upon arrival on scene. Notify Emergency Response Coordinator Charge that an ambulance is required. Supervisor or a member of the Emergency Response Team shall call for an Ambulance by calling 911, and give site location, incident details, number of casualties and injuries. If an Ambulance is unable to provide timely response or transportation, the ERT vehicle will be utilized to transport casualties to the nearest available medical facility or to meet the Ambulance on route. The ERT vehicle will only be driven by members of the ERT.
External Response	EHS

A2.5 Fire Fighting

A fire can occur at any location where fuel and ignition sources exist.

Threat	• **Injury** • **Infrastructure / Asset Damage** • **Disruption of Production**
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Fire Detection Alarms** • **Direct** • **Phone** • **Radio Channel 7**
Response	**Discovering a Fire** Assist any person in immediate danger if safe to do so and isolate the fire by closing doors where applicable; pulling the fire alarms as they safely evacuate the space. **Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and type and size of the fire and its location and request assistance. Provide first aid to anyone injured and stay with the casualty until the assistance arrives if safe to do so. Evacuation The Person in Charge (Warden) will evacuate staff to the nearest muster point and remains there until personnel accounted for. The PIC will notify the Emergency Response Coordinator on the status of the head count. **Fire Response** The emergency response team will be despatched to the fire and will initiate minimal firefighting activities. **Note –** the site ERT will not partake in full scale firefighting activities, this is left to Halifax Fire. The Emergency Response Coordinator will report back to the H&S Manager, who will inform the General Manager. The Emergency Response Coordinator will assess the fire event and determine if Halifax Fire, EHS or RCMP are required. **Note**: If the fire is small, attempt to put out using the nearest Fire Extinguisher or hose reel, ONLY IF SAFE TO DO SO **All Clear:** Halifax Fire, and/or the Emergency Response Coordinator will determine when the fire event has come to a conclusion and it is safe for personnel to return to normal duties. The all clear will be communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire EHS RCMP

A2.6 Vehicle Incident (on site)

Vehicle accident requiring emergency response from the site ERT and external emergency services.

Threat	• **Injury to occupants of the vehicles** • **Environmental impact (dependant on vehicles involved)** • **Impact to Company image / reputation**
Notification	**ERT, SMRT** **CRP (if level 3 event)**
Alarm	• **Direct** • **Phone** • **Radio Channel 7**
Response	**Raise the alarm**, call **via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. emergency type (vehicle accident), location, number of people involved and situational report on injuries and request ERT response. Provide first aid to anyone injured and stay with the casualty (s) until assistance arrives and it is safe to do so. Emergency response team and safety on call personnel are notified to respond. The emergency response team will assess the accident and will initiate emergency management activities (triage of casualties, first aid, secure the vehicle i.e. fire or spill, secure the scene). The Emergency Response Coordinator will provide a situational report back to the H&S Manager, who will inform the General Manager. The Emergency Response Coordinator will assess the accident and determine if Fire, EHS or Police are required and will notify the external emergency agencies (dial 911) of the accident and provide full details number of casualties and the condition of the casualties If ambulance required, notify security of the pending arrival and to allow the ambulance through the entrance gate. Delegate someone to meet EHS and direct to location of the accident. Preserve the scene for investigation
External Response	RCMP Halifax Fire (including HazMat) EHS LAE NS OHS Division Transport Company (if Hazardous Substances / Explosives involved)

A2.7 Cyanide Exposure

Medical event requiring urgent medical treatment and transport to a medical facility.

Threat	Serious injury / death
Notification	• **ERT, SMRT, CRT**
Alarm	• **Direct** • **Radio Channel 7** • **Direct Contact with EHS via 911** • **Direct Contact with AGC Contract Physician**
Response	**Raise the Alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and extent of injuries. **Emergency Response** Assess the scene for personnel that may have been exposed to cyanide, whilst maintaining your own safety. Direct the personnel exposed to fresh air (if conscious) If personnel unconscious, Emergency Response Team to respond and remove casualties to fresh air (using the appropriate PPE including SCBA) Remove contaminated clothing. Wash cyanide residue from the casualties. Administer oxygen 15 lpm Record baseline observations in preparation for communications with EHS. Remain with the casualty and provide appropriate support and treatment. Emergency Response Coordinator or delegate to contact EHS via 911 and request response to suspected cyanide exposure giving the contact details of the AGC contract physician on call identifying the availability of the CYANOKIT. EHS to request the approval for the attending Paramedics to administer the CYANOKIT when they arrive on site from the on-call physician. Emergency Response Coordinator to request the CYANOKIT be collected from the site first aid room transported to the location of casualties. Emergency Response Coordinator or delegate to notify security to allow ambulance through entrance gate. Delegate someone to meet EHS and direct to location of the casualty. **Note**: Never leave the casualty alone. Provide support and appropriate assistance to casualty until emergency help arrives.
External Response	EHS RCMP AGC On-Call Contract Physician

A2.8 Hazardous Substance Release (other than cyanide)

A release of hazardous chemicals can impact people over a wide area. If a major release occurs, an evacuation should be initiated, especially downwind of the release.

Threat	• **Injury / Illness** • **Disruption to Production** • **Adverse Impact on Company Image**
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Area Alarms** • **Direct** • **Radio Channel 6** • **Radio Channel 7**
Response	**Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. release type, amount released, location, people involved and request ERT response. **Evacuation:** The PIC (Warden) will evacuate staff to the nearest muster point and remains there until personnel accounted for. The PIC will notify the Emergency Response Coordinator on the status of the head count and identify if any personnel are injured or have been exposed. Depending on wind conditions, evacuation should occur up wind, away from any vapour cloud. The Emergency Response Coordinator will communicate with the H&S Manager and will initial report to the General Manager. **Response**: The emergency response team will be dispatched to the spill / release and will initiate emergency response activities. The Emergency Response Coordinator in conjunction with area supervision will attempt to determine quantity and source of spill / release and will give a situational report back to the H&S Manager. The H&S Manager will communicate with the Manager Environment & Permitting as required. The Emergency Response Coordinator will assess the spill / release event and determine if Emergency Services are required. If the incident is serious and cannot be contained, the Emergency Response Coordinator will call 911 and request assistance from the appropriate Emergency Services. The SDS for the product leaking / spilt will be reviewed to assist in developing an emergency response and recovery plans and will be made available to the Emergency Services. Wind direction and strength should be considered during spill / release response. Emergency Response Coordinator or delegate will arrange for the Emergency Services to be met at the gate and escorted on site. **Recovery**: The Spill Response may require an area to be secured with barriers and signs to prevent access to the affected area until contained and cleaned up.
External Response	Halifax Fire (including HazMat) EHS RCMP NSE

A2.9 Entrapment/Confined Space Rescue

Any entrapment which may or may not be related to confined spaces. If supplementary hazards are present including but not limited to extreme atmospheric hazards, chemical release or an inability to extract personnel, the Halifax Fire Confined Space Rescue team must be notified and assistance requested.

Threat	• **Suffocation** • **Fire / Explosion** • **Injury / Illness** • **Disruption to Production**
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Area Alarms** • **Direct** • **Radio Channel 7**
Response	**Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. Workers trapped in Confined Space. Request assistance. ERC will determine required information for immediate notification of Fire, Police and EHS via 911. **Rescue/Extraction**: The Mill/Processing Plant Area Emergency Alarm will be activated. The area and (if possible) confined space must be inspected for additional hazards which may pose a threat to responders; this may include but is not limited to changes in atmospheric conditions, in flooding, etc. The area immediately surrounding the entrapment/confined space is to be secured and entry limited to response personnel and critical operations personnel assisting with rescue only. Confined space rescue trained personnel will act as primary responders and follow pre-designated confined rescue plan which had developed for the task. All equipment will be available on task site with supplementary equipment being provided by ERT as necessary. The Emergency Response Coordinator communicate the incident to the H&S Manager who will give an initial report to the General Manager. **Response:** The emergency response team will be despatched to the release and the Emergency Response Coordinator will assess the release and determine if the full need of Halifax Fire Confined Space Rescue and EHS support. **All Clear:** Maintain involvement until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire Confined Space Rescue EHS

A2.10 Radiation Exposure

Any uncontrolled exposure to radiation or release. Supplementary notifications are required as per federal radiation regulations; additional information as per Canadian Nuclear Safety Commission license in compliance with the Nuclear Safety and Control Act. The site Radiation Safety Officer as well as Halifax Fire Hazmat team must be notified and assistance requested.

Threat	• **Injury / Illness** • **Disruption to Production**
Notification	**ERT, SMRT, CRT**
Alarm	• **Direct** • **Radio Channel 7**
Response	**Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. Workers trapped in Confined Space. Request assistance. ERC will determine required information for immediate notification of Fire, Police and EHS via 911. The Emergency Response Coordinator communicate the incident to the H&S Manager who will give an initial report to the General Manager. **Response:** The emergency response team will be despatched to the release and the Emergency Response Coordinator will assess the release and determine if the full need of Halifax Fire Hazmat is required including EHS support. The entire mill facility should be evacuated to ensure no further exposure; all evacuations should be made to an upwind location. Any personnel who are suspected to have been directly exposed to radiation should be isolate and prepare for a hazmat decontamination; follow-up treatment will be conducted at the hospital. Halifax hazmat and potential additional external radiation resource support will determine the course of action for area specific decontamination. **All Clear:** Maintain involvement until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire Hazmat EHS Radiation Subject Matter Experts

A2.11 Explosion

The most likely sources of an explosion is a premature blast detonation or from propane fuelled process equipment.

Threat	• **Serious Injury** • **Loss of Company Assets** • **Disruption to Production** • **Adverse Impact on Company Image**
Notification	**ERT, SMRT, CRT**
Alarm	• **Direct** • **Radio Channel 7**
Response	An incident involving explosives (e.g. propane fuelled process equipment, premature detonation of explosives) has the potential to result in a major explosion and multiple injuries. **Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and type and size of the fire and its location and request assistance. **Evacuation**: The Person in Charge (Warden) will evacuate staff to the nearest muster point and remains there until personnel accounted for. The person in charge will notify the Emergency Response Coordinator on the status of the head count. **Emergency Response**: The emergency response team will be placed on alert and will assist with evacuation of personnel. No attempt is to be made to approach or extinguish the fire. The Emergency Response Coordinator will determine if emergency services (fire, ambulance and police) are required and will communicate with the H&S Manager. **Safe Zone**: The emergency response team will establish and maintain a safe zone around the magazine. The size of the safe zone will be determined through consultation with explosive experts / engineering department. The H&S Manager will notify the General Manager. Maintain security of affected area until Emergency Response Coordinator gives "All Clear"
External Response	Halifax Fire EHS RCMP LAE NS OHS Division

A2.12 Pit Wall/Ramp Failure

Open pit wall failures can pose a risk, depending on the location and nature of the failure

Threat	• **Injury** • **Disruption to Production**
Notification	**ERT, SMRT, CRT** **NSE** **LAE NS OHS Division**
Alarm	• **Direct** • **Radio Channel 2** • **Radio Channel 7**
Response	**If People Injured, Trapped or Missing: Raise the Alarm, via the RADIO system stating "Emergency, Emergency, Emergency"**, and then provide particulars of the emergency. i.e. location, people involved and type and request assistance. **Response**: Emergency response (first-aid/ medical/ search /pit evacuation/ rope rescue etc). The Emergency Response Coordinator or delegate with the Chief Mine Engineer and Senior Geologist will assess the failure and determine the response. The Emergency Response Coordinator will determine if Emergency Services are required. If personnel are not accounted for, rescue plans will be developed and implemented. The area is to be secured using Emergency Response Team or other site personnel to prevent personnel entering the danger zone Emergency Response Coordinator will notify the H&S Manager who will communicate with the Chief Mine Engineer and General Manager regarding the failure. The General Manager or delegate will conduct the initial notification of the failure to LAE NS OHS Division. **Recovery:** The Geotechnical Expert (s) with Site Management will develop and implement a recovery plan. General Manager advise LAE NS OHS Division of recovery plan. H&S Manager will communicate with external service providers if further assistance is required (e.g. additional rescue equipment etc) **All Clear:** Maintain involvement until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire EHS RCMP NSE LAE NS OHS Division Project Management (if contractors involved) Geotechnical Experts (advice on recovery)

A2.13 Ground Collapse

A major ground collapse is likely to result in significant injury, equipment damage and disruption to mine production.

Threat	• **Injury** • **Disruption to Production** • **Impact of Company Image**
Notification	**ERT, SMRT, CRT**
Alarm	• **Direct** • **Radio Channel 2** • **Radio Channel 7**
Response	**Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and type and request assistance. The Emergency Response Coordinator will communicate with the H&S Manager and confirm the incident; the H&S Manager will give an initial report to the General Manager. **Evacuation:** The Mine GF or Supervisor on learning of the event will assess the impact on personnel and initiate an evacuation (if applicable). **Emergency Response**: The Chief Mine Engineer / Mine GF and/or Supervisor, and the Emergency Response Coordinator will assess the situation and develop a response plan. The Emergency Response Coordinator in conjunction with the H&S Manager will determine if the Emergency Services (Halifax Fire, EHS and RCMP) are required. ERT will report back to the Emergency Response Coordinator on the head count received from mine supervision. The Emergency Coordinator will notify the H&S Manager who will notify the General Manager. If personnel unaccounted for, the Crisis Management Plan will be initiated and the CEO notified as per reporting hierarchy. The area is to be secured using Emergency Response Team or other site personnel. **Recovery:** The Geotechnical Expert (s) with Site Management will develop and implement a recovery plan.
External Response	Halifax Fire EHS RCMP LAE NS OHS Division NSE Geotechnical Experts (advice on recovery)

A2.14 TMF Failure

A failure of a Tailings Management Facility (Dam) could occur due to a major rainfall event, seismic activity or mismanagement of the facility.

Threat	• **Injury** • **Disruption to Production** • **Damage / Collapse of infrastructure** • **Environmental Impact**
Notification	**ERT, SMRT, CRT** **Nova Scotia Environment (NSE)** **Department of Natural Resources (DNR)**
Alarm	• **Direct** • **Radio Channel 3** • **Radio Channel 2**
Response	**If People are Injured, Trapped or Missing: Raise the Alarm,** call the **Emergency via the RADIO system stating "Emergency, Emergency, Emergency"**, and then provide particulars of the emergency. i.e. location, type and people involved, request assistance if necessary. The Chief Mine Engineer, H&S Manager and Manager Environment & Permitting will meet with the Emergency Response Coordinator to assess the situation and determine an appropriate response. The Emergency Response Coordinator will notify the Emergency Services (Fire, EHS and RCMP) as required. The area is to be secured using the Emergency Response team or other site personnel to prevent persons entering the danger zone. Where tailings may encroach on neighbouring properties or public roadways construction of bunds and/or diversion drains may be required to prevent tailings leaving site. Where tailings may encroach on neighbouring properties or public roadways the appropriate authorities must be notified. **Recovery:** The Manager Environment & Permitting, Chief Mine Engineer and General Manager along with a suitably qualified geotechnical organisation will develop a recovery plan.
External Response	As Necessary: RCMP EHS

A2.15 Severe Electrical Storm

Activities in the open during an electrical storm should be stopped due to the risk of being struck by lightning.

Threat	• **Personnel being struck by lightning** • **Lightning initiating fire or explosion** • **Disruption to power**
Notification	**SMRT**
Alarm	• **Observations of lightning / thunder** • **Alarm** • **Radio Channel 2 (mine operations)** • **Radio Channel 6 (mill operations)** • **Radio Channel 1 (safety & security)**
Response	Management to monitor the weather and to notify personnel when there is an approaching storm or threat of lightning strikes. Personnel working out in the open - All personnel to move into a building, closed in environment for protection Personnel working in closed cab vehicles and equipment - Operators to park their vehicle up, stay inside the cab and not touch handles / winders etc until the threat of lightning strike has past. **If injury, damage or loss; raise the alarm**, **via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. emergency type, location, number of people involved and situational report on injuries requesting assistance. The Emergency Response Coordinator will confirm the incident and give an initial report to the H&S Manager who will communicate with the General Manager. Emergency response will be determined by the extent of the injuries, damage or loss and in line with the specific emergency response criteria. If rubber-tired equipment struck by lightning, park in secured/ isolated area for 24 hours **All Clear:** Maintain involvement until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	EHS Halifax Fire (as necessary) NS Power DNR

A2.16 Forest Fire

A major forest fire could have a significant impact on the operations and surrounding community

Threat	• **Injury** • **Damage / loss of Infrastructure**
Notification	**ERT, SMRT, CRT**
Alarm	• **Direct (department briefing sessions)** • **Phone** • **Radio**
Response	Monitor forest fire threat through the media and communications with the Halifax Fire, Department of Natural Resources and RCMP. Initiate the Emergency Response Team to undertake a fire watch of the mining lease. If fire detected, raise the alarm, **via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the fire and location. Emergency Response Coordinator will notify the H&S Manager who will communicate with the General Manager or delegate of the fire. Emergency Response Coordinator regular communicates with the H&S Manager who will communicate with staff and contractors on the fire threat. An incident action plan will be developed and communicated as necessary. Evacuation points for consideration depending on wind direction and extent of fast moving fire: Mining: Open pit Processing: Mill Control Mining Maintenance Workshop: Open pit Administration: Open pit Take directions from DNR, Halifax Fire and RCMP. **All Clear:** Maintain involvement until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire RCMP DNR

A2.17 Natural Event

A major natural event, earthquake or seismic event is one that may cause damage to mine infrastructure and result in disruption to the operation.

Threat	• **Collapse of mine infrastructure (e.g. Tails Dam, pit walls, operations facilities, buildings or structures)** • **Loss of access to mine (loss of ramps)** • **Induces major fire/explosion (e.g. LPG or fuel storage)** • **Disruption to security/communications**
Notification	**ERP, SMRT, CRT**
Alarm	• **By the event** • **Site Alarms (emergency channel call out)** • **Radio Channel 7**
Response	**Surface Assessment of Possible Impact**: The Supervisors / Managers on learning of the event will assess mine and plant infrastructure for integrity and operation and report any damage or losses. **Emergency Response Team**: The Emergency Response Team will be placed on standby until a full assessment of operations has been completed. If injury, damage or loss; raise the alarm via the RADIO system stating "Emergency, Emergency, Emergency", and then provide particulars of the emergency. i.e. emergency type, location, number of people involved and situational report on injuries requesting assistance. Emergency Response Coordinator will notify the H&S Manager who will notify General Manager. Emergency response will be determined by the extent of the injuries, damage or loss and in line with the specific emergency response criteria. **All Clear:** Site security to me maintained until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire EHS RCMP

A2.18 Flooding

In rush of water or material into the mine area is likely to have an impact on personnel.

Threat	• **Injury** • **Disruption to Production** • **Impact of Company Image**
Notification	**ERT, SMRT, CRT**
Alarm	• **Direct** • **Radio Channel 7**
Response	**Raise the alarm**, **via the RADIO system** stating "Emergency, Emergency, Emergency", and then provide particulars of the emergency. i.e. location, people involved and type and size of the fire and its location and request ERT response to the affected area. The Emergency Response Coordinator will confirm the incident and give an initial report to the H&S Manager who will communicate the event to the General Manager. **Consider Evacuation**: The Mine GF or Supervisor on learning of the in rush will determine if a full mine evacuation is required. If a full mine evacuation is required, a radio broadcast of the emergency will be communicated. **Emergency Response**: The Chief Mine Engineer / Mine GF or Supervisor, and the Emergency Response Coordinator will assess the situation and develop an incident action plan. The Emergency Response Coordinator will notify the Emergency Services (Fire, Ambulance and Police) if required. Emergency Response Team will initiate the response plan and account for all personnel. ERT will report back to the Emergency Response Coordinator on the head count. The Emergency Response Coordinator will notify the H&S Manager who will notify the General Manager The area is to be secured using Emergency Response Team or other site personnel to prevent personnel entering the danger zone **Recovery**: The General Manager / Chief Mine Engineer with technical support will develop and implement a recovery plan **All Clear:** Site security to me maintained until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire EHS RCMP Geotechnical Expertise (if applicable)

A2.19 Tire Fire

A tire fire can occur due to overheating or failure. Tire fires generate significant heat, smoke and can explode.

Threat	• **Potential for Serious Injury** • **Equipment Damage** • **Production Loss**
Notification	**ERT, SMRT**
Alarm	• **Area Evacuation Alarms** • **Direct Report** • **Radio Channel 7**
Response	Equipment operator/driver to park-up equipment / vehicle in designated safe location (if possible) and leave area immediately **Raise the alarm**, **via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. location, people involved and type and size of the fire and its location and request assistance. Park vehicle in designated area (if applicable and possible) evacuate all personnel to a "safe" distance of approximately 300 metres from the vehicle (due to possible tire explosion). If there is no fire, but tire has overheated (delaminated, failed etc): park vehicle up in a safe location and raise the alarm. A fire watch will be established. **If there is no fire, but the tire has overheated**: Park vehicle in a safe position (off decline and away from development and production headings) and raise the alarm. ERT team will responded and will establish a fire watch. **Emergency response**: The Emergency Response Coordinator will assess the fire and determine the of the plan of attack based on the extent and severity of the fire communicating with the H&S Manager. The H&S Manager will notify the General Manager of the fire. **Post Fire**: Maintain secure access to vehicle / burnt tire location for 24 hours. Emergency Response Team to monitor for 24 hours or until the "All Clear" is given.
External Response	Halifax Fire EHS RCMP

A2.20 Hazardous Substance Release

A release of hazardous substances can impact people over a wide area. If a major release occurs, an evacuation should be initiated, especially downwind of the release.

Threat	• **Injury / Illness** • **Disruption to Production** • **Adverse Impact on Company Image**
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Area Alarms** • **Direct** • **Radio Channel 7**
Response	**Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. release type, amount released, location, people involved and request assistance. **Evacuation** the PIC (Warden) will evacuate staff to the nearest muster point and remains there until personnel accounted for. The PIC will notify the Emergency Response Coordinator on the status of the head count. Depending on wind conditions, evacuation should occur up wind, away from any vapour cloud. The Emergency Response Coordinator communicates the incident to the H&S Manager who will give an initial report to the General Manager. **Response**: The emergency response team will be dispatched to the spill / release and will initiate emergency response activities. The Emergency Response Coordinator attempt to determine quantity and source of spill / release and will give a situational report back to the H&S Manager. The Emergency Response Team will assess the spill / release event and determine if Fire, Ambulance or Police are required. If the incident is serious and cannot be contained, the Emergency Response Coordinator or delegate will call 911 and request assistance from the appropriate Emergency Services which may include Halifax Fire HazMat. The Safety Data Sheet (SDS) for the product leaking / spilt will be reviewed to assist in developing an emergency response and recovery plans and will be made available to the Emergency Services. Wind direction and strength should be considered during spill / release response. Emergency Response Coordinator will arrange for the Emergency Services to be met at the gate and escorted on site. **Recovery**: The Spill Response may require an area to be secured with barriers and signs to prevent access to the affected area until contained and cleaned up. Notify H&S Manager in the event that any personnel are exposed.
External Response	Halifax Fire EHS RCMP LAE NS OHS Division

A2.21 LPG Release

Threat	• **Fire / Explosion** • **Injury / Illness** • **Disruption to Production**
Notification	**ERT, SMRT** **CRT (if level 3 event)**
Alarm	• **Area Alarms** • **Direct** • **Radio Channel 7**
Response	**Raise the alarm, via the RADIO system stating "Emergency, Emergency, Emergency",** and then provide particulars of the emergency. i.e. LPG leak / fire and people involved. Request assistance. ERC will determine required information for immediate notification of Fire, Police and EHS via 911. **Evacuation**: The Mill/Processing Plant Area Emergency Alarm will be activated. The PIC (Warden) will evacuate staff to the muster point clear of the emergency and will remain there until personnel are accounted for. The PIC will notify the Emergency Response Coordinator on the status of the head count The Emergency Response Coordinator communicates the incident to the H&S Manager who will give an initial report to the General Manager. **Response:** The emergency response team will be despatched to the release and the Emergency Response Coordinator will assess the release and determine if the full need of Halifax Fire, EHS and RCMP support. Secure an exclusion zone around the vessel (500 to 1000-meter radius). The Emergency Response Team to assist in establishing exclusion zone. **LPG Gas Management**: Shut down leak if safe to do so and isolate any ignition sources. Emergency Response Team to set up a perimeter and await the response of Halifax Fire. **(ONLY IF SAFE TO DO SO)** Determine likely impact of any explosion and ensure potentially affected areas are evacuated. Contact LPG supplier and advise them of the release and seek advice on management. **All Clear:** Site security to me maintained until the all clear is communicated through the PIC in conjunction with the ERT Unified Command.
External Response	Halifax Fire (including HazMat) EHS RCMP LPG Supplier

A2.22 Civil Unrest

A civil unrest is any breach of the peace by a significant number of people assembled in one area or the gathering of an unruly mob. This may include any situation which could develop into a riot or significant event. Any civil unrest must be taken seriously; Management and Police must be notified immediately.

Threat	• **Injury** • **Damage** • **Operational downtime** • **Community impact** • **Media**
Notification	**ERT, SMRT, CRT**
Alarm	• **Phone** • **Direct**
Response	Do not panic. Notify the Manager, Supervisor, Security and raise the alarm via phone ***(do not use the radio to communicate as it may alarm personnel)*** The threat will be communicated to the General Manager or delegate. The General Manager or delegate will notify the RCMP and appoint a Person in Charge (PIC), generally the Security Manager. The PIC in conjunction with the Emergency Response Coordinator will arrange for the area of threat to be evacuated in an orderly manner. **Response:** When directed, alert all employees to evacuate calmly to a designated safe location away from the potentially threatening environment if it is safe to do so. All employees should avoid confrontations with demonstrators if evacuation is necessary. If evacuation is not safe, have all employees shelter in place and await further instructions from security personnel or the RCMP. All sensitive areas should be secured and all security access controls put in place. All media communication or external communication originating from the site should be silenced during the event as to not conjure further alarm. Maintain involvement until "All Clear/ Stand-down" given by General Manager / RCMP.
External Response	RCMP

A2.23 Bomb Threat

A bomb threat must be taken seriously; Management and Police must be notified immediately.

Threat	• **Injury** • **Damage**
Notification	**ERT, SMRT, CRT**
Alarm	• **Phone** • **Direct**
Response	**Instructions for Person Receiving a Telephone or Written Bomb Threat** **Receiving A Telephone Bomb Threat:** • Listen – Be calm and courteous; • Prolong the conversation. DO NOT put the caller on hold. Do not transfer the caller; • Obtain as much information as possible using the "Bomb Threat Checklist"; • If possible, alert a co-worker to the situation while the caller is on the phone so that the following steps can be initiated: - Acquire a copy of the "Bomb Threat Checklist" so you can collect all available information; - Call Security "3630" and inform them that a Bomb threat is the process of being received - Notify your supervisor • Complete the "Bomb Threat Checklist" and provide it to Security personnel; and • If the call is on an internal line, document where the call is coming from on the "Bomb Threat Checklist". **Receiving a Written Bomb Threat** Handle the letter as little as possible and then only by the edges; • Call Security "3630" and notify them of the written bomb threat; and • Information will be provided to security personnel: - How was the letter received/delivered - Who delivered it with date and time, when known - Where is the letter/envelope - Contents of the letter – postmark Security Management in collaboration with Senior Management will contact "911" as appropriate. Emergency Dispatch will be advised that there is a Bomb Threat in progress. The following information will be provided: - Your name, location and the number of a dedicated phone line for communications - The information collected on the "Bomb Threat Checklist"; and - Whether the threat is specific or non-specific Security personnel, in collaboration with Site Management will organize search leads and set up Search Command Centre. Ensure that the Command Centre is searched first and a secure, hard wired phone line is in place. Ensure that building floor plans are in the Command Centre. **If an Unidentified Object is found** • DO NOT TOUCH OR MOVE the object(s) or packages(s); • Withdraw searchers from the immediate area;

	• Do not touch electrical switches etc; • Ensure there is a clear path to and from the object; and • Advise the search lead of the following: - Your name - Location of the object - Reason(s) suspected - Description of the object - Any other useful information - Complete search of the area Once an object is located, a second search should be initiated (to determine whether there are additional bombs. **Whether to Evacuate?** The decision to evacuate should be governed by certain facts: • The size, design and construction of the threatened building; • Proximity of the threatened building to other edifices, which could pose an added risk; • The likelihood of that building's being targeted by bombers; • How often recently the community or Atlantic Gold Corporation has received bomb threats and the extent of the publicity these received; • The possibility of carrying out an effective search without having to evaluate; and • Whether the threat was specific or non-specific. **How to Evacuate** Continuous security during evacuation should be a priority. • Evacuation routes and safe areas must be thoroughly searched; • Once the safe area is deemed safe, all personnel, including command center staff should be relocated; • Evacuating personnel should be requested to leave in a calm and orderly manner. Some staff should be employed to assist in directing traffic; and • Personnel should also be instructed to take their small, valuable personal belongings with them. **Conclusion of a Search** • In consultation with the RCMP, the CEO/designate will determine when the bomb threat will be deemed a hoax or whether to take further precautionary action; • In addition, the CEO/Designate should be the only person responsible to cancel the "bomb threat" after every area to be searched has been searched or the time for a bomb to detonate has sufficiently passed, again asking to account the information obtained and the existing condition.
External Response	Halifax Fire EHS RCMP

A2.24 Security Breach

Threat	• Injury / Harm
Notification	SMRT CRT (event dependent) Security
Alarm	• Nil
Response	The following information has been put together to assist you in the event of an intruder(s) entering the site. It is only a guide as every situation is different. People who enter the site must be carefully monitored to ensure that their reasons for being on site are valid. **Staff confronted by intruder(s) should:** • Remain calm. • What you do next depends on the individual situation and what you feel comfortable with **NEVER PUT YOURSELF AT RISK**. • Approach him/her and inquire as to the purpose of their visit and if appropriate inform them that an appointment must be made to attend the site. Any person acting suspiciously or non-specific in their reason for being on site must be asked to leave and escorted off site. **DO NOT** under any circumstances attempt to confront or resist them. • **OBEY** requests or demands of armed intruder(s) using your judgement • Be courteous and speak if asked by the intruder(s). • Move slowly. Only do this with safety. Advise the intruder(s) of any sudden unexpected movements you may have to make. • If a weapon is present observe it and be aware of it. • Note the intruder(s) conversation including any indecent language, accent, nicknames or speech peculiarities. • Unless otherwise ordered, continually watch the intruder(s), making a mental note of their description. Pay particular attention to scars, tattoos and any other unusual or prominent features. • When the intruder(s) depart, record vehicle type, registration number and route taken. Report the emergency to security on channel 7 who will notify the RCMP via 911. RCMP should also be asked to attend if there are concerns regarding potential intruder(s) from outside the site.
External Response	RCMP

A2.25 Power Failure

A power failure may occur due to weather related conditions, equipment failure or malicious occurrence. Nova Scotia Power must be involved in any power failure occurrence to ensure that the grid system does not experience catastrophic overload when re-energization occurs.

Threat	• **Damage** • **Operational downtime**
Notification	**ERT, SMRT, CRT**
Alarm	• **Phone** • **Direct**
Response	Alarm is unnecessary, power failure should be communicated to site management including the general manager. All mill operational personnel should prepare their respective areas by ensuring that all equipment is controlled appropriately to ensure that no damage occurs during re-energization. Nova Scotia Power must be communicated with during all power failure events to ensure controlled re-energization. ***Always assume equipment is energized even during a power failure, ensure safe isolation prior to any work*** All workers in operational areas should have adequate emergency lighting available to conduct their tasks in a safe manner. Should an incident, medical emergency or other emergency event occur during a power failure all standard response protocols are to be followed. Upon re-energization all site management plus the COO are to be notified.
External Response	Nova Scotia Power

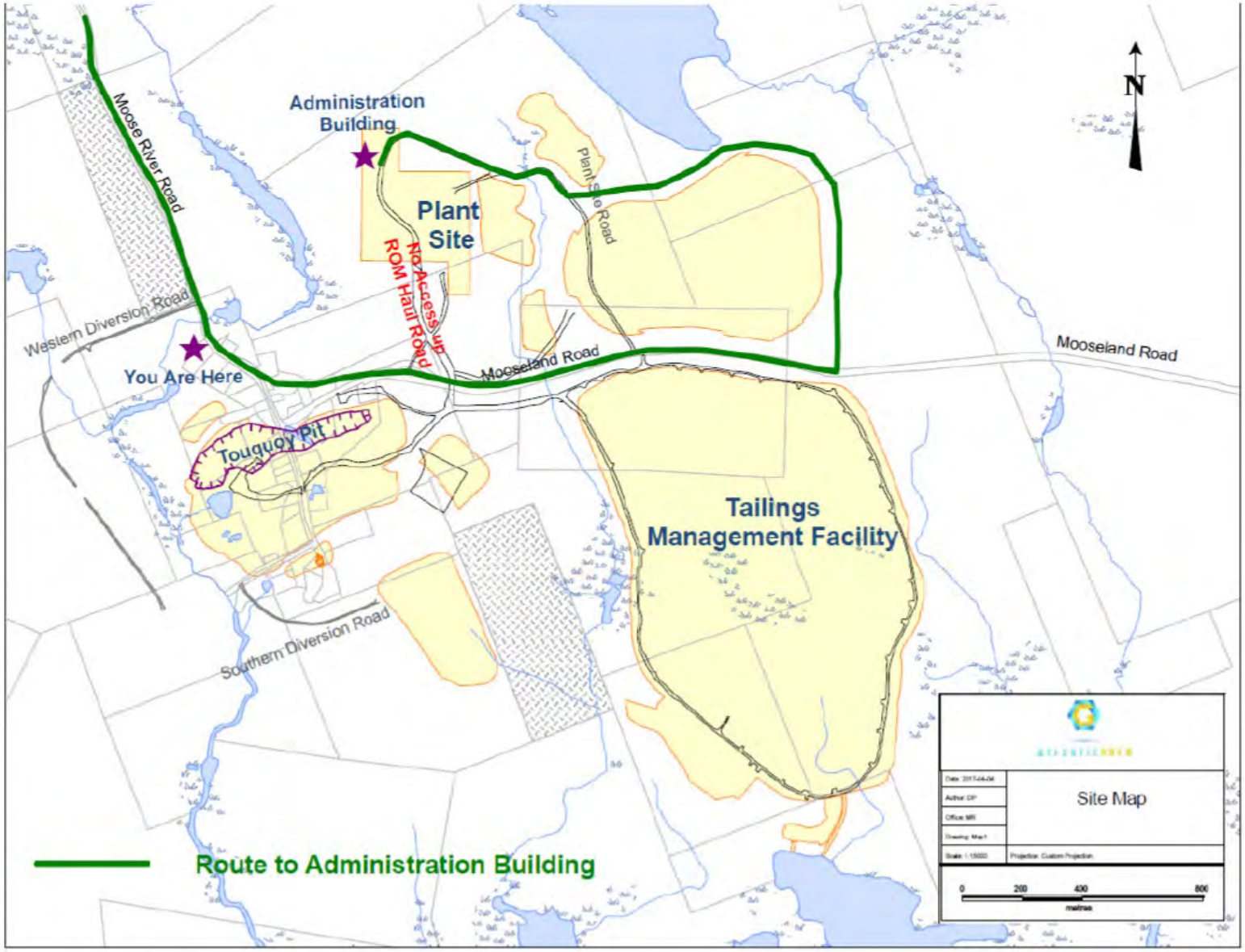
Appendix 3

Maps

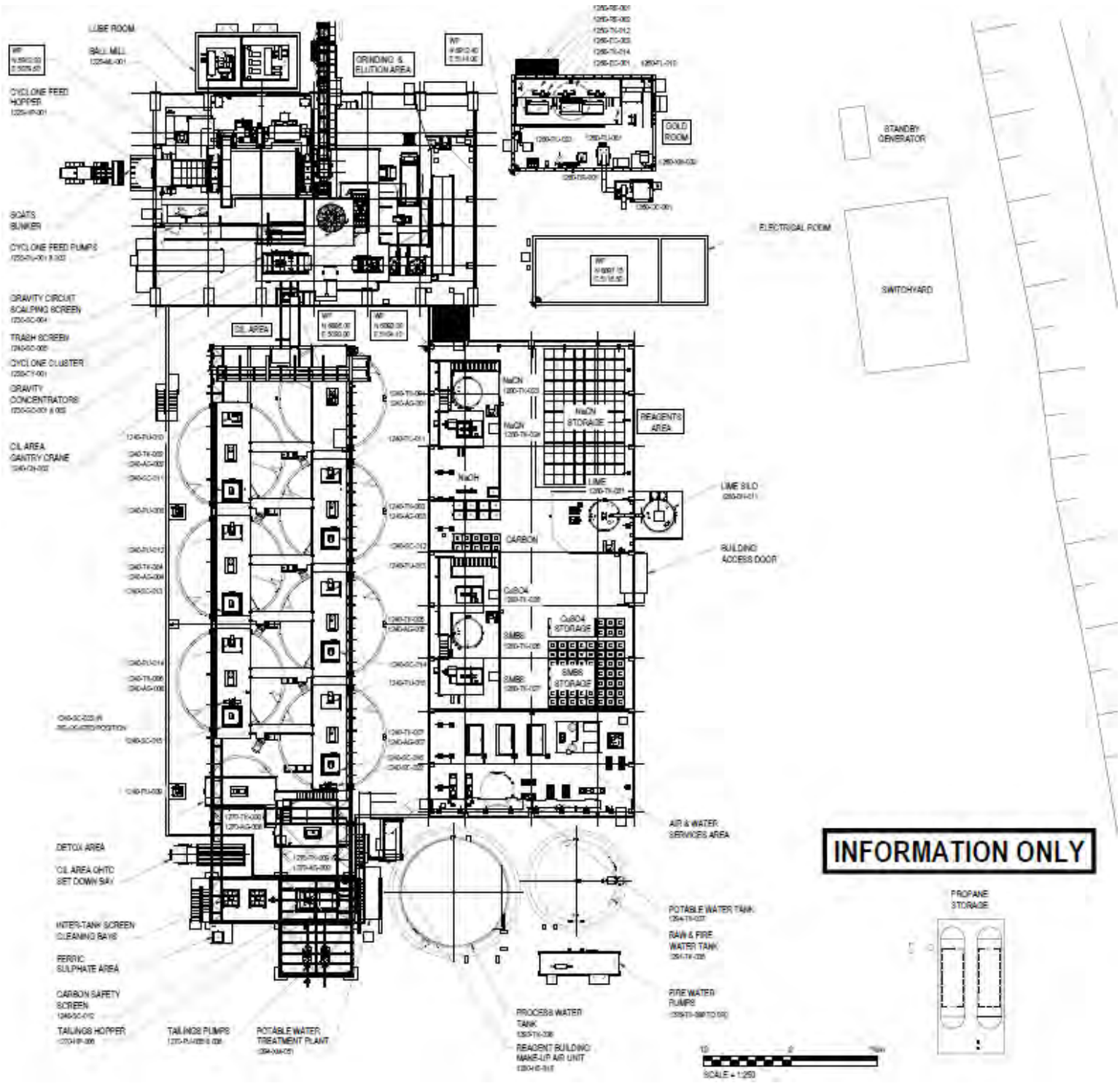
For detailed Emergency Supplies Locations please refer to area specific maps below.

Supplies Legend

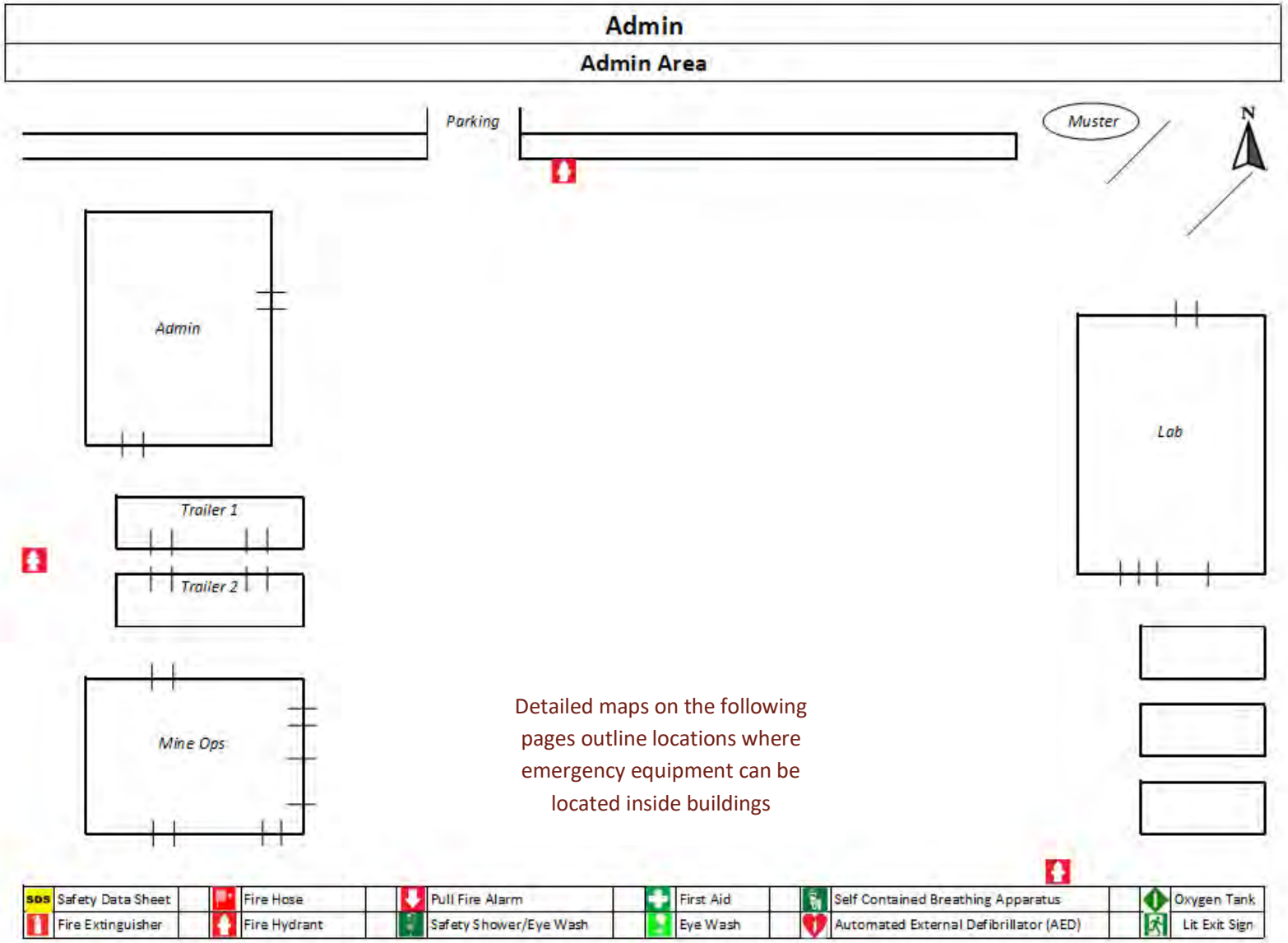
Site Overview Map



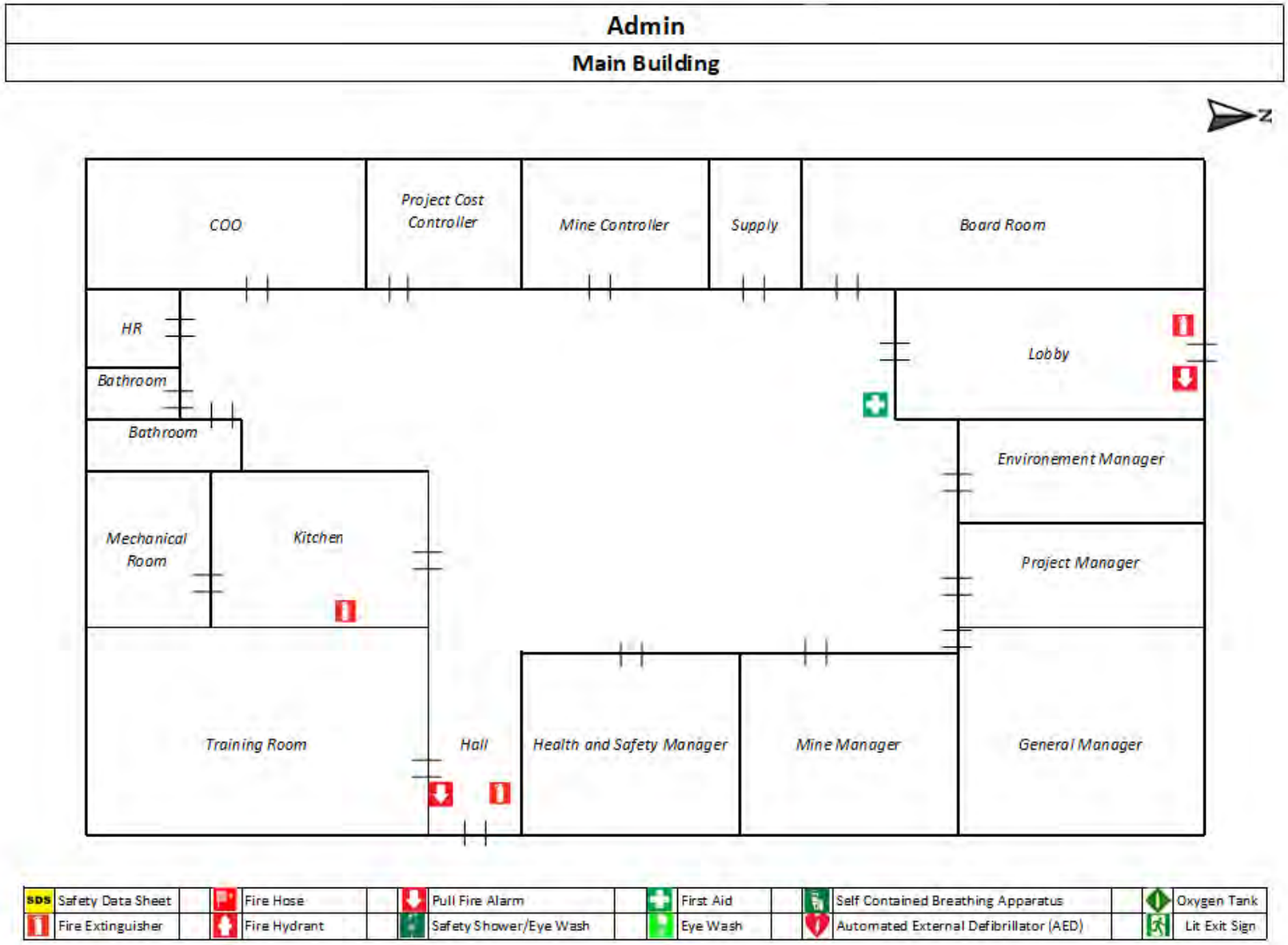
Mill Layout Overview



AGC Emergency Supplies Location Map

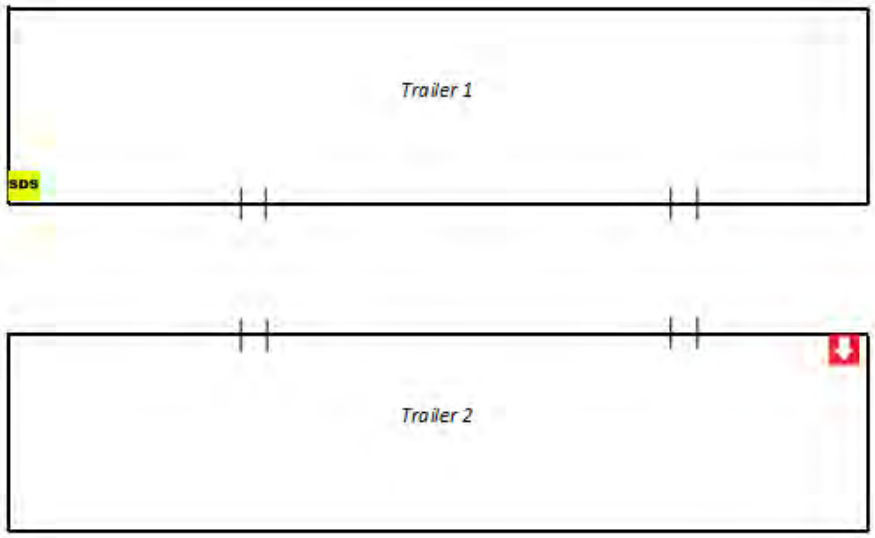


AGC Emergency Supplies Location Map



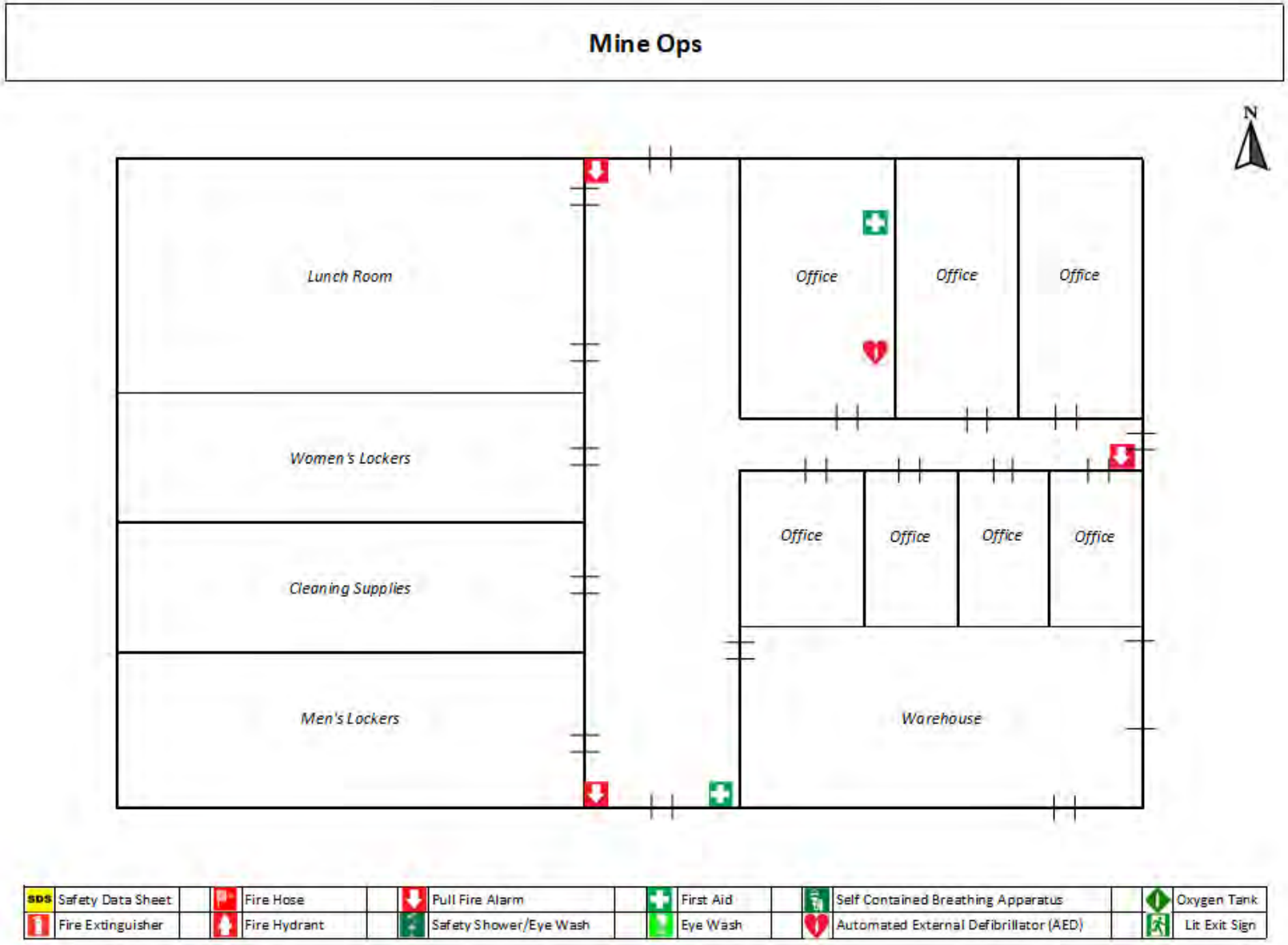
AGC Emergency Supplies Location Map

Admin
Trailers



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

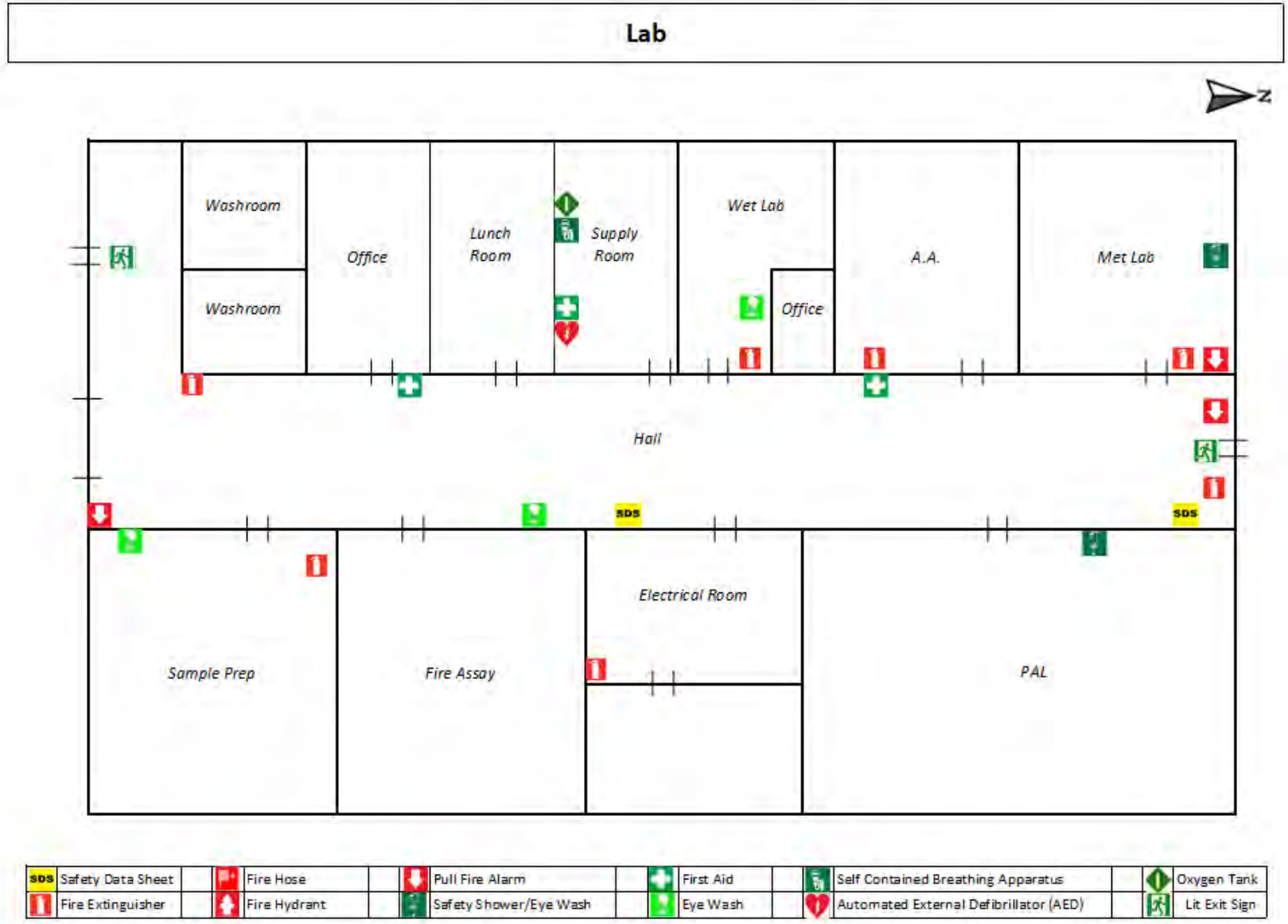
AGC Emergency Supplies Location Map



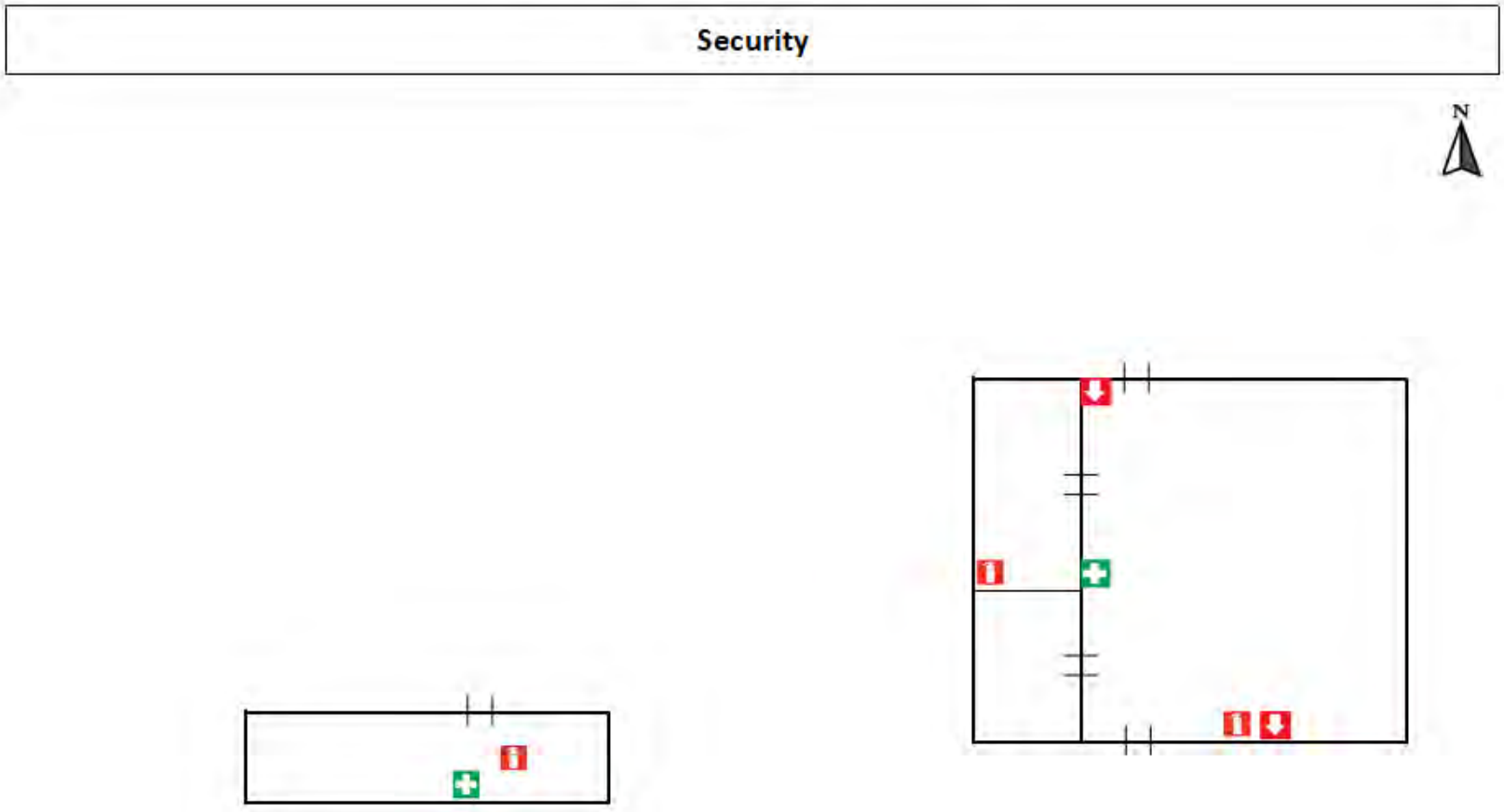
AGC Emergency Supplies Location Map

Truck Shop
Truck Shop and Surroundings

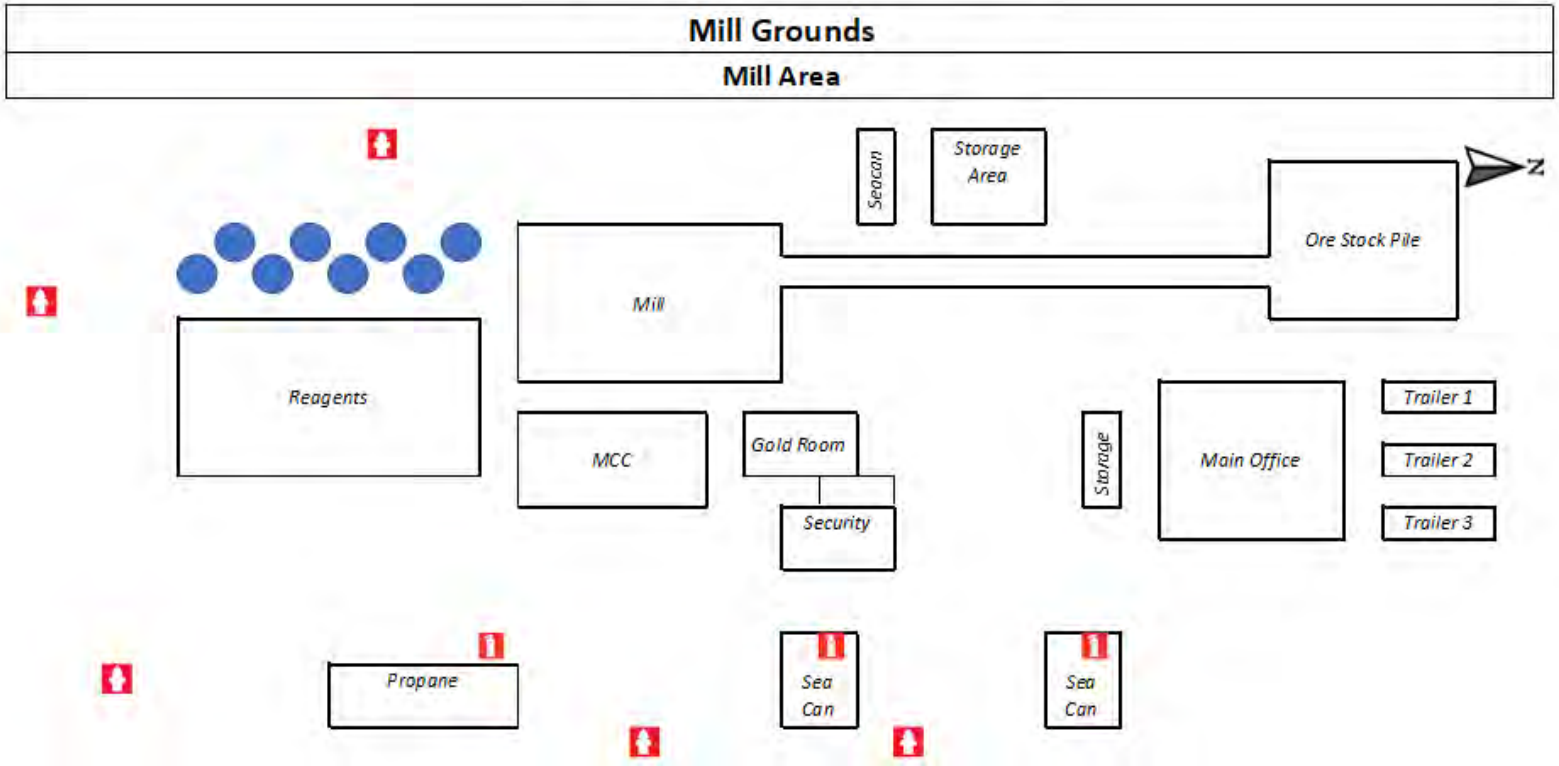
AGC Emergency Supplies Location Map



AGC Emergency Supplies Location Map



AGC - Emergency Supplies Location Map

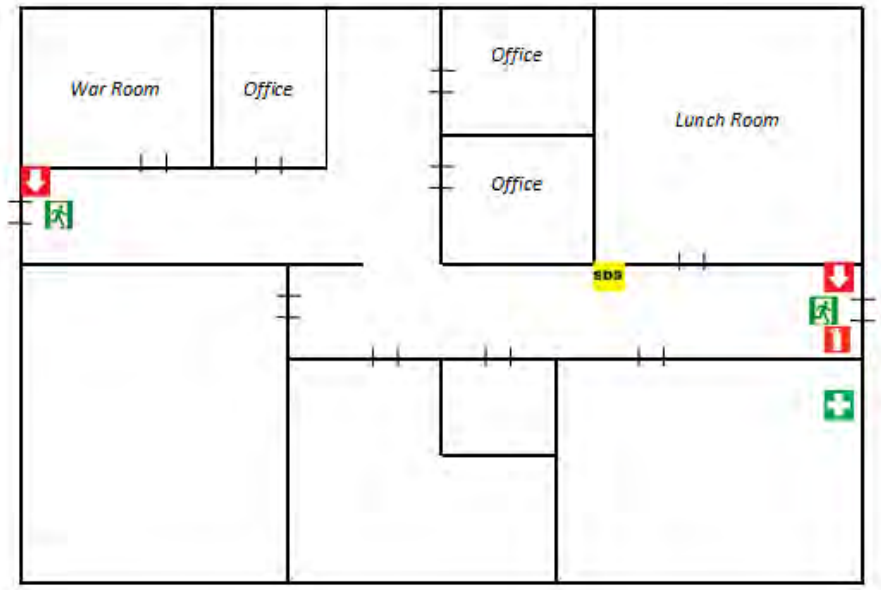


Detailed maps on the following pages outline locations where emergency equipment can be located inside buildings

SDS Safety Data Sheet	Fire Hose	Pull Fire Alarm	First Aid	Self Contained Breathing Apparatus	Oxygen Tank
Fire Extinguisher	Fire Hydrant	Safety Shower/Eye Wash	Eye Wash	Automated External Defibrillator (AED)	Lit Exit Sign

AGC - Emergency Supplies Location Map

Mill Grounds
Mill Main Office



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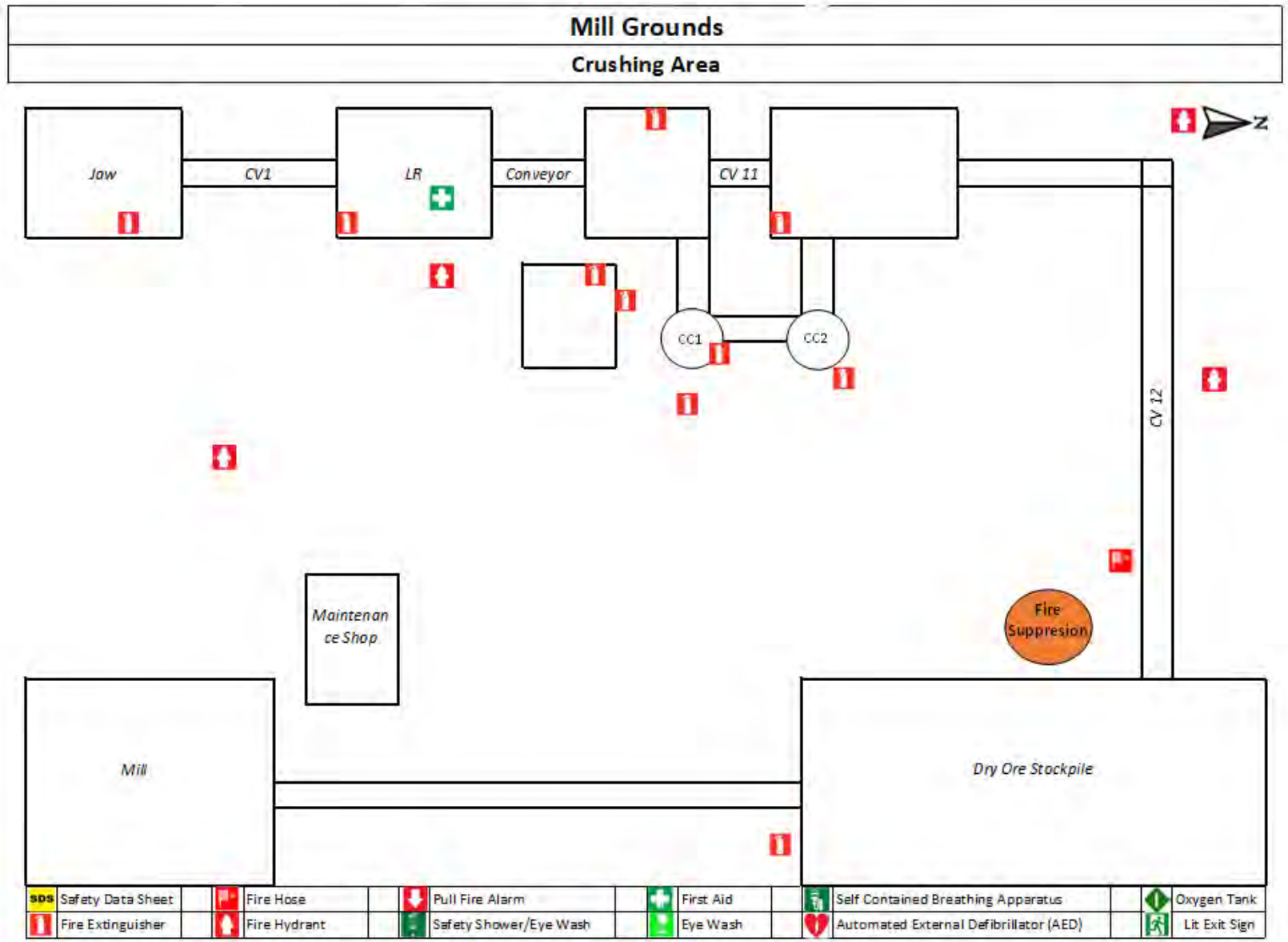
AGC - Emergency Supplies Location Map



AGC - Emergency Supplies Location Map

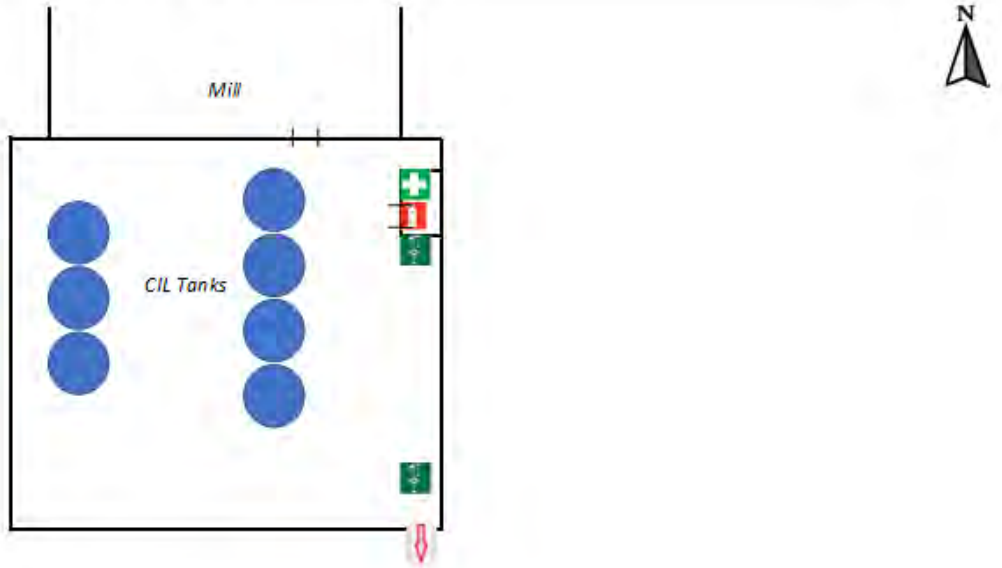
Mill Grounds
CIL Ground Level

SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

AGC - Emergency Supplies Location Map

Mill Grounds

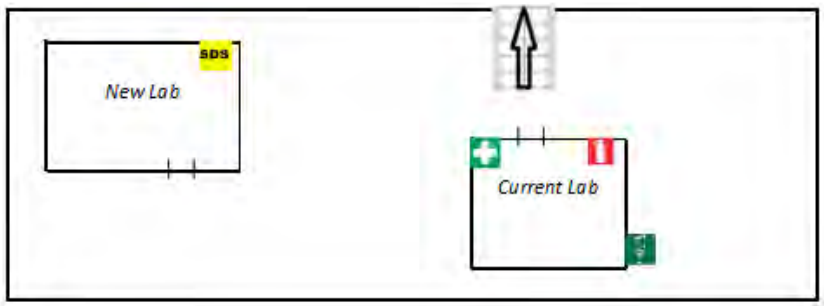
CIL Level 2



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

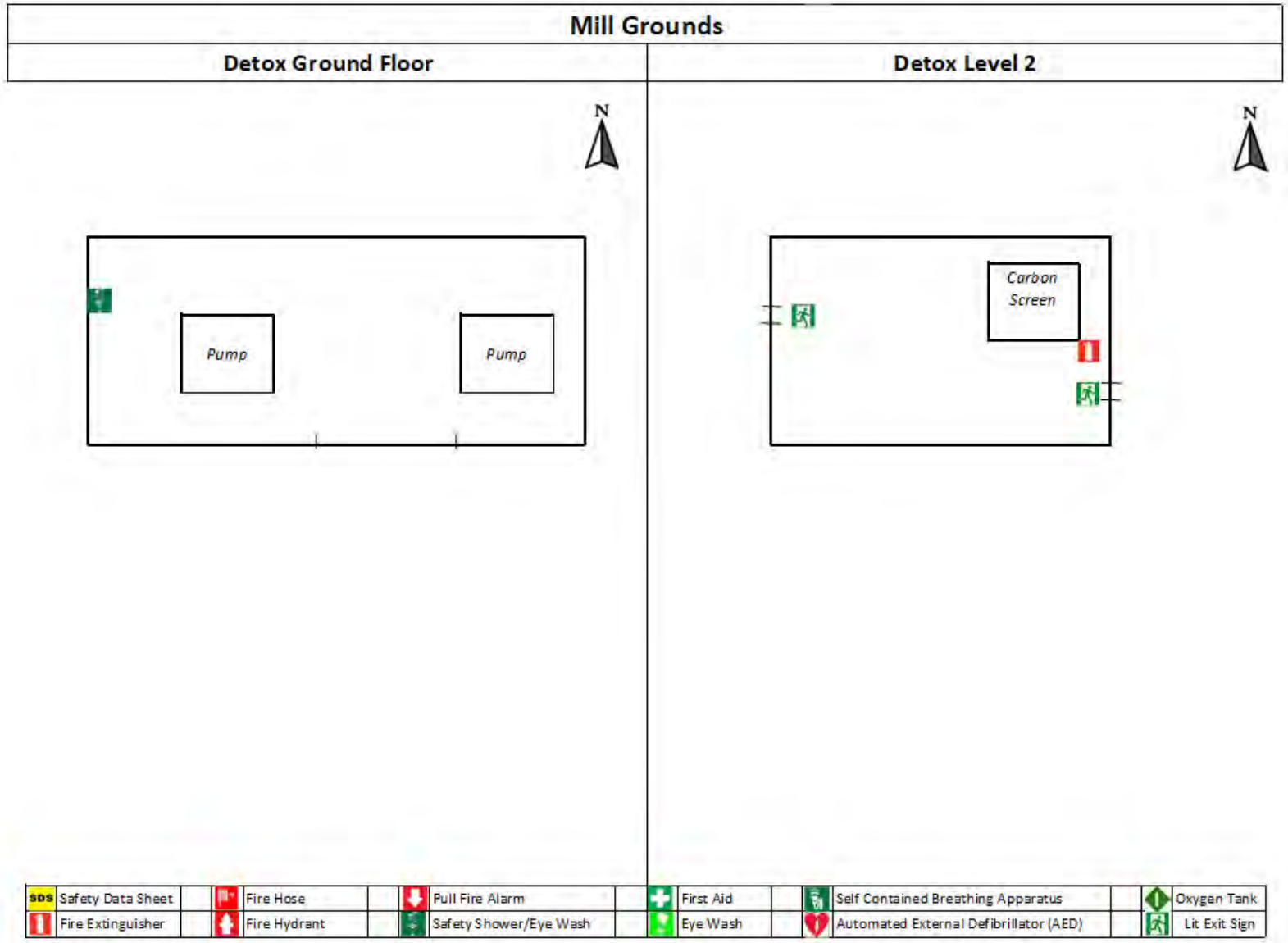
AGC - Emergency Supplies Location Map

Mill Grounds
Detox Level 3



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

AGC - Emergency Supplies Location Map



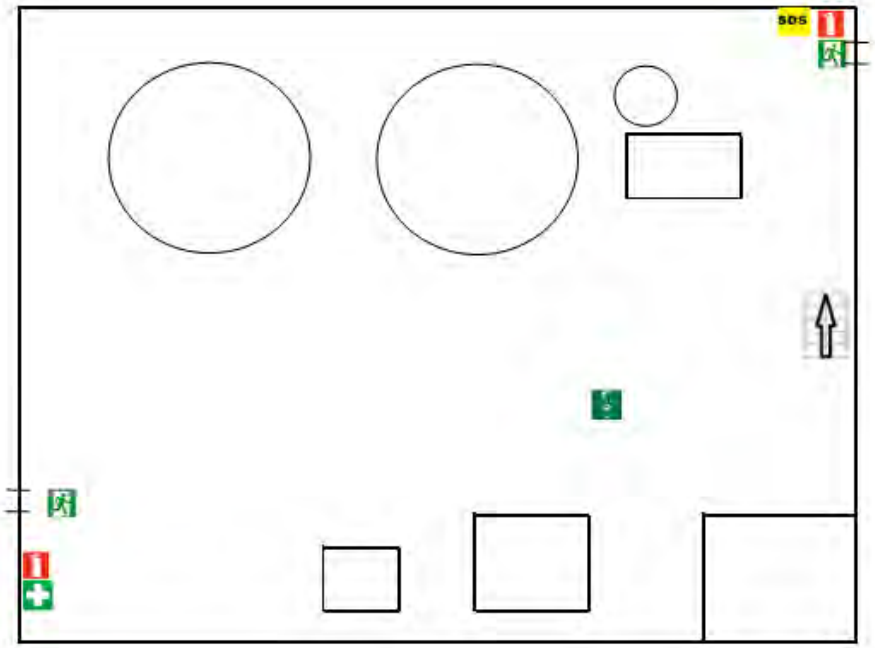
AGC - Emergency Supplies Location Map

Mill Grounds
Water Treatment

SDS Safety Data Sheet	Fire Hose	Pull Fire Alarm	First Aid	Self Contained Breathing Apparatus	Oxygen Tank
Fire Extinguisher	Fire Hydrant	Safety Shower/Eye Wash	Eye Wash	Automated External Defibrillator (AED)	Lit Exit Sign

AGC - Emergency Supplies Location Map

Mill Grounds
Gold Room Ground Floor

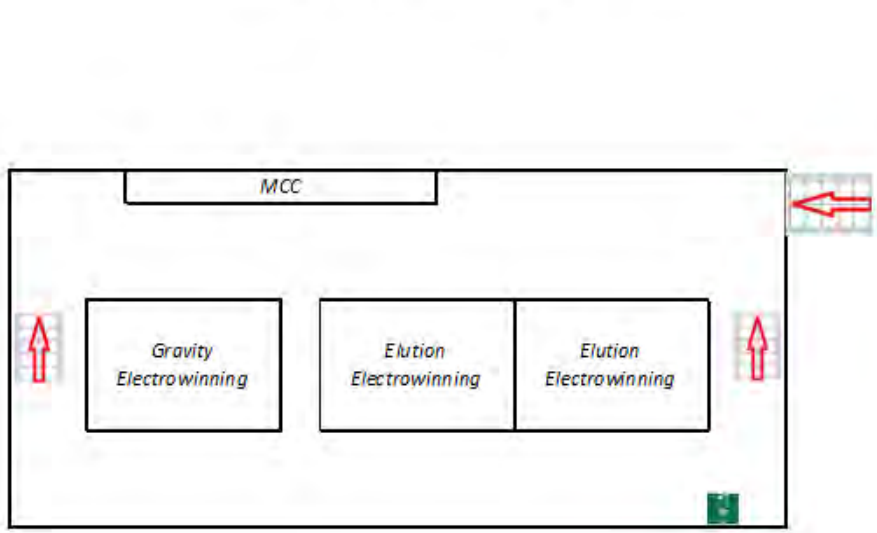


SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

AGC - Emergency Supplies Location Map

Mill Grounds

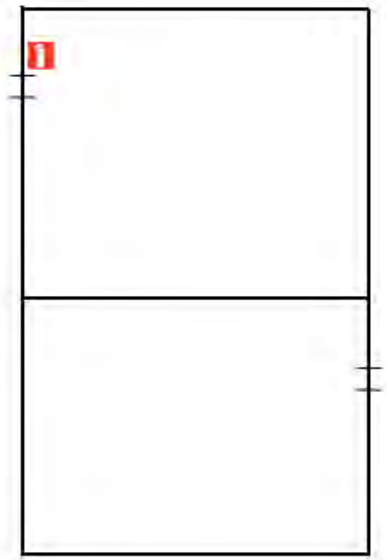
Gold Room Level 2



SDS Safety Data Sheet	Fire Hose	Pull Fire Alarm	First Aid	Self Contained Breathing Apparatus	Oxygen Tank
Fire Extinguisher	Fire Hydrant	Safety Shower/Eye Wash	Eye Wash	Automated External Defibrillator (AED)	Lit Exit Sign

AGC - Emergency Supplies Location Map

Mill Grounds
Gold Room Security Trailer

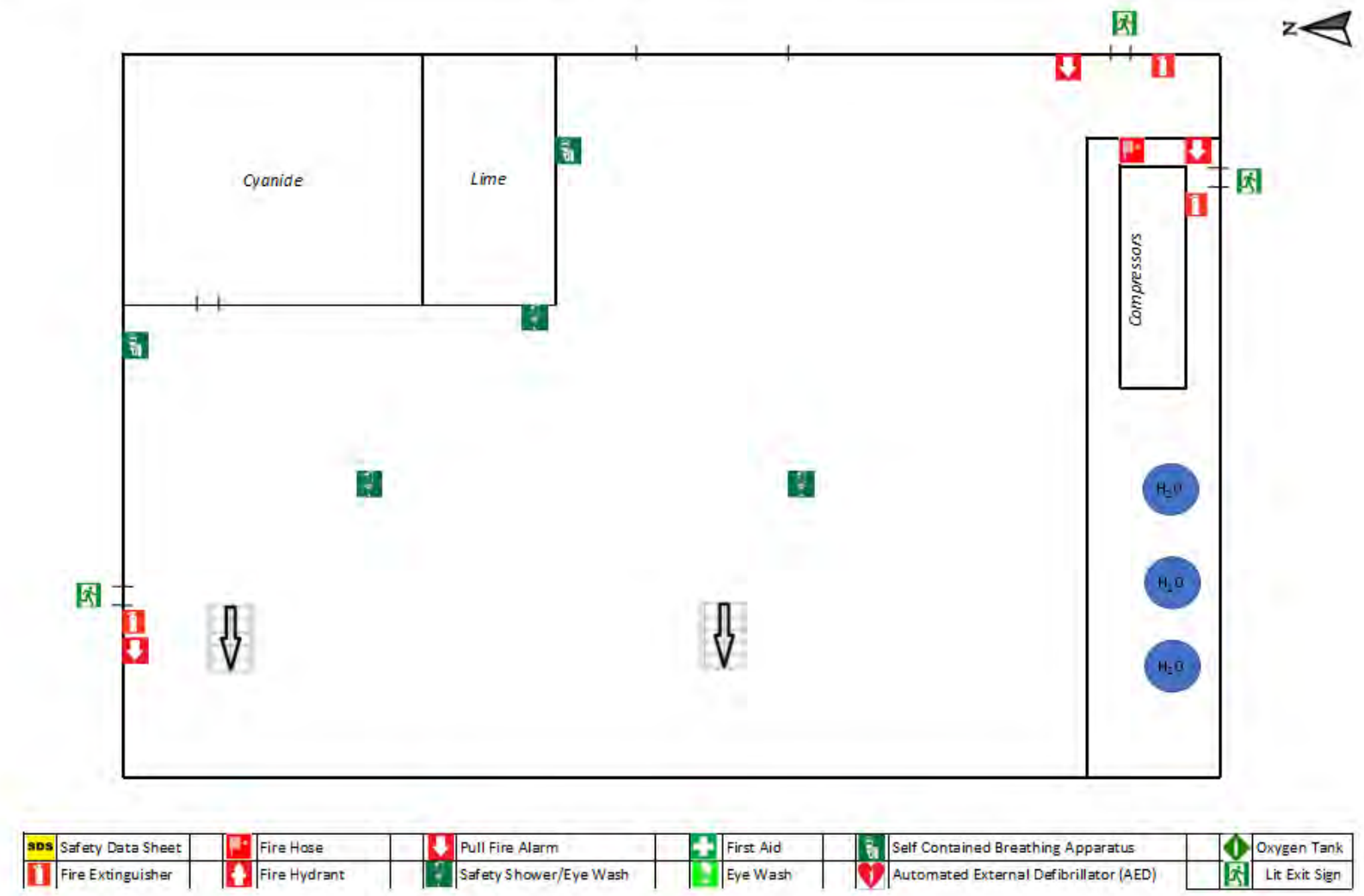


SDS Safety Data Sheet	Fire Hose	Pull Fire Alarm	First Aid	Self Contained Breathing Apparatus	Oxygen Tank
Fire Extinguisher	Fire Hydrant	Safety Shower/Eye Wash	Eye Wash	Automated External Defibrillator (AED)	Lit Exit Sign

AGC - Emergency Supplies Location Map

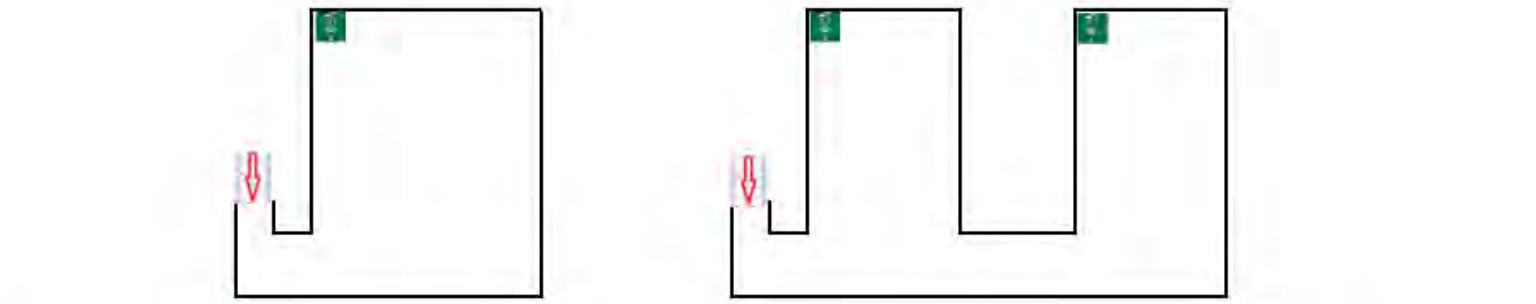
Mill Grounds

Reagent Building - Level 1



AGC - Emergency Supplies Location Map

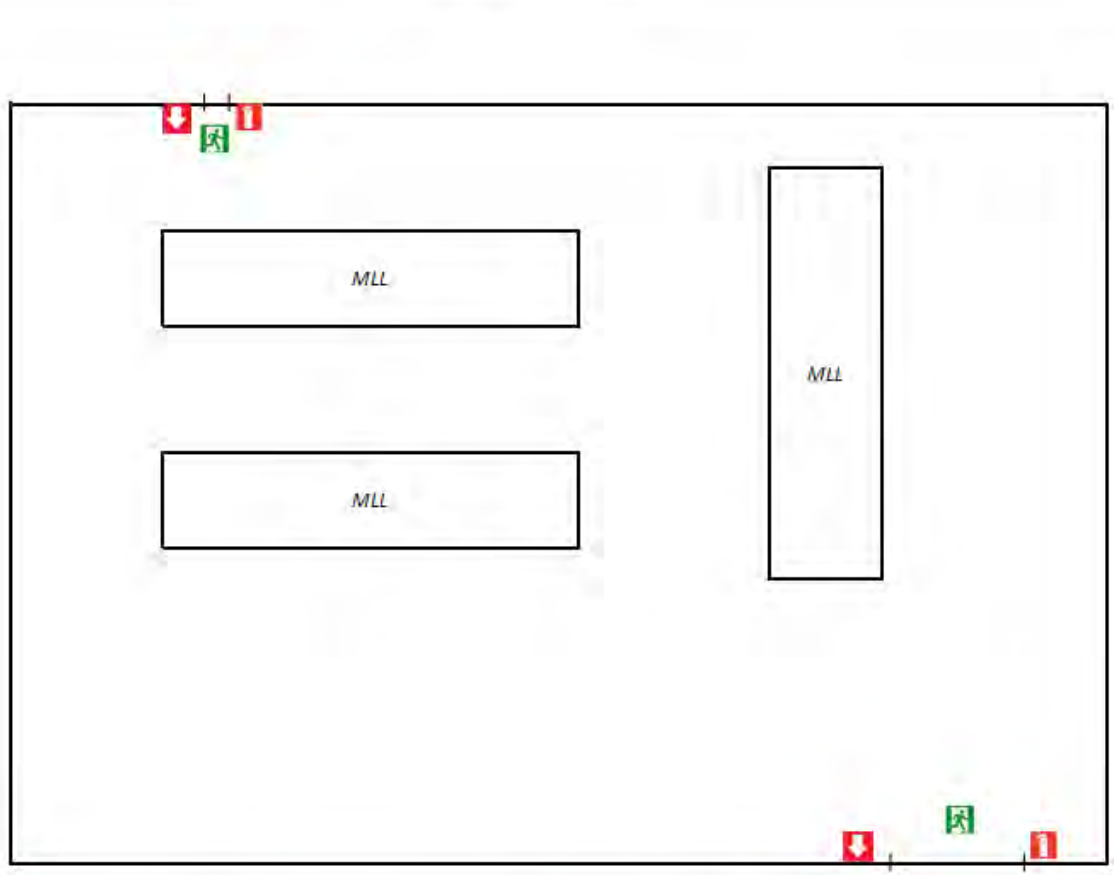
Mill Grounds
Reagent Building - Level 2



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

AGC - Emergency Supplies Location Map

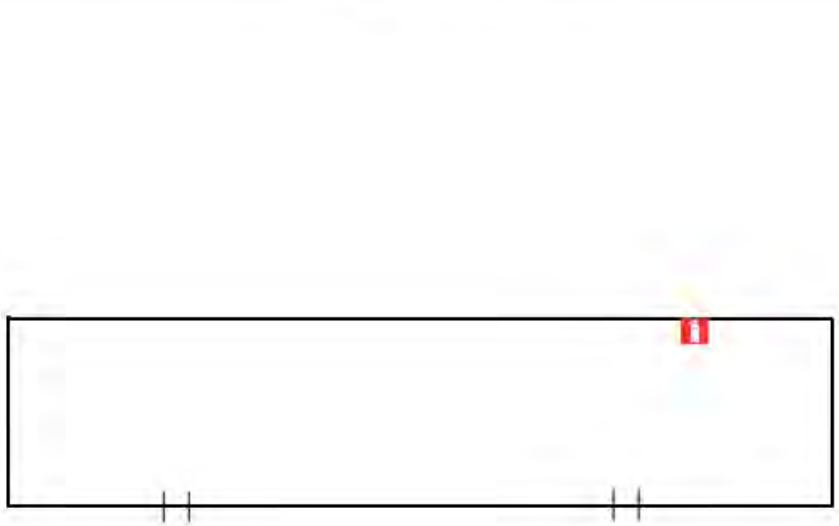
Mill Grounds
Electrical Room



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

AGC - Emergency Supplies Location Map

Mill Grounds
Emergency Pump House



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

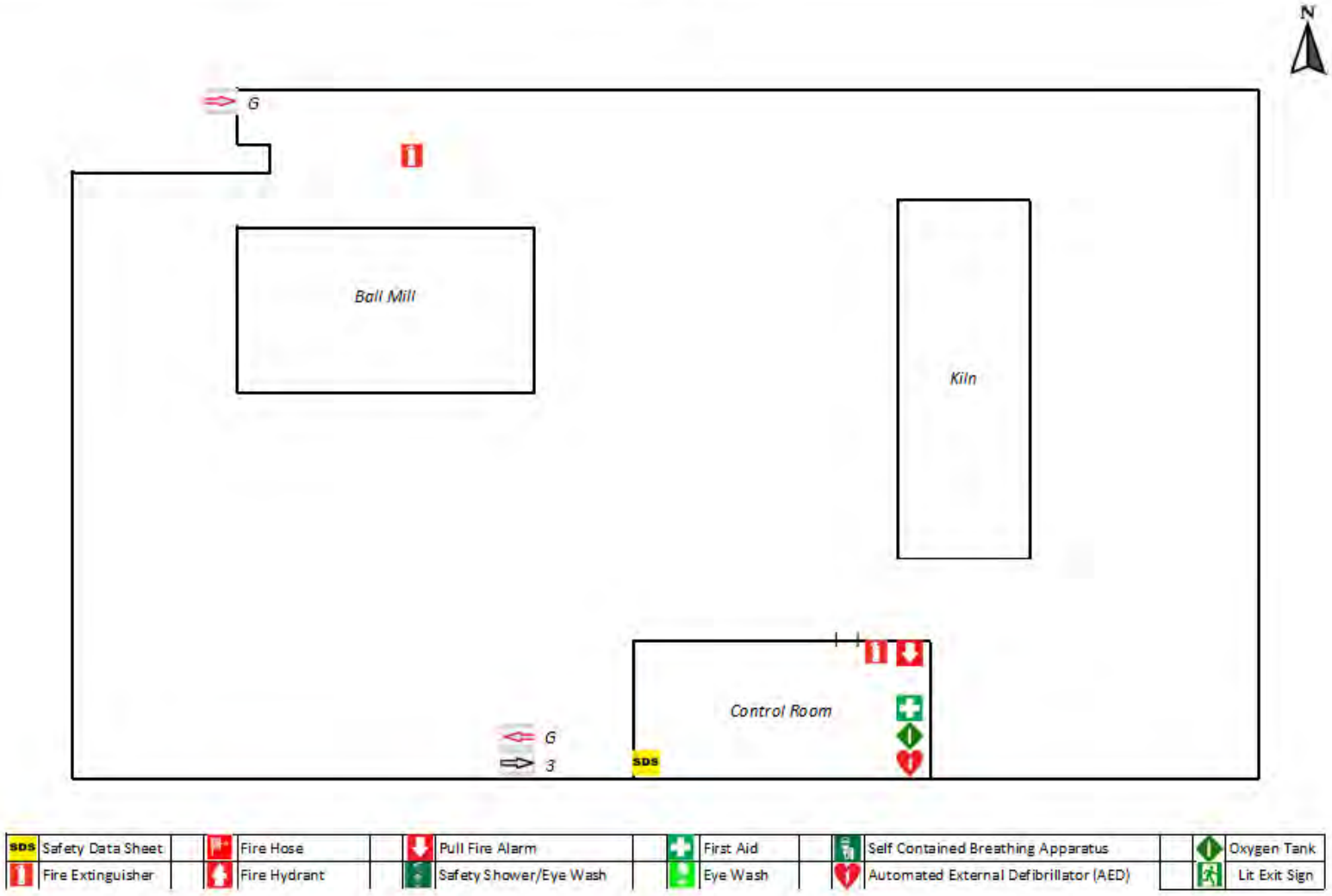
AGC - Emergency Supplies Location Map

Mill Building
Gound Level

AGC - Emergency Supplies Location Map

Mill Building

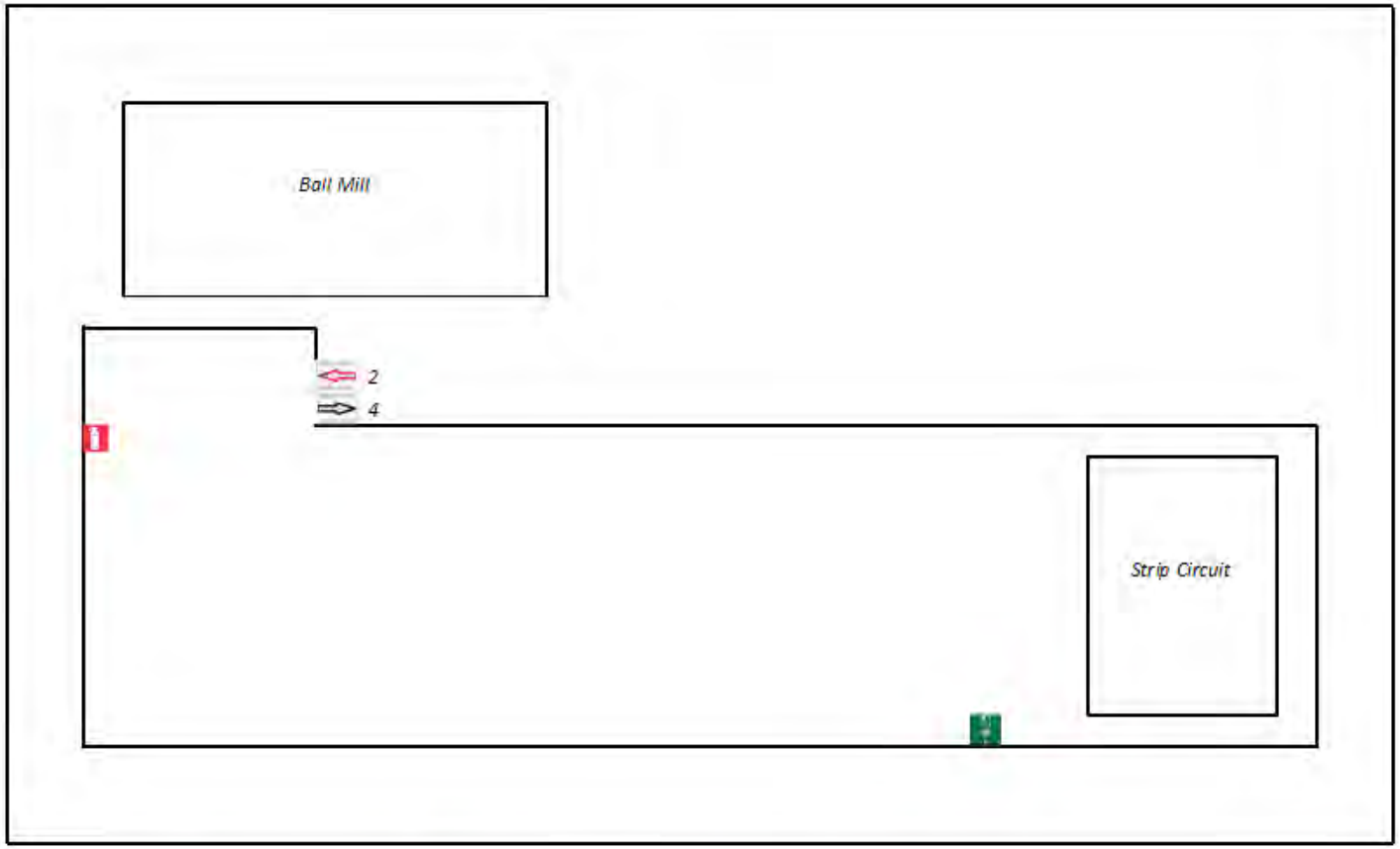
Level 2



AGC - Emergency Supplies Location Map

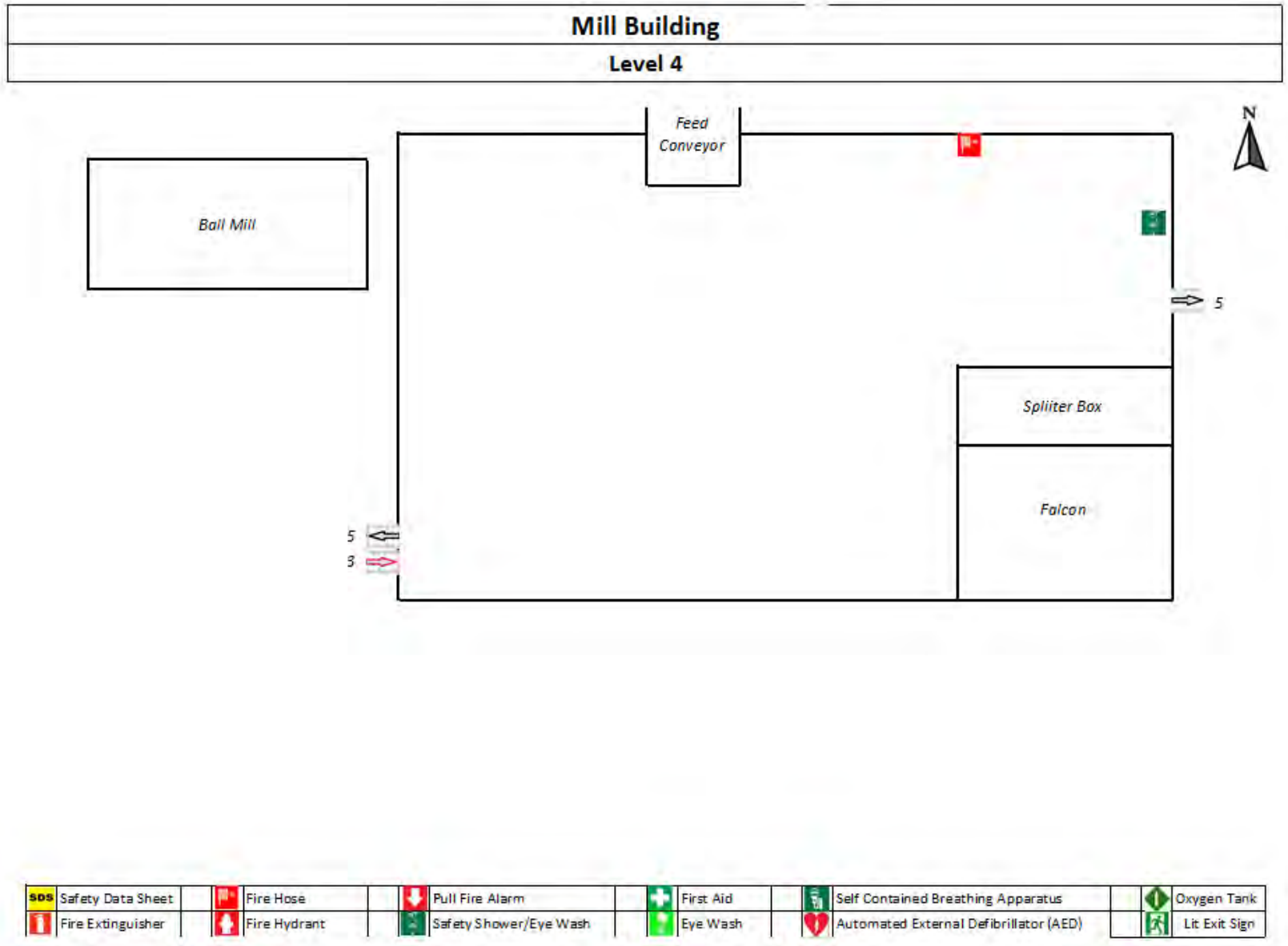
Mill Building

Level 3



SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

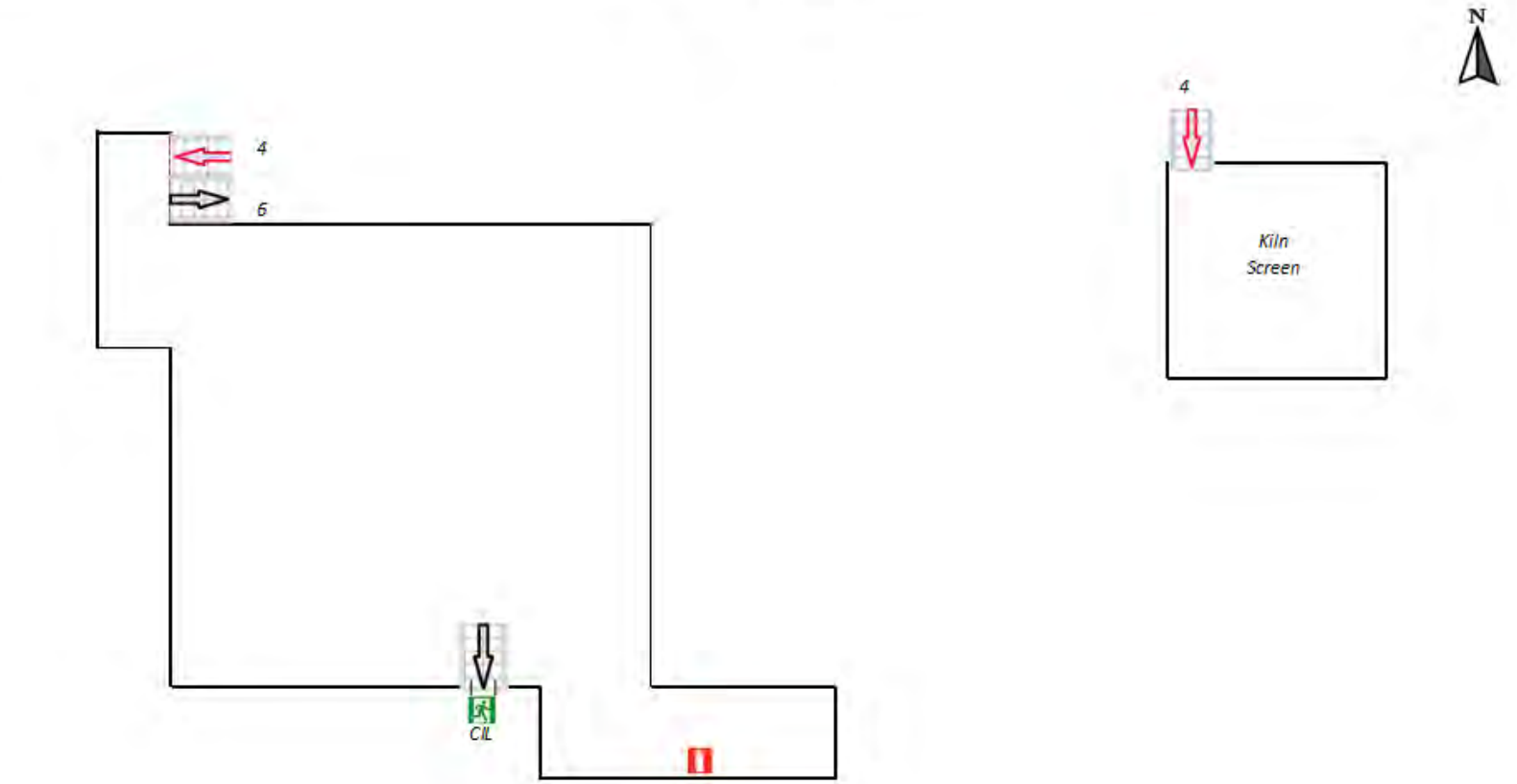
AGC - Emergency Supplies Location Map



AGC - Emergency Supplies Location Map

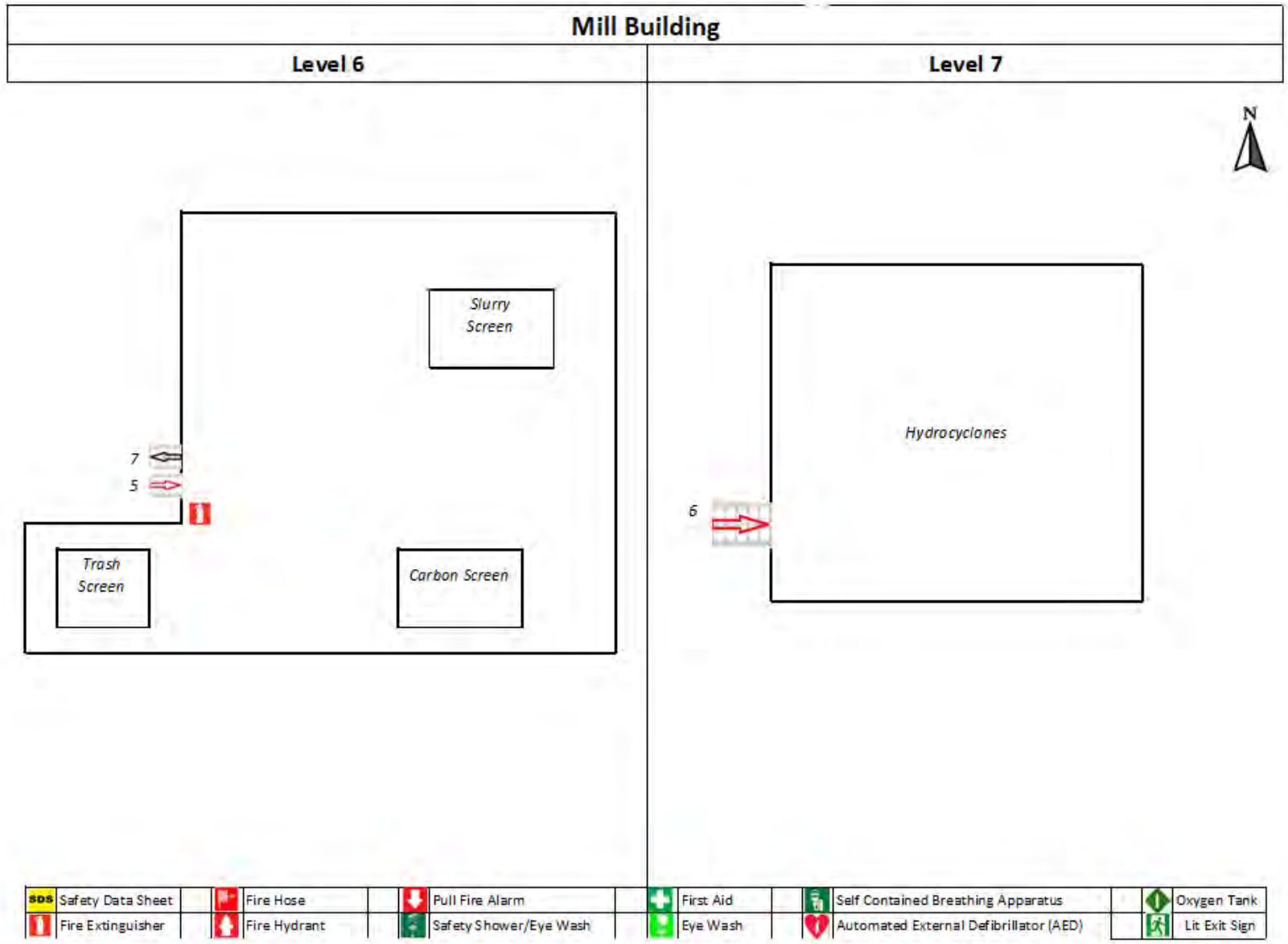
Mill Building

Level 5



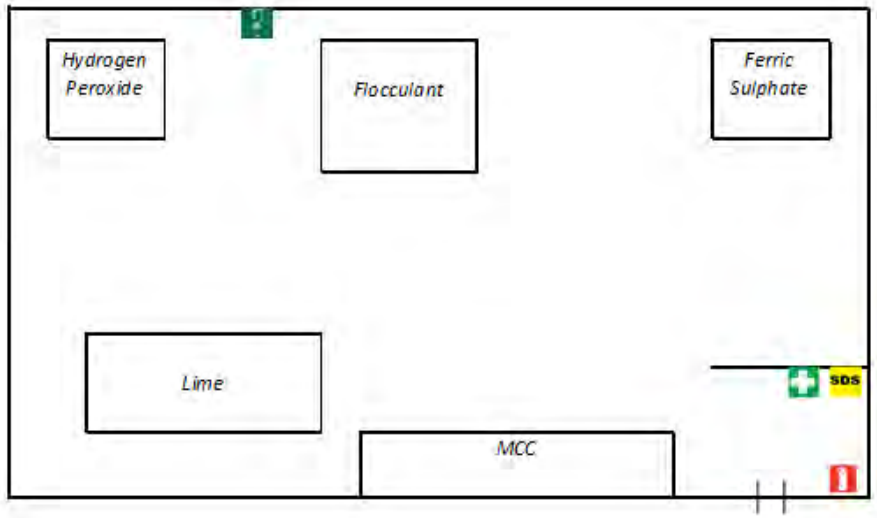
SDS	Safety Data Sheet		Fire Hose		Pull Fire Alarm		First Aid		Self Contained Breathing Apparatus		Oxygen Tank
	Fire Extinguisher		Fire Hydrant		Safety Shower/Eye Wash		Eye Wash		Automated External Defibrillator (AED)		Lit Exit Sign

AGC - Emergency Supplies Location Map



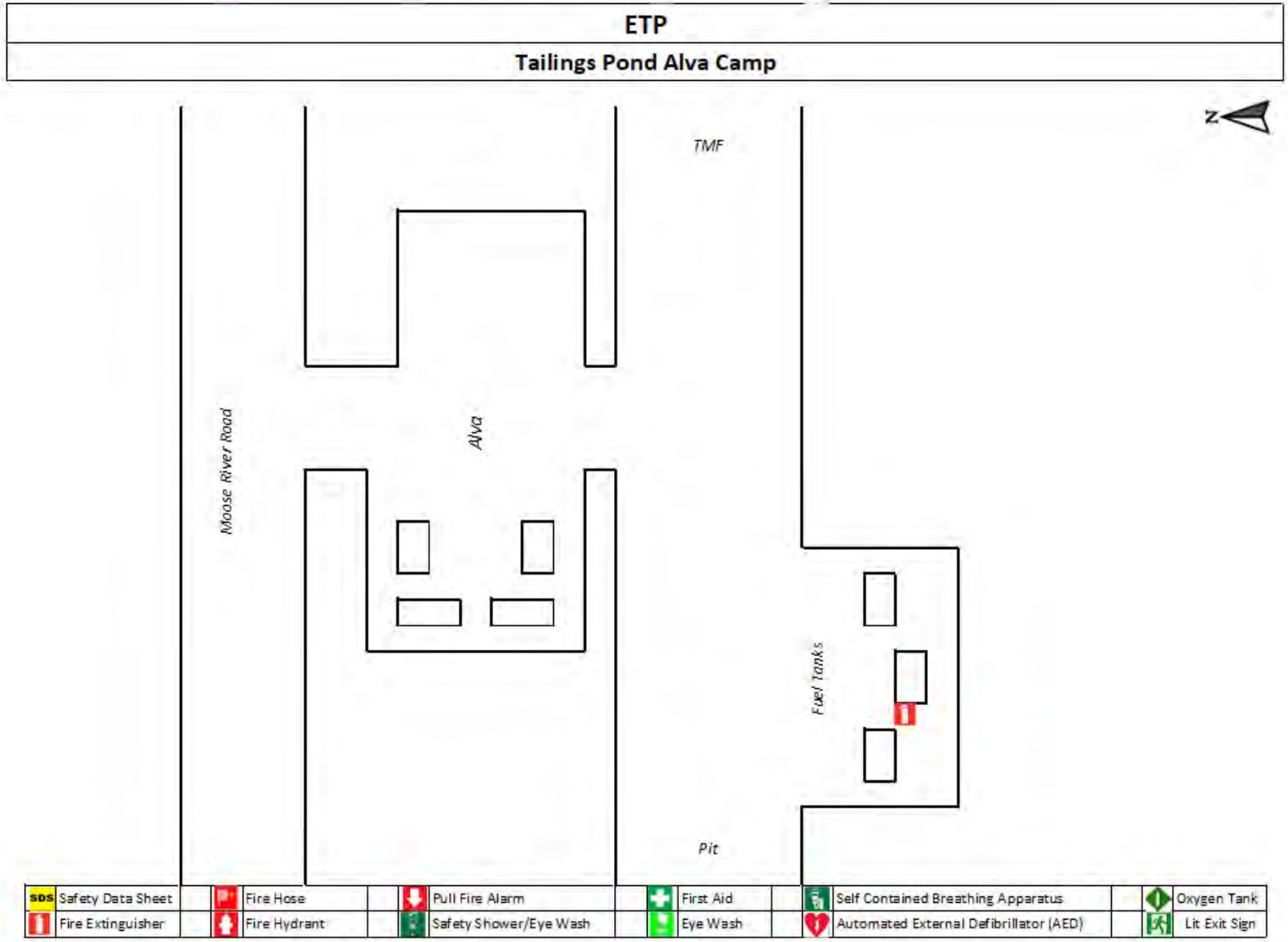
AGC Emergency Supplies Location Map

ETP
Effluent Treatment Plant



SDS Safety Data Sheet	Fire Hose	Pull Fire Alarm	First Aid	Self Contained Breathing Apparatus	Oxygen Tank
Fire Extinguisher	Fire Hydrant	Safety Shower/Eye Wash	Eye Wash	Automated External Defibrillator (AED)	Lit Exit Sign

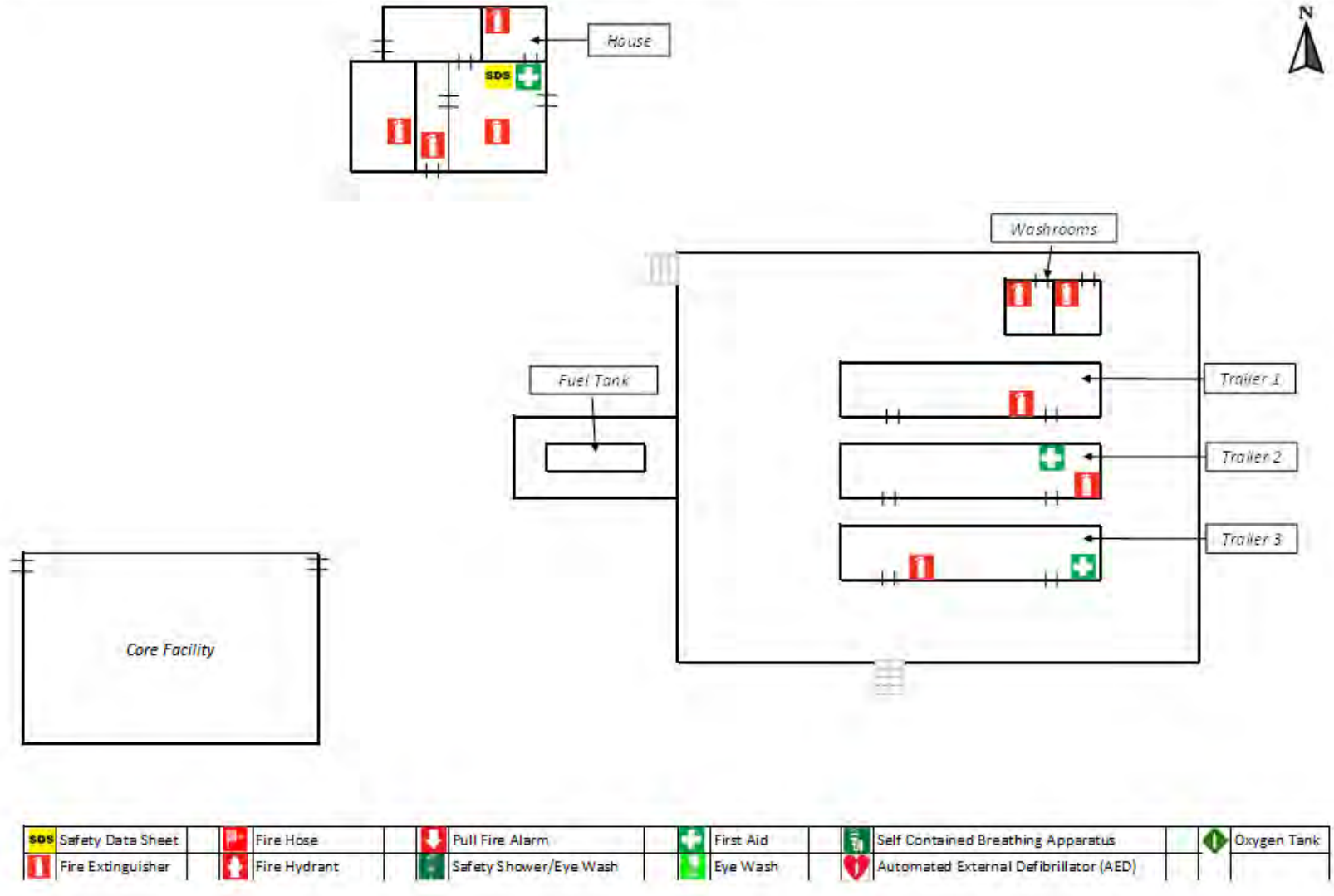
AGC Emergency Supplies Location Map



AGC - Emergency Supplies Location Map

Exploration

Office/Trailers



Appendix 4

Emergency Supplies

Starter Kit V-Vac	Tychem suit	Cling Gauze - 10 pack	Saline Solution 0.9% 1 L x 10
Gauze Non-sterile 1x5 yd 4/box	Duct Tape	4x4 gauze - sleeve	WaterJel Burn Dressing (4x4") x 8
Bandage Elastic Econo-wrap 2inx5yd	Air mover	Abdominal Pad - 10 pack	Assorted Bandages plastic
Bandage Elastic Econo-wrap 3inx5yd	intrinsically safe tool set	Triangular bandage	Assorted Bandages fabric
Ointment Polyspoirn 15gm	Reciprocating Saw	Splint, semi rigid (SAM)	Blood Pressure Cuff x 2
Penlight w/o batteries black	Pry Bar	Saline (irrigation) 1000cc	stethoscope double head
Tweezers for F/A kit	Glass master	Shears, trauma	Accel TB Wipes x 2
Monitor Blood Pressure	Automatic centre punch (glass breaker)	Blood Pressure cuff - adult	BZK Wipes (Antiseptic Towelettes)
Kendrick Extraction Device	halligan bar	Stethoscope	Vomitus Bags x 12
SKED Stretcher	flathead axe	Backboard, Ferno plastic with pins	Instant Cold Packs x 20
Stretcher Wire Basket GALV Coated	Bolt cutters	Head immobilization device, ferno	Rapid Relief Hot/Cold Packs x 4
Head immobiliser universal	Portable lights	Cervical collar - adult	Adult Collars- adjustable x 6
Pillow Case, disposible 25/pkg	Universal spanner wrench - hastings brass HB-10	Backboard immobilization straps, set of 4	Sam Splints- flat x 12
Stretcher Ambulance bed type	Economy nozzle and combo nozzles	Femur Traction Splint, bilateral	Spine Board- Plastic x 3
Film poly g/p heavy clr 120inx100ft	1-1/2in rubber covered fire hose 100ft	Kendrick Extraction Device (KED)	assorted wooden splints 6/pk
Garage broom natural palmira 18in	2-1/2in rubber covered fire hose 100ft	ASA 81mg chewable	24" x 3" wire splint
Brush vehicle synthetic hair 10in	1in rubber covered fire hose 100ft	Diphenhydramine (Benadryl)	half arm splint
Handle extension twist lock 12ft	Hazmat decontamination pool	Epinepherine auto injector (EPI Pen) 0.3mg IM	hand and wrist splint
Rubber Mallet 24oz	Tarps 8x10	Airway management kit x 4	full leg splint
Gillette Shave Cream 49gm	Battery ram 40lbs	BVM x 2	half leg splint
Plug N Dike dry granular 48lb 5 Gal	Sterling 200ft - 12.5mm nylon static rope red, blue	BVM (reusable) x 2	foot and ankle splint
Bag Carry 100ft rope	omniblock swivel pulley - single	Pocket mask w/O2 port x 4	Stair Chair x 1
Carabiner aluminum high grade 5 pk	omniblock swivel pulley - double	One-way valves for pocket masks x 6	Wool Blankets x 6
Wypall cloths x90	prusik minding pulley	Non-rebreather O2 masks x 18	Cloth Slings--No substitutes x 6
Pad Oil Only 15inx19in 100/bale	petzl aveo site harness - rescue harness	Easifix 7.5 cm (3") x 9	Conterra Speed Straps (sets of 6) x 3
Rescue Randy	First Response Bag	Easifix 10 cm (4") x 9	Nitrile (powder free) gloves- S x 1
ERG Books	Oxygen Cylinder - Size D	Super Scissors (heavy duty) x 12	Nitrile (powder free) gloves- M x 2
Delineators	Oxygen Regulator - Size D	ABD, Sterile medium (8x10) x 24	Nitrile (powder free) gloves- L x 3
absorbent pads (oil and water) 100/box	Bag Valve Mask - adult	ABD, Sterile medium (12x16) x 24	Nitrile (powder free) gloves- XL x 3
65 Gallon Overpack	Non Rebreather Mask - Adult	Non-Sterile 8 ply (5cm)-2" x 3	Medical Back Pack (capable of holding a D cylinder)
Super Absorbent Flake socks 3in 30/case	Nasal Cannula - adult	Non-Sterile 8 ply (7.5cm)-3" x 3	Sheets (disposable) x 6
Oil containment boom 10ft (4xbundle)	Oral Pharyngeal Airway (set)	Sterile (5cm)-2" x 3 boxes	Pillows x 2
absorbent bulk 10kg bags	Nasal Pharyngeal Airway (set)	Telfa Non-Adherent 5cm x 1 box	For Speakman Portable Eyewash/Shower-Preservative x 2
chem gloves	Manual Suction (v-vac)	Tongue Depressors x 100	

Appendix 5

Emergency Call Process

Radio Channels (on site – Touquoy Mine)

Radio Channel	Department/Area
1	Health & Safety
2	Mine Operations/Pit
3	TMF Operations
4	Warehousing (shared with ERT for training)
5	Mill Projects
6	Mill Operations
7	Security
8	EMERGENCY

Emergency Call-Out

In order to effectively communicate the need for assistance in an emergency the following procedure is to be followed when conducting an emergency call out via radio:

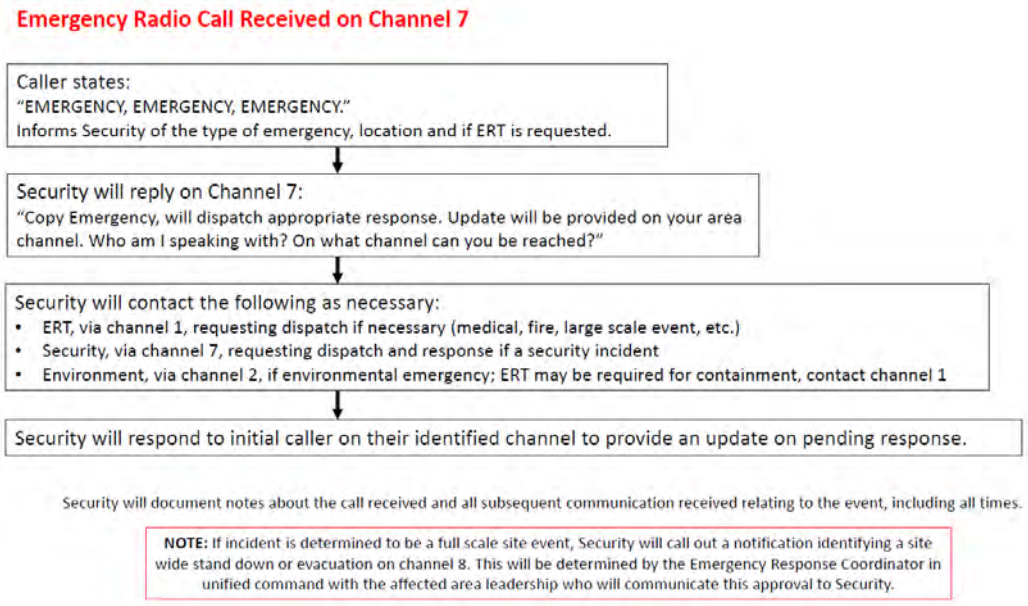
1. Contact Security on Channel 7 first stating EMERGENCY, EMERGENCY, EMERGENCY. Inform them of the type of emergency, location and if ERT is requested.

2. Security will call out the emergency evacuation (if necessary) on the channel specific to the work area, as noted above. They will state EMERGENCY, EMERGENCY, EMERGENCY and give very brief instructions on muster requirements.

3. Security will contact the ERC or delegate via channel 1 to inform of the emergency.

4. ERT members will be contacted by the ERC or delegate on their respective radio channels informing them to muster at the ERT facility for further briefing prior to response.

5. Should the emergency or evacuation require a site wide response, Security will provide the required information via the all-call Emergency channel 8.



Appendix 6

Touquoy Mine Tailings Management Facility Emergency Preparedness and Response Plan

Atlantic Gold

ATLANTIC MINING NS CORP.

Touquoy Mine Tailings Management Facility Emergency Preparedness and Response Plan

Touquoy Tailings Management Facility,
Moose River, Nova Scotia
AGC-PLN-ENV-001

Project No. 121619250

Release Date: January 30, 2019

Atlantic Mining NS Corp.
409 Billybell Way,
Mooseland, NS
B0N 1X0

This Emergency Preparedness and Response Plan is a "working" document that will be continually updated as required throughout the life of the project and reviewed and updated on an annual basis to maintain adequacy of the plan. As such, version updates will be recorded in the table below, documenting any significant changes to emergency preparedness at the Tailings Management Facility (TMF). All Atlantic Gold employees and contractors/sub-consultants are responsible and encouraged to report problems or concerns related to any aspect of this plan.

Pages affected by the current revision are listed in the table below and are identified by hash marks (lines) on the right side of the affected pages.

Report Version Update Summary

To be Completed by ERC/ Manager of Environmental and Permitting or designate					
Version	**Revised By**	**Date MM/DD/YYYY**	**Approved By**	**Released By**	**Pages Affected**
00	Stantec Consulting Ltd.	09/17/2018	Melissa Nicholson		all
01	Jennifer Adshade	01/30/2019	Melissa Nicholson		all
02	Ryan Keating	08/21/2020	Ryan Keating		all

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LIST OF APPENDICES

1.0 Introduction

This Tailings Management Facility Emergency Preparedness and Response Plan (TMF EPRP) provides an emergency response protocol in the event of an emergency at the Touquoy Mine TMF. This plan outlines responsibilities of key personnel, provides guidance on identifying an existing or potential emergency and the severity of the emergency as it relates to potential failure of the TMF or impact on the environment. In addition, this plan outlines preventative and remedial actions for an existing or potential emergency. This plan is intended to supplement the site *Emergency Response Plan* (ERP) prepared by Atlantic Gold, a subsidiary of St. Barbara Limited, for TMF related emergencies and should be read in conjunction with the site ERP.

The plan was developed in general accordance with the Mining Associations of Canada (MAC) "A Guide to Management of Tailings Facilities, Third Edition" [1] , the Canadian Dam Association (CDA) Dam Safety Guidelines 2007 (2013 Edition)[2] and the "Reference Guide and Template for Preparing a Dam Emergency Plan in British Columbia"[3]. The MAC guide states that TMF EPRP's:

- identify possible emergency situations that could occur during the initial construction, operations and ongoing construction, closure, and post-closure phases of the life cycle of a tailings facility, and which could pose a risk to populations, infrastructure, and the environment; and
- describe measures to respond to emergency situations and to prevent and mitigate on and offsite environmental and safety impacts associated with emergency situations.

The purpose of this plan is to meet Environment Canada's requirements for an ERP under the Metal and Diamond Mining Effluent Regulations (MDMER). Part 3 Section 30(1) of the MDMER states that "the owner or operator of a mine shall prepare and emergency response plan 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 unauthorized deposit of such a substance or to mitigate the effects of such a deposit."

The information requirements of the ERP (Part 3, Section 30(2), MDMER), and a guide to where in the present document the information can be found, are summarized in Table 1-1 below.

1 Mining Associations of Canada (MAC) "A Guide to Management of Tailings Facilities, Third Edition, 2017

2 Canadian Dam Association (CDA) Dam Safety Guidelines 2007 (2013 Edition)

3 Reference Guide and Template for Preparing a Dam Emergency Plan in British Columbia, Revision 2, 2016.

Table 1-1 Concordance between ERP Information Requirements under the Metal and Diamond Mining Effluent Regulations and the Structure of this Document

ERP Information Requirement (from Part 3, Section 30(2))	Location of the Information
30(2) The Emergency response plan shall include the following elements	
(a) the identification of any unauthorized 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;	Section 6.2
(b) a description of the measures to be used to prevent, prepare for, respond to and recover from a deposit identified under paragraph (a);	Section 6.3 Section 6.5
(c) a list of the individuals who are to implement the plan in the event of an unauthorized deposit, and a description of their roles and responsibilities;	Section 3.0 Section 4.0
(d) the identification of the emergency response training required for each of the individuals listed under paragraph (c);	Section 7.0
(e) a list of the emergency response equipment included as part of the plan, and the equipment's location; and	Section 6.4
(f) alerting and notification procedures including the measures to be taken to notify members of the public who may be adversely affected by a deposit identified under paragraph (a).	Section 6.3

1.1 Scope

This TMF EPRP is supplemental to the site ERP for specific emergencies related to the Touquoy TMF, and referenced in the Operations, Maintenance, and Surveillance (OMS) Manual for the site. This plan specifically outlines responses related to the events that could cause potential failure of the Touquoy TMF dams and/or uncontrolled release of tailings/effluent to the environment. For all other emergencies at the site refer to the site ERP.

1.2 Definitions

Term	
Corporate Response Team (CRT)	Senior corporate management group responsible for providing corporate coordination and support during a crisis or emergency.
Crisis	A sudden event or set of circumstances that could significantly impact AGCs ability to operate, damage to AGC reputation.
DNR	Department of Natural Resources
Emergency	A serious unplanned event that poses potential harm to health, safety, production, equipment or environment that requires immediate action. An "Emergency, Emergency, Emergency" announcement on channel 8 of the 2-way radio system signifies an emergency situation requiring activation of the emergency response team.
Emergency Response Coordinator (ERC)	Person responsible for the management of incident activities at the site of the emergency.
Emergency Response Plan (ERP)	A course of action developed to mitigate the potential damage of serious sudden or unplanned events that have the potential to endanger health, safety or business continuity.
Emergency Response Team (ERT)	A group of employees trained in emergency response and rescue that provide the field response activities to an emergency.
EOR	Engineer of Record
ETP	Effluent Treatment Plant
Inflow Design Flood (IDF)	As defined by the Canadian Dam Association, the maximum flood for which the dam is designed or evaluated
LAE NS OHS Division	Labour and Advanced Education Nova Scotia, OHS Division. Occupational Health and Safety regulatory body.
MDMER	Metal and Diamond Mining Effluent Regulations
MOWL	Maximum Operating Water Level
Natural Event	An adverse event resulting from natural process of the earth. eg. hurricanes, floods, etc.
NSE	Nova Scotia Environment. Environmental regulatory body.
OMS Manual	Operation, Maintenance and Surveillance Manual
ROM	Run-of-Mine. Stockpiled ore for milling.
Senior Management Response Team (SMRT)	A group consisting of department managers and/or supervisors that provide internal resources (people, equipment, materials) to support the emergency response activities.
TMF	Tailings Management Facility which includes the Tailings Pond, Polishing Pond, Constructed Wetland, and ancillary structures.

2.0 Project Information

2.1 Facility Access

The Tailings Management Facility (TMF) is located approximately 100-kilometers (km) northeast of Halifax, in the Moose River Gold Mines District of Halifax County, Nova Scotia. The TMF comprises approximately 94 ha and can be accessed off Mooseland Road, year-round by vehicle. Access to the dam and associated facilities are best suited to 4x4 vehicles. The general location of the facility can be found on Figure 2.1.

2.2 Facility Description

The TMF is part of the Moose River Consolidated operation, which also includes the open pit mine, waste rock area, a Mill, and other potential satellite operations. This document is applicable to the Touquoy TMF only and does not address emergency response situations for other aspects of the operation (see site ERP). The Touquoy TMF is described below and shown on Drawing 1 (Site Plan) and Drawing 2 (TMF Pipeline Layout Plan) in Appendix A.

The TMF receives water from the mill via tailings slurry, storm water retention and collection pond discharge (capturing runoff from the waste rock pile and mill site), seepage collection ditches (pumped back to TMF), dewatering of the open pit and direct precipitation. Discharge from the TMF flows through an Effluent Treatment Plant (ETP) to a polishing pond, then to a constructed wetland before being released in Scraggy Lake. Losses from the TMF include reclaimed water, discharge to the polishing pond, water retained in the tailings matrix, seepage, and evaporation. The following paragraphs outline the operation of the TMF.

2.2.1 Tailings Pond and Dam

- The tailings dam is constructed using rockfill with a sloping upstream low permeable clay till core tied into an upstream clay till blanket. The dam is currently under construction and is built to a minimum elevation of 125.0 metres. The ultimate elevation is 130.0 m, approximately 20 to 25 metres high dam.
- The upstream core is placed on a graded filter consisting of Type 2 – Fine Filter, over a Type 3 – Coarse Filter.
- The upstream slope of the clay core is protected by Rip Rap.
- The ultimate stage will have a rockfill, open channel spillway with a high density polyethylene (HDPE) section that covers the dam core in the area of the spillway. The spillway will flow to the polishing pond. Intermittent stages of the dam do not have a spillway planned at this time.

2.2.2 Tailings and Water Management

- The tailings slurry is conveyed through a double wall HDPE pipeline that runs from the Mill to the Tailings Pond. The double walled pipeline consists of 355-millimetre (mm) carrier pipe inside a 450 mm diameter outer containment pipe.

- The tailings are deposited in the Tailings Pond by spiggoting and in certain conditions such as winter, from the end of pipe.
- Process water is reclaimed from the TMF from a floating barge and conveyed through a 350 mm diameter reclaim water line to the mill.
- Surplus tailings water is discharged via pumping for treatment at the ETP.
- For extreme events exceeding the inflow design flood (IDF), water will be discharged through the Tailings Pond emergency spillway or in the interim with “no spillway scenario”, pumped to the polishing pond or open pit.
    - IDF Levels determined by measuring 0.7 m below top of Clay Core (i.e. water levels to be maintained 0.7 m below top of Clay Core Elevation).

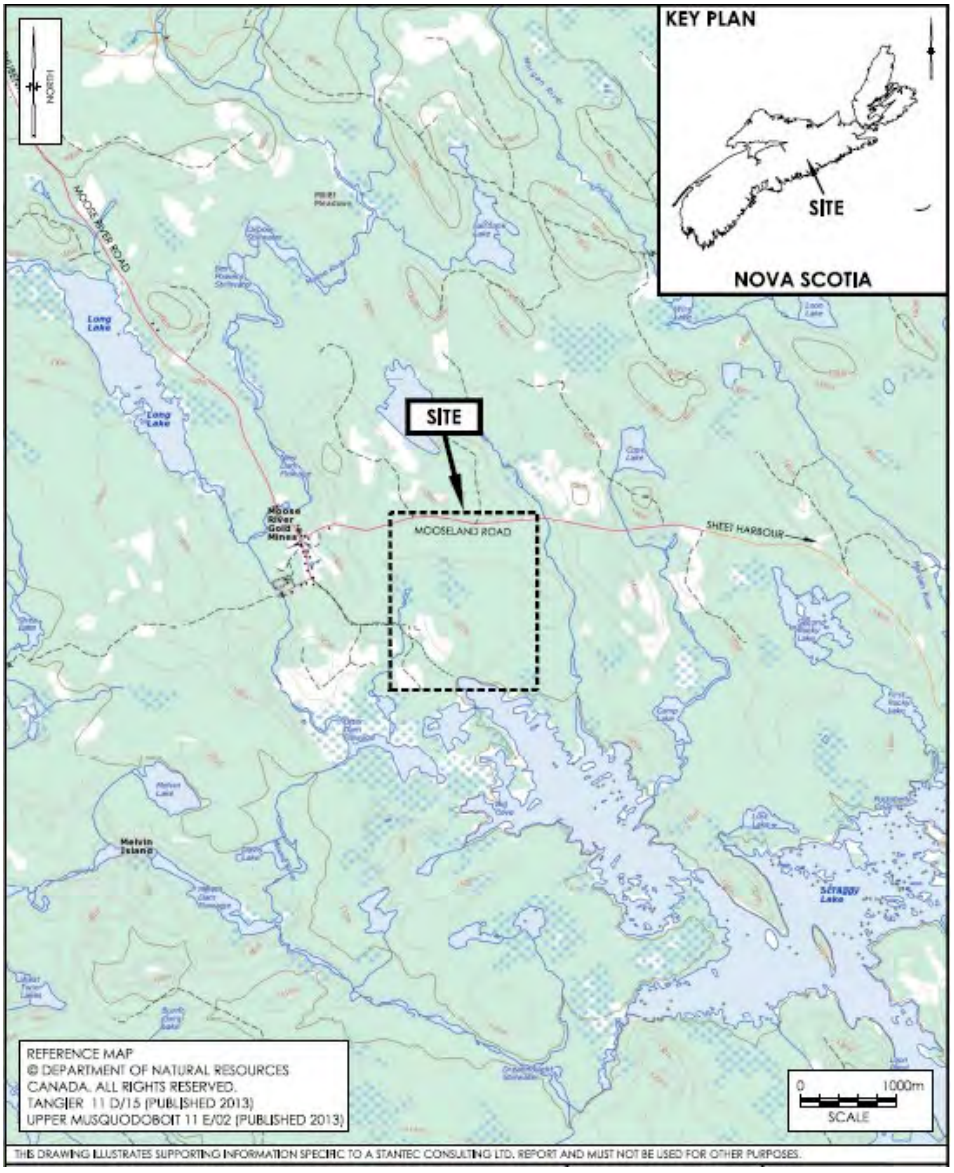

Figure 2.1 - Site Location Plan

2.2.3 Mine Site Water Directed to Tailings Pond

- Mine site water from dewatering the open pit is collected in sumps and pumped to the tailings pond through a 305 mm diameter pipe.
- Seepage collection ditches collect tailings seepage at the toe of the tailings dam. These ditches flow into seepage collection ponds and are pumped back into the tailings pond.
- Water is collected and pumped from the waste rock storage area to the TMF.
- Water is collected and pumped from operational haul roads to the TMF during storm events.
- Mill site and run-of-mine (ROM) stockpile runoff is directed to the Mill storm water retention pond and conveyed to the TMF as required.

2.2.4 Polishing Pond

- The polishing pond dam is constructed to a crest elevation of 114.5 m.
- Geometry and materials are similar to the tailings pond dam.
- Polishing Pond water is released to a constructed wetland draining into Scraggy Lake from the discharge structure. There is a valve at the discharge structure that can be closed to stop discharge to the constructed wetland if water quality does not meet federal (MDMER) guidelines.
- Extreme events exceeding the IDF (within 350 mm of Emergency spillway invert) will by-pass the constructed wetland and flow directly to Scraggy Lake through the polishing pond emergency spillway.

2.3 Effects of Inundation

Significant volumes of tailings and effluent could be released to the environment in the event of a breach in any section of the TMF dam. Limited infrastructure and population are present in the immediate downstream area of the dam so significant impact to population or infrastructure is not anticipated in the event of a breach. Due to the presence of Scraggy Lake located downstream of the TMF, a breach could result in damage or danger to fish habitat or fish, or the use by man of fish.

Flood inundation maps provide a representation of potential flood risk and impacts to areas of interest within a watershed. Inundation maps provide useful information to emergency officials in assessing flood risks, issuing early warnings, and planning evacuations.

The inundation mapping contained in this TMF EPRP (Appendix A), was prepared by Golder (2000)[4], and was generated from comprehensive dam breach and river channel hydraulic modelling. The flood areas shown on the maps represent the estimated maximum extent of flooding downstream of the TMF toward Scraggy Lake during dam failure under fair-weather and IDF conditions. The IDF is defined as “the maximum flood for which the dam is designed or evaluated” (CDA, 2007)

4 Golder Associates. Draft Report on Dam Break Flooding Study. Submitted September 2007.

The inundation maps in Appendix A show the potential inundated area for the failure scenario of the TMF followed by overtopping failure of the polishing pond dam. Dam failure was simulated to increase the water elevation in Scraggy Lake by 45 cm during the flood. The simulated peak discharge through the tailings dam breach of about 1200 m^3/s would occur approximately 18 minutes after the beginning of piping failure. The simulated peak discharge through the polishing pond dam of about 500 m^3/s would occur approximately 31 minutes after the beginning of piping failure. Dam breach analysis requires many assumptions and therefore the accuracy of resulting inundation maps is limited, and the maps should not be viewed in absolute terms.

3.0 Responsibilities

The general responsibilities of both internal and external responders during an emergency are outlined in the site ERP and presented in the table below:

Table 3-1 - Responsibilities of Key Personnel

General Manager	• Ensure appropriate resource availability for ERT and SMRT • Responsible for timely and effective communication of events as per reporting and notification structure • Liaise with regulatory agencies when required (incl. NSE, LAE NS OHS Division, DNR, etc.)
Mill Manager	• First level of contact in the event of an emergency • Notifies all applicable parties of the situation • Part of the SMRT • Initiates emergency responses according to the situation and level of emergency • Provide timely and effective direction to emergency responders • Provide situational updates to the SMRT and CRT as necessary and as per notification and reporting procedures
Department Manager	• Provide timely and effective communication of ERP to department personnel • Participate in timely and effective communication during an event as per reporting and notification structure and procedures • Establish inspection protocols for emergency preparedness supplies and equipment as related to their department, ensuring sufficient supplies and equipment are on site in preparedness for a potential emergency event
Emergency Response Coordinator	• Act as liaison between ERT and H&S Manager • Provide scene control and direction in the event of an emergency • Establish response plans for emergency events • Act as ERT team lead and provide resource support in the form of training, information and guidance for ERT members • Ensure ERT is adequately prepared and trained to respond to emergency events • Establish inspection protocols for ERT controlled supplies and equipment ensuring sufficient supplies are on site in preparedness for a potential emergency event • Provide secondary assistance as medical first responder if necessary • Maintain direct oversight of site ERT programming • Properly don supplementary PPE when working in hazardous areas during an emergency
Emergency Response Team	• Act as first responders in the event of an emergency • Provide area control in specific emergency circumstances • Work under the direction and oversight of the ERC

	• Participate in training and emergency response professional development as deemed necessary by the ERC • Respond in a timely manner and as directed to emergency calls while on site • Ensure ERT equipment inspections are completed and documented routinely • Properly don supplementary PPE when working in hazardous areas during an emergency
Health & Safety Manager (or delegate)	• Act as liaison between ERC and site management; chiefly the site Operations General Manager • Provide situational updates to the SMRT and CRT as necessary and as per notification and reporting procedures • Liaise with external regulators • Provide secondary assistance to ERC in regards to scene control and ERT direction as necessary • Maintain functional oversight of site ERT programming, training and development • Provide resource support to Mill Manager, ERC and ERT as requested • Ensure PPE is available working in hazardous areas during an emergency
Security Superintendent (or delegate)	• Establish area or boundary control as requested during an emergency event • Communicate with emergency services providers as requested (situationally dependent)
Manager/Superintendent Environment and Permitting (or delegate)	• Act as liaison between ERC and site management as required in any type of environmental event • Provide situational updates to the SMRT and CRT as necessary and as per notification and reporting procedures related to environmental events • Liaise with external environmental regulators • Provide secondary assistance to Mill Manager and ERC in regards to scene control and provide direction as necessary during environmental situations • Assist as subject matter experts related to spills and remediation
Human Resources Department	• Provide personnel information to emergency services if necessary
Superintendent / Supervisor	• Ensure availability of ERT members in the event of an emergency (in a timely manner) • Act as liaison between ERC, H&S Manager and Department Manager if necessary • Provide area subject matter expertise as requested during an emergency event; provide direct support if requested (including equipment and manpower)
Employees / Business Partners	• Review and acknowledge requirements and procedures outlined in Emergency Response Plan

	• Actively participate in AGC safety programing to ensure due diligence is practiced in the prevention of emergency events • Properly don supplementary PPE when working in hazardous areas during an emergency • Evacuate as directed in a fast, safe manner and await further instructions including “All Clear” in the event of an emergency
Technical Consultants (Including Engineer of Record)	• Provide technical input in the case of an emergency or potential emergency.

4.0 Emergency Contact List

All contacts (internal and external) included in the contact lists in this document (and the site ERP) shall be aware that they are on the list and know what is expected of them. When necessary, training will be provided to these individuals to ensure they are capable of responding to the situation.

Table 4-1 - Emergency Contact List

Emergency Contact List			
Emergency Response Team (ERT) – Listed daily with Atlantic Gold's Shift Supervisor; List includes supervisor, superintendent, heavy equipment operators, tailings line operator. Identifies Emergency Response Coordinator			
Site Management Response Team (SMRT) – General Manager, Mill Manager, Manger Environmental & Permitting, Environmental Superintendent, Health & Safety Manager, Security Superintendent, Mine/TMF Superintendent			
Corporate Response Team (CRT) – VP business integration & people, COO			
Internal Emergency Contacts			
Department/Process	**Name**	**Telephone Number (Business Hours)**	**Telephone Number (After Hours)**
Emergency Response Coordinator (ERC)	Paul Harnish	902-384-3623	902-999-9042
Supply Chain	Sara Parrill	902-384-3625	902-222-2318
Senior Management Response Team (SMRT) and Engineer of Record (EOR)			
Manager Environment & Permitting	James (Jim) Millard	902-499-7910	
Environment Superintendent	Melissa Nicholson	902-384-3611	902-229-8743
Health & Safety Manager	Keith Closen	902-384-3691	902-499-1796
Security Manager	Terry Moser	902-384-3629	902-957-5729
Mill Manager	Andrew Taylor	902-384-3651	705-626-9519
General Manager	Laird Brownlie	902-384-3603	902-391-0700
Mine Manager	Scot Klingmann	902-880-6127	
Engineer of Record	Paul Deering (Stantec Consulting Ltd.)	709-576-1458	709-685-8243
Corporate Response Team (CRT)			
Media Contact	Dustin O'Leary	902-407-0817	902-719-5620
VP Business Integration and People	Tom Ellard	416-844-9503	416-844-9503
Local Stakeholders			
Middle Musquodoboit RCMP (non-emergency)		902-384-3401	
Musquodoboit Rural High School		902-384-2320	
Parker's Esso		902-384-2844	
Emergency Responders/Regulatory Agencies		**Telephone Number (Business Hours)**	**Telephone Number (After Hours)**

Maritimes Regional Office Canadian Coast Guard & Fisheries and Oceans Canada	902-426-6030	1-800-565-1633
Nova Scotia Environment (NSE) Site Environmental Inspector: Rachel Bower District Manager: Inspection, Compliance and Enforcement Division - Kevin Garroway	902-219-2900	1-800-565-1633
Environment and Climate Change Canada (ECCC) (Notification required under MDMER) Touquoy project: Aaron Marshall, Enforcement Officer	(902) 426-6030 or (902) 426-9224	1-800-565-1633
Nova Scotia Emergency Management Office	(902) 424-5620	1-866-424-5620
Middle Musquodoboit Fire Department	911	
Ambulance		
RCMP (North Central Detachment)		
Department/Area	**Mine Site Radio Channels**	
Health & Safety	1	
Mine Operations/Pit	2	
TMF Operations	3	
Site Services	4	
Mill Projects	5	
Mill Operations	6	
Security	7	
EMERGENCY	8	

Emergency Response Consultant	Service	Telephone Number
Stantec Consulting Ltd, Dartmouth.	24-hour Emergency Spill Response Services	Office: (902) 468-7777 Paul Deering: (709) 685-8243
AECOM	Emergency Spill Response Services	Office: (902) 428-2021 Rory McNeil: (902) 292-267 Rob McCullough: (902) 717-5440 David Bugden: (902) 471-6914
GHD – Emergency Response, Dartmouth	Emergency Spill Response Services	Office: (902) 468-1248 Jeff Parks: (901) 221-0406
Intrinsik Consulting, Halifax	Toxicology	Office: (902) 429-0278 902-478-0395 (Christine Moore)
McCallum Environmental Ltd., Bedford	Biology/Wetlands	Office: (902) 446-8252 Andy Walter: (902) 441-2639
Emergency Service Providers	**Service**	**Telephone Number**
Canadian Helicopters (Goffs, NS)	Emergency Helicopter Access	Office: (902) 873-0015
Cougar Helicopters (Goffs, NS)	Emergency Helicopter Access	Office: (902) 873-8346

Vision Air Helicopters (Goffs, NS)	Emergency Helicopter Access	Office: (902) 873-3488
Battlefield – Cat Rentals	Pump Supplier	Office: (902) 454-6480 Ken Totten: (902) 292-1715
External Contractor - Alva Construction	Contractors/Heavy Equipment Fleet	Radio Channel 3 Office: (902) 863-6445 Colin Mass: (902) 870-2087
United Rentals	Pump Supplier	Office: (902) 468-6668 Matthew Foston: (902) 843-1153
Sansom Equipment Ltd.	Pump & Pump Parts Supplier	Office: (902) 895-2885 Matt Carroll: (902) 890-3267
Clean Earth Technologies	Vac truck services / Soil Remediation	Office: (902) 835-9095 Troy Canning: 902-266-9930 Matt Hersey: 902-225-8844
Northeast Equipment Ltd.	Pipelines	Office: (902) 455-1755 Eric Smith: (902) 468-7473
Engineered Pipe Group	Pipelines/pumps/flanges	Office: (902) 465-2200 Anthony Parker: (902) 219-3850
Aquaterra Ressources	Environmental Sampling Supplies	Office: (902) 861-3866 David Robinson: (902) 488-0016
Terrapure	Hazardous Waste Disposal	Office: (902) 468-9011 Micheal Bettle: (902) 292-7900
Bureau Veritas Laboratories	Analytical Laboratory	Office: (902) 420-0203 24/7 Emergency Line: 1-844-287-7455

5.0 Organization

Refer to the site ERP as it is the overarching document to describe the organization, roles, responsibilities, and resources for responding to emergencies at the Touquoy TMF.

6.0 Emergency Response

6.1 Situation Assessment and Alert Level Activation

Events that could potentially threaten the TMF or potentially result in an unauthorized deposit of deleterious substance may include but are not limited to, the following:

- Unusual instrumentation readings
- Failure or impending failure of the tailings dam
- Overtopping of the tailings dam
- Slumping, sliding, cracking, settlement or other loss of section of the tailings dam
- Elevated or excessive seepage
- Rapid increase or unexplained cloudiness of seepage through the tailings dam or foundations
- Formation of sinkholes on the tailings beach, dams or dam foundations
- Rupture of tailings or reclaim pipelines that may result in dam erosion and/or release of tailings slurry/effluent
- Release or potential release of tailings or effluent exceeding federal regulation or provincial water quality guidelines
- Seismic Events
- Extreme precipitation or Wind
- Sabotage or Vandalism

All unusual events should be reported as per Figure 6.1.

The person who discovers a situation that may threaten the structural integrity of the TMF dams or results in uncontrolled release of tailings or effluent will advise the Mill Manager (or delegate) immediately. The Mill Manager will notify the following persons:

- General Manager
- Mine/TMF Superintendent
- Mill Operations General Foreman
- Environment and Permitting Superintendent/Manager
- Health and Safety Manager

The staff noted above will assess the situation and advise the General Manger or his/her delegate on alert level determination. The Emergency Response Plan will then be initiated. This procedure is illustrated below in Figure 6.1.

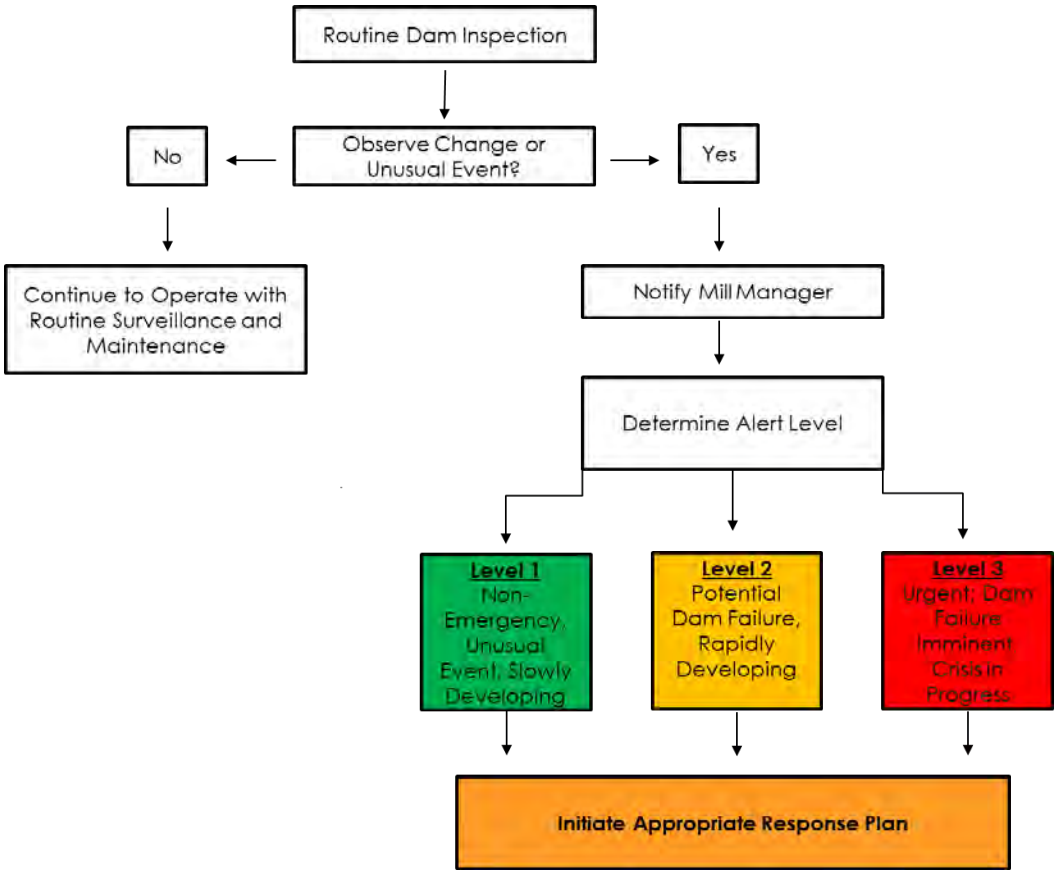

Figure 6.1 - Alert Level Determination and Response Plan Initiation

6.2 Trigger Events and Alert Levels

To effectively manage emergency response, three alert levels have been established, based on the significance of the event. The levels outlined below are for situations that could result in potential dam failure and/or result in the uncontrolled release of tailings or tailings effluent into the surrounding environment. These levels differ from the emergency levels outlined in the site ERP and are specific to the TMF EPRP.

- **Level 1 – Non-Emergency, Unusual Event**
- **Level 2 – Emergency**
- **Level 3 – Crisis**

Specific events, situations and the corresponding alert levels are outlined in Table 6.1 below.

Table 6-1 - Alert Levels for Unusual Events and Emergencies

Alert Levels for Unusual Conditions and Emergencies at the Touquoy Mine Tailings Management Facility		
Trigger Event	**Situation**	**Alert Level**
Rising water levels, overtopping	Rising water levels in Tailings Pond – No Spillway Scenario - For rising water levels where no emergency spillway is present refer to "Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond Water Level within IDF Zone, No Emergency Spillway Scenario", Appendix B	1 - 2
	Polishing Pond levels within one IDF (350 mm) of Emergency spillway invert.	1
	Polishing Pond emergency spillway is discharging to Scraggy Lake	2
	Polishing Pond of Tailings Pond - Water is flowing overtop of the dam crest	3
Polishing Pond Emergency Spillway Erosion or Blockage	Polishing Pond spillway is flowing with minor active erosion	2
	Spillway flowing with active bottom or side erosion in spillway with active headcut advancing towards control section of the dam	2
	Spillway blocked by ice or debris and water continuing to rise toward minimum freeboard	2
	Controlled section compromised, failure of spillway or imminent failure of spillway	3
Loss of Dam Section/ Embankment Movements	Erosion due to storm wave action or visual displacement or settlement of the embankment	1
	Erosion, settlement, slides or cracking that could potentially cause failure of the dam	2
	Sudden or rapidly proceeding slides, settlement or cracking of the crest, embankment slopes or foundation, failure appears imminent	3
Seepage/ Sinkholes	New seepage areas in or near the dam or increased seepage of existing seepage areas	1
	Sinkhole with non-structural impacts	1
	New seepage areas with cloudy discharge, old seepage areas develop cloudy discharge.	2
	Observation of new sinkhole in pond area or on embankment	2
	Seepage with discharge causing erosion	3
	Rapidly enlarging sinkhole	3
Instrumentation	Instrumentation readings beyond predetermined values (i.e. dam vibrating wire piezometers, tailings line pressure gauges, etc.)	1

Alert Levels for Unusual Conditions and Emergencies at the Touquoy Mine Tailings Management Facility		
Trigger Event	**Situation**	**Alert Level**
Seismic Event	Measurable earthquake felt or reported at or within 50 km of the dam	1
	Earthquake resulting in visible damage to the dam	2
	Earthquake resulting in uncontrolled release of water from the dam	3
Tailings or Reclaim Line Rupture	Leaking or breakage of outlet or pipeline causing minor dam surface erosion and/or release of process water or tailings slurry that can be contained in the TMF or double lined HDPE pipe or containment ditches.	1
	Leaking or breakage of outlet or pipeline causing down cutting in dam surface, erosion and/or release of process water or tailings slurry outside of the TMF or containment ditches.	2
	Breakage of outlet or pipeline possible causing significant to catastrophic dam surface erosion and/or release of process water or slurry that could or does flow into a sensitive receiving environment (watercourse, wetland, waterbody)	3
Water Quality exceedance at Final Discharge Point (FDP) or in Polishing Pond.	Water quality exceedance in effluent from the treatment plant, no water quality exceedance at FDP/polishing pond.	1
	Exceedance at FDP or polishing pond, sufficient capacity in polishing pond for ongoing effluent storage without discharge to environment.	1
	Exceedance at FDP or in polishing pond, no capacity remaining in polishing pond, closing the discharge valve would result in spilling from the emergency spillway directly to Scraggy Lake, capacity in tailings pond to pump water from the polishing pond.	2
Security Threat	Verified bomb threat that, if carried out, could result in damage to the dam	2
	Detonated bomb that has resulted in damage to the dam	3
Forest Fire	Forest Fires within 50 km of the site	1
	Forest fires in area that could prevent access to and/or from the site or threaten to impact site infrastructure	2
	Fire impacting site infrastructure related to TMF or fire related evacuation of the site required	3
Other Situations	Any unusual event or condition on or around the dam with potential to harm the dam	1
	Any unusual event or condition that has caused visible damage to the dam and requires mitigation efforts to restore structural integrity of the dam	2
	Any unusual event or condition that has resulted in, or will likely result in, failure of the dam and an uncontrolled release of water or tailings from the impoundment that could or does flow into a	3

Alert Levels for Unusual Conditions and Emergencies at the Touquoy Mine Tailings Management Facility		
Trigger Event	**Situation**	**Alert Level**
	sensitive receiving environment (watercourse, wetland, waterbody)	

6.3 Alert Level 1-3 Response Plans

To prevent emergency events that could potentially result in dam failure or uncontrolled release of tailings, inspections and monitoring must be completed routinely according to Operations, Maintenance and Surveillance (OMS) Manual and following any extreme events (storms, earthquake, floods etc). In addition, regular maintenance as outlined in the OMS Manual, as well as remedial maintenance of the facility should take place following unusual events being noted as the result of inspection and/or monitoring. At a minimum, all unusual events must be reported to the Mill Manager, generally following the procedure in Figure 6.1.

It should be noted that even once unusual conditions are noted it is difficult to predict where a dam breach or TMF failure will initiate and precisely what remedial actions would be required. This section outlines general responses that could be undertaken to avoid or slow down a dam breach or TMF failure.

The responses to TMF emergency events generally require the following mitigation measures:

- Lower the pond levels
- Stop or retard dam internal erosion
- Stop or retard dam or spillway external erosion
- Stabilize unstable slopes
- Contain/remediate released tailings slurry and/or process water
- FDP water quality exceedance mitigation
- Mitigate downstream consequences - alert and evacuate

The responses have been outlined below as they are related to the Alert Levels and specific situations. Responses should only be executed if deemed to be safe.

Many of the emergency responses require dewatering of the tailings or polishing ponds. To simplify the responses, and for ready reference, two dewatering plans have been prepared and included in Appendix C.

6.3.1 Level 1 Alert: Non-Emergency, Unusual Event Level - Communication and Response Plan

In a Level 1 Alert event, all parties outlined in Figure 6.2 should be notified and one or more of the responses provided in Table 6.2 should be considered.

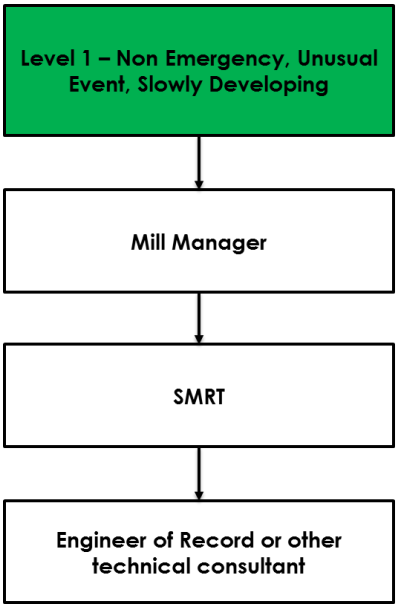

Figure 6.2 - Level 1 Alert Communications

Table 6.6-2 – Level 1 Alert Situation Requirement and Response Plan

Situation Requirement	Response Details
Report unusual data or event	o Notify/Report as per Figure 6.2. o No external response other than notification of EOR. o Monitor/Investigate the situation
Lower the water levels of the tailings pond	o For Rising water levels for the tailings pond situation where no emergency spillway is present refer to "Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond Water Level within IDF Zone, No Emergency Spillway Scenario, Appendix B.
Lower the water levels of the polishing pond	o If not already done, and water quality allows, open the polishing pond discharge valve. o Stop discharge to the polishing pond from the tailings pond, only if there is storage capacity in the tailings pond. o Polishing pond levels may be lowered to allow for remediation of unusual event or emergency. Dewatering plans are presented in Appendix C.

Situation Requirement	Response Details
Contain/remediate released tailings slurry and/or process water	o Shut down flow to the pipe if not already complete o Excavate contained tailings slurry from site ditches or containment ponds and transfer to the TMF o Pump contained process water from site ditches or containment ponds into the TMF o Report as required.
FDP water quality exceedance mitigation	o Close the valve at the polishing pond discharge structure and monitor polishing pond water levels. o If there is limited storage remaining in the Polishing Pond, stop discharge to the polishing pond from the tailings pond, only if there is storage capacity in the tailings pond. o Check that the Effluent Treatment Plant is functioning properly by sampling water directly from the Effluent Treatment Plant and following the geobags, prior to discharge into the polishing pond. Adjust treatment as required. o Conduct monitoring campaign consisting of water quality sampling parameters and acute lethality testing as per MDMER (Part 3, Section 31) to determine when normal operations can proceed. o Report as required to provincial and federal authorities.

6.3.2 Level 2 Alert: Emergency Level - Communication and Response Plan

In a Level 2 Alert event, all parties outlined in Figure 6.3 should be notified and one or more of the responses provided in Table 6.3 should be considered.

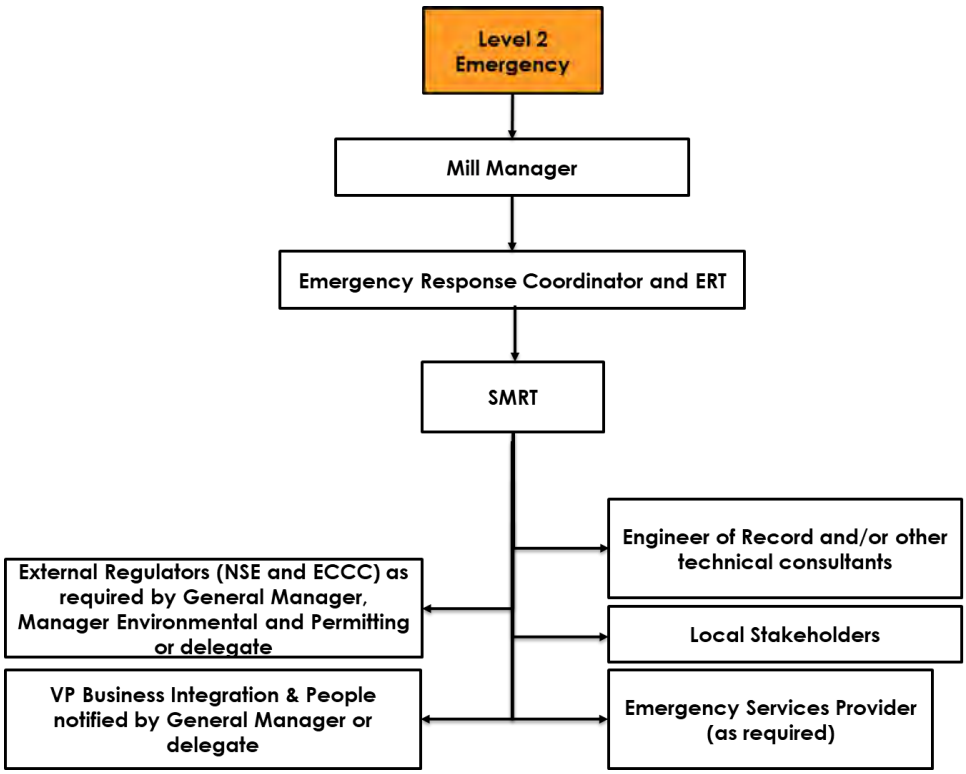

Figure 6.3 - Level 2 Alert Communications

Table 6.6-3 – Level 2 Alert Situation Requirement and Response Plan

Situation Requirement	Response Details
Report event or exceedance and control access	o Notify/Report as per figure 6.3. o Notify external regulators as required. o Control access by notifying all mine site personnel and setting up barricades at road assess points. o Restrict all non-remedial activity downstream of the tailings pond.
Lower the pond levels in the tailings pond	o For Rising water levels for the tailings pond situation where no emergency spillway is present refer to "Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond Water Level within IDF Zone, No Emergency Spillway Scenario, Appendix B. o Tailings pond levels may be lowered to allow for remediation of unusual event or emergency. Dewatering plans are presented in Appendix C. Stopping inflow into the tailings pond from the mill, waste rock pile, seepage collection ponds, mill site pond, and open pit can assist in lowering the water levels.

Situation Requirement	Response Details
Lower the pond levels in the polishing pond	o Polishing pond levels may be lowered to allow for remediation of unusual event or emergency. Dewatering plans are presented in Appendix C. Stopping inflow into the polishing pond from the ETP can assist in lowering the water levels.
Stop or retard dam internal erosion	o Place inverted filter over the area of seepage. Inverted filter could include placing Type 2 – Fine Filter followed by Type – 3 Coarse Filter, followed by Type 4 – Rockfill. This will allow seepage without mobilization of dam material particles. o If seepage velocity is too high (i.e. material being placed is washed away) for placement of material in the order above, placement of larger materials may have to be placed first, followed by the filter materials as the seepage velocity lowers. o If sinkhole is present attempt to reduce the flow by plugging the entrance with dam fill materials compatible with the internal filters of the dam or readily available materials such as bentonite, soil or rockfill, or plastic sheeting.
Stop or retard dam or spillway external erosion	o Place coarse rockfill on areas of surface erosion o In the case of a tailings pipeline rupture stop flow from the tailings line from the mill o In the case of tailings pipeline rupture outside the TMF, if practical to do so construct berms downstream of rupture to minimize erosion and contain release o In the event that an open channel begins to form on the dam crest or spillway channel wall it should be plugged with rockfill materials and once it is closed Type 1 – Clay Core used to reduce seepage through the plug.
Stabilize unstable slopes	o Place Type 4 – Rockfill or other material as downstream buttress in the area of unstable or failed slope
Contain/remediate released tailings slurry and/or process water	o Shut down flow in pipe if not already complete o Install silt curtain/booms/fencing as needed to protect downstream sensitive receptors (watercourses, wetlands, water bodies) o Construct berms, ponds, ditching as required to contain released tailings slurry or process water and prevent migration to a downstream sensitive receptor
FDP water quality exceedance mitigation	o If protocol in Emergency Level 1 are not completed already activate now o Pump water from polishing pond to tailings pond using diesel pumps (confirm capacity in the tailings pond prior to pumping) o Shut down mill if water levels in the tailings pond are above the maximum operating water level (MOWL) as per the OMS Manual.

Situation Requirement	Response Details
	o Activate Dewatering Plan 2 if necessary to dewater tailings pond and polishing pond to operational levels. o If uncontrolled or imminent release of effluent into Scraggy Lake notify ECCC and NSE. o Conduct monitoring campaign consisting of water quality sampling parameters and acute lethality testing as per MDMER (Part 3, Section 31) to determine when normal operations can proceed. o Report as required to provincial and federal authorities.

6.3.3 Level 3: Crisis Level - Communication and Response Plan

Once a Level 3 Alert is activated, dam failure is considered imminent. It is assumed at this point it is unsafe to attempt remediation of the effected portion of the facility and personnel should not be allowed to access the facility. Details of the Level 3 response will be specific to the event that is occurring and will be developed by the Parties outlined in Figure 6.4

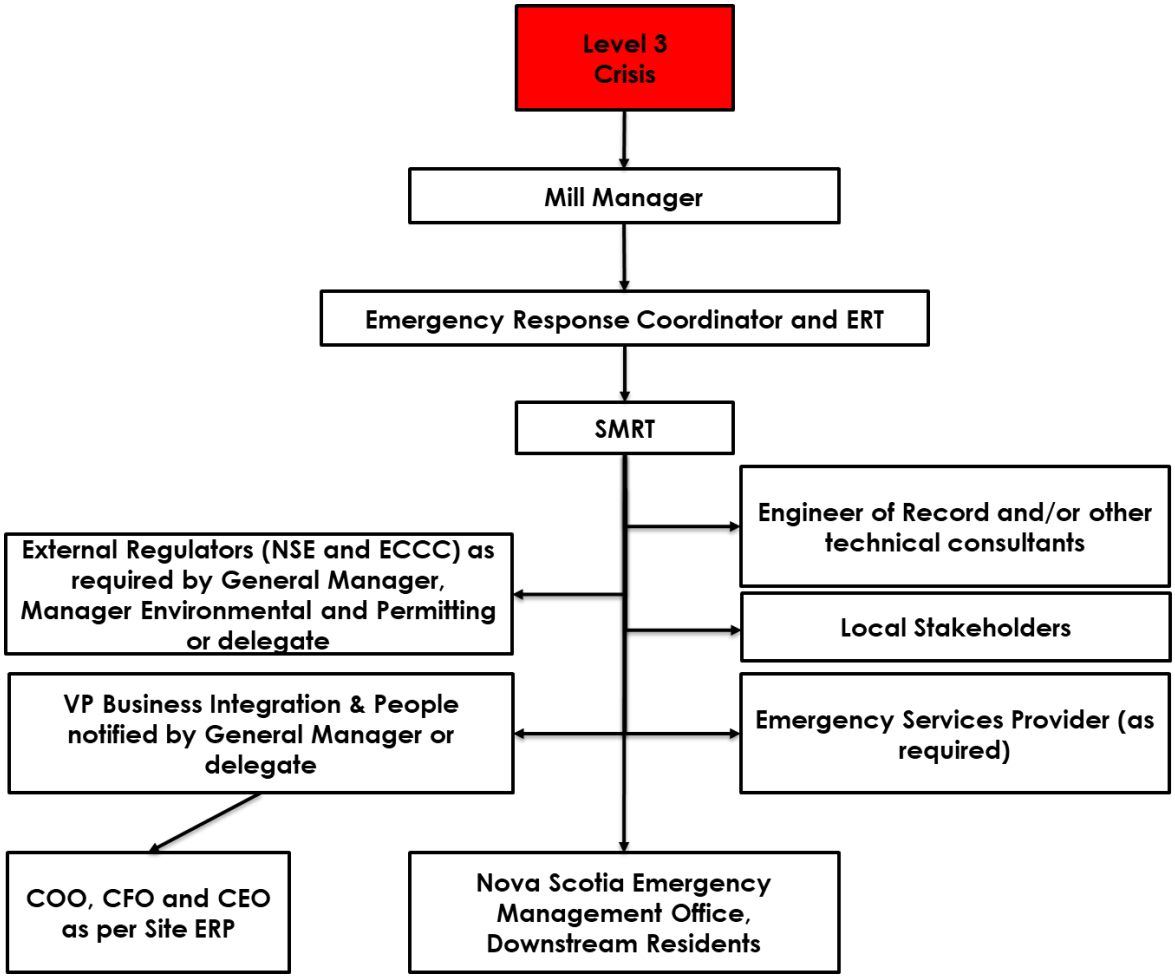

Figure 6.4 - Level 3 Alert Communication

6.4 Resources and Supplies

6.4.1 Resources

The current mine operation involves continuous personnel on site and offsite including heavy earthworks contractors and consultants. If a situation occurs that requires remedial actions, Atlantic Gold has the equipment, materials, labor and technical resources to respond at the site, whether it be internally or from outside contractors and consultants. In addition to the main dam contractor, additional emergency providers have been outlined in Table 4.1.

In many cases above, placement of different materials can be used to slow or mitigate an event from escalating further such as placing inverted filters or rockfill buttresses. To respond in an emergency, the following materials should be readily available onsite: Type 1 – Clay Core, Type 2 – Fine Filter, Type 3 – Coarse Filter, Type 4 – Rockfill/Waste Rock. For the purpose of emergency response, a minimum of 500 m^3 of each material type is to be readily available. Granular materials such as Type 2, Type 3, and Type 4 should be stockpiled at known locations. It is assumed that access to the waste rock pile is available for additional rockfill volume if needed. To avoid degradation of the material, Type 1 should not be stockpiled but access should be maintained to the borrow source for use in an emergency. Furthermore, access to pumps is needed to respond to an emergency concerning raising water levels. Pumps are readily available on-site and can be found at de-watering structures (i.e. pit sump, stormwater collection ponds and seepage ponds).

6.4.2 Emergency Supplies

In the event of a TMF emergency, available emergency response equipment and the location stored onsite is detailed in Appendix D. Appendix D does not list emergency supplies related to First Aid or small hand tools that are available onsite and described in the mine site Emergency Response Plan. Emergency supplies specific to an emergency are outlined in the response to that emergency herein.

6.5 Incident Investigation and Documentation

As per the Site ERP, following an emergency, a full investigation shall be carried out as per the AGC incident reporting management program. At the completion of the investigation, the emergency response plan shall be revised and amended if necessary.

Debriefing will be conducted in both immediate discussion on the evaluation of the response (hot wash format) and more detailed formal evaluation (cold wash format) following the incident investigation. Hot washes will be conducted with all active incident members immediately post incident while cold wash debriefing will be conducted upon the conclusion of the incident investigation; this will be participated by all ERT and support members whether or not they were active in the event.

Documentation should include, at a minimum, the following:

- Location and nature of the incident
- Steps taken to remediate the problem
- Personnel involved
- Timeline
- Results of the remediation
- Cause and Corrective Actions to be taken

For incidents specifically involving a deleterious substance, as per MDMER, the following documentation is needed:

- Name, description and concentration of the deleterious substance deposited;
- Estimated quantity of the deposit and how the estimate was achieved;
- The day on which, and hour at which, the deposit occurred;
- The quantity of the deleterious substance that was deposited at a place other than through a final discharge point and the identification of that place, including coordinates of the location and, if applicable, the civic address;
- The quantity of the deleterious substance that was deposited through a final discharge point and the identification of that discharge point;
- The name of the receiving body of water and the identification of that place, including coordinates of the location where the deleterious substance entered the receiving body of water;
- The results of the acute lethality tests conducted under subsection 31.1(1) of MDMER or a statement indicating that acute lethality tests were not conducted but that notification was given under MDMER subsection 31.1(2);
- The circumstances of the deposit, the measures that were taken to mitigate the effects of the deposit and, if the emergency response plan was implemented, details concerning its implementation; and
- The measures that were taken, or that are intended to be taken, to prevent any similar occurrence of an unauthorized deposit.

The Emergency Response Report and Environmental Incident Report Form can be used to document the incident (see Appendix E – TMF EPRP Forms).

7.0 Training and Document Control

7.1 Document Control and Posting Location

The TMF EPRP shall be a controlled document.

A copy of the TMF EPRP will be maintained at applicable ERP posting locations. Posting locations include:

- Main Administration Building Health and Safety Office
- Environment Trailer Safety Board
- Mill Operations Facility Lunchroom
- Mill Operations General Foreman Office
- Emergency Response Coordinator Office
- TMF Contractor Trailers (Alva and Stantec)

This TMF EPRP will be updated yearly, as a minimum, or after any significant change to personnel, operations, infrastructure, and/or design criteria. The TMF EPRP will be reviewed and updated by a designate from the Mill department, with review and input from the Touquoy SMRT. All holders of the TMF EPRP shall notify ERC of any necessary changes.

All updates made to the TMF EPRP must be communicated to personnel.

7.2 Training

Training as it pertains to this TMF EPRP will be undertaken in conjunction with the training for the site ERP. Training requirements are discussed in Section 4 of the site ERP.

7.3 Testing

There are several purposes for conducting test exercises of the TMF EPRP. First, the execution of a test ensures the TMF EPRP document is complete and current. As well, test exercises ensure that the responsibilities outlined for various positions in the internal emergency responders accurately reflect the required duties during emergency situations and assesses responder's overall readiness to effectively respond in the event of a TMF related emergency.

An annual tabletop exercise shall be conducted to test the plan. The testing exercise shall be documented and used to improve/modify the plan. More specifically, Atlantic Gold will record the following information and keep the record for at least five years:

(a) a summary of the test;
(b) the test results; and

(c) any modifications that are made to the plan as a consequence of the test.

Tests may range from a limited table-top exercise to a full-scale simulation of an emergency event. All external and local government agencies are to be invited to participate in testing of the TMF EPRP procedures. Participation may vary from desk-top reporting functions to on-site involvement with simulated emergencies.

7.4 **Emergency Contact List**

All contacts (internal and external) included in the contact lists in this document (and the site ERP) shall be aware that they are Stakeholders and must be familiar with their associated responsibilities. Training will be provided to these individuals to ensure they are capable of responding to the situation.

Appendix A – Maps and Figures

Site Plan

Pipeline Plan

Inundation Mapping

SQUARE LAKE
MOOSE RIVER ROAD
MOOSE RIVER
MILL SITE
WASTE ROCK STORAGE FACILITY
STORMWATER RETENTION POND
COLLECTION PONDS
MOOSELAND ROAD
WATERCOURSE No.4
FISH RIVER
OPEN PIT
TAILINGS POND
TAILINGS DAM
TOPSOIL STOCKPILE
POLISHING POND DAM
POLISHING POND
WETLAND
EMERGENCY SPILLWAY
SCRAGGY LAKE
GRID NORTH
0 500m
SCALE 1 : 15,000

LEGEND
CONTOUR, 1m (LIDAR 2010)
EXISTING ROAD
PROPOSED TMF INFRASTRUCTURE
WATERCOURSE
WATERBODY

MOOSELAND ROAD
WATERCOURSE No.4
ACCESS ROAD
TAILINGS POND
TAILINGS DAM
ACCESS ROAD
DECANT BARGE
POLISHING POND DAM
ULTIMATE TAILINGS POND EMERGENCY SPILLWAY
EFFLUENT TREATMENT PLANT
POLISHING POND
GEOBAG AREA
POLISHING POND OUTLET CONTROL STRUCTURE
WETLAND
POLISHING POND EMERGENCY SPILLWAY
OVERFLOW CHANNEL
FRESHWATER INTAKE PUMP HOUSE
SCRAGGY LAKE
GRID NORTH
0 100 200m
SCALE 1 : 7500

Reference:
DATA SOURCE: SNSMR (REPRODUCED AND DISTRIBUTED WITH THE PERMISSION OF SERVICE NOVA SCOTIA & MUNICIPAL RELATIONS); MINING ATLANTIC NS CORP.

SITE PLAN

TOUQUOY MINE TAILINGS MANAGEMENT FACILITY
HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC MINING NOVA SCOTIA CORPORATION

Job No.:	121619250
Scale:	AS SHOWN
Date:	2020 08 24
Dwn. By:	JL
App'd By:	JG

Dwg. No.: 1

Stantec

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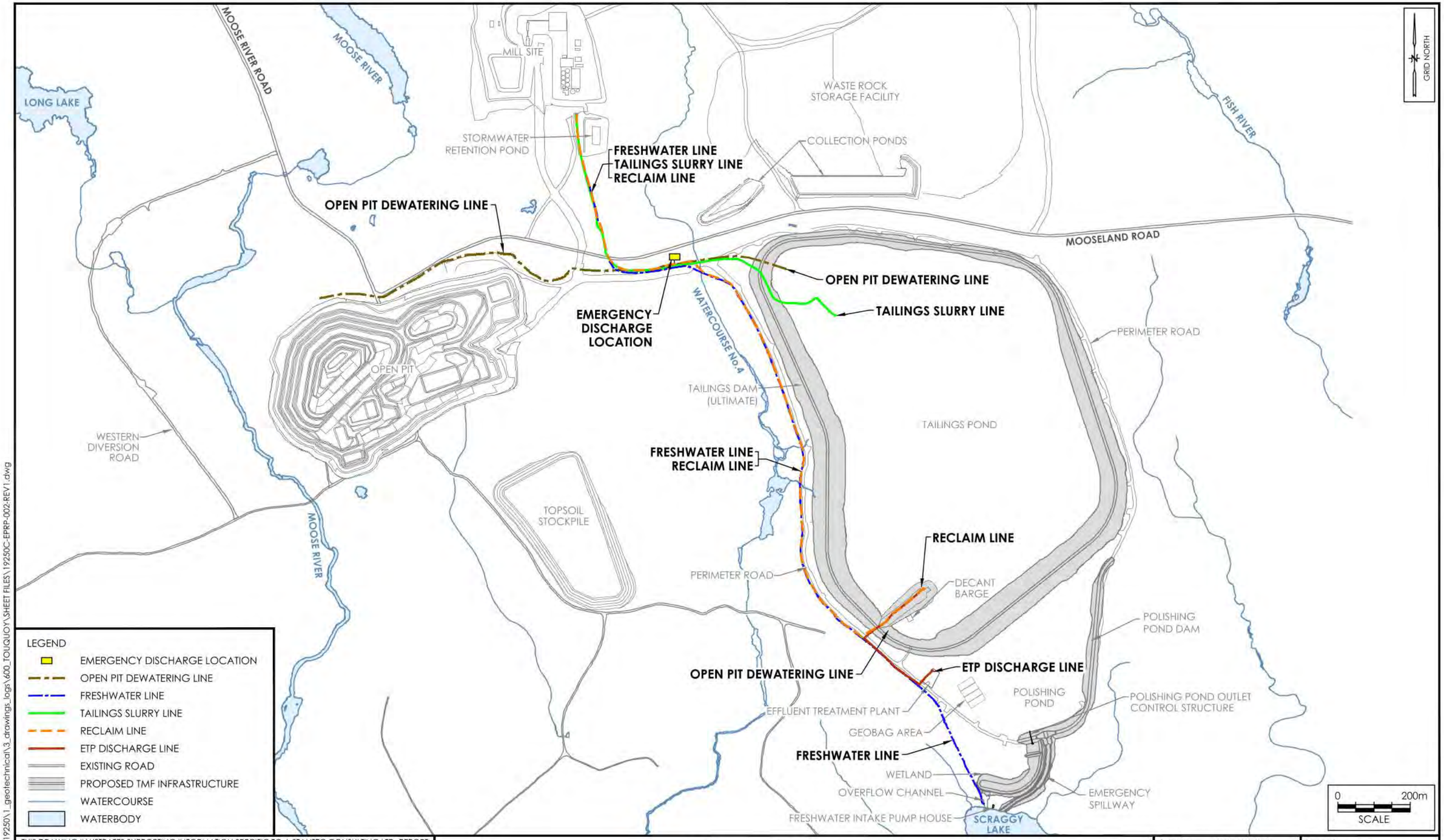

LEGEND

- EMERGENCY DISCHARGE LOCATION
- OPEN PIT DEWATERING LINE
- FRESHWATER LINE
- TAILINGS SLURRY LINE
- RECLAIM LINE
- ETP DISCHARGE LINE
- EXISTING ROAD
- PROPOSED TMF INFRASTRUCTURE
- WATERCOURSE
- WATERBODY

Reference:

DATA SOURCE: SNSMR (REPRODUCED AND DISTRIBUTED WITH THE PERMISSION OF SERVICE NOVA SCOTIA & MUNICIPAL RELATIONS); MINING ATLANTIC NS CORP.

TMF PIPELINE LAYOUT PLAN

TOUQUOY MINE TAILINGS MANAGEMENT FACILITY

HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC MINING NOVA SCOTIA CORPORATION

Job No.:	121619250
Scale:	1 : 10,000
Date:	2020 08 24
Dwn. By:	JL
App'd By:	JG

Dwg. No.: 2

Stantec

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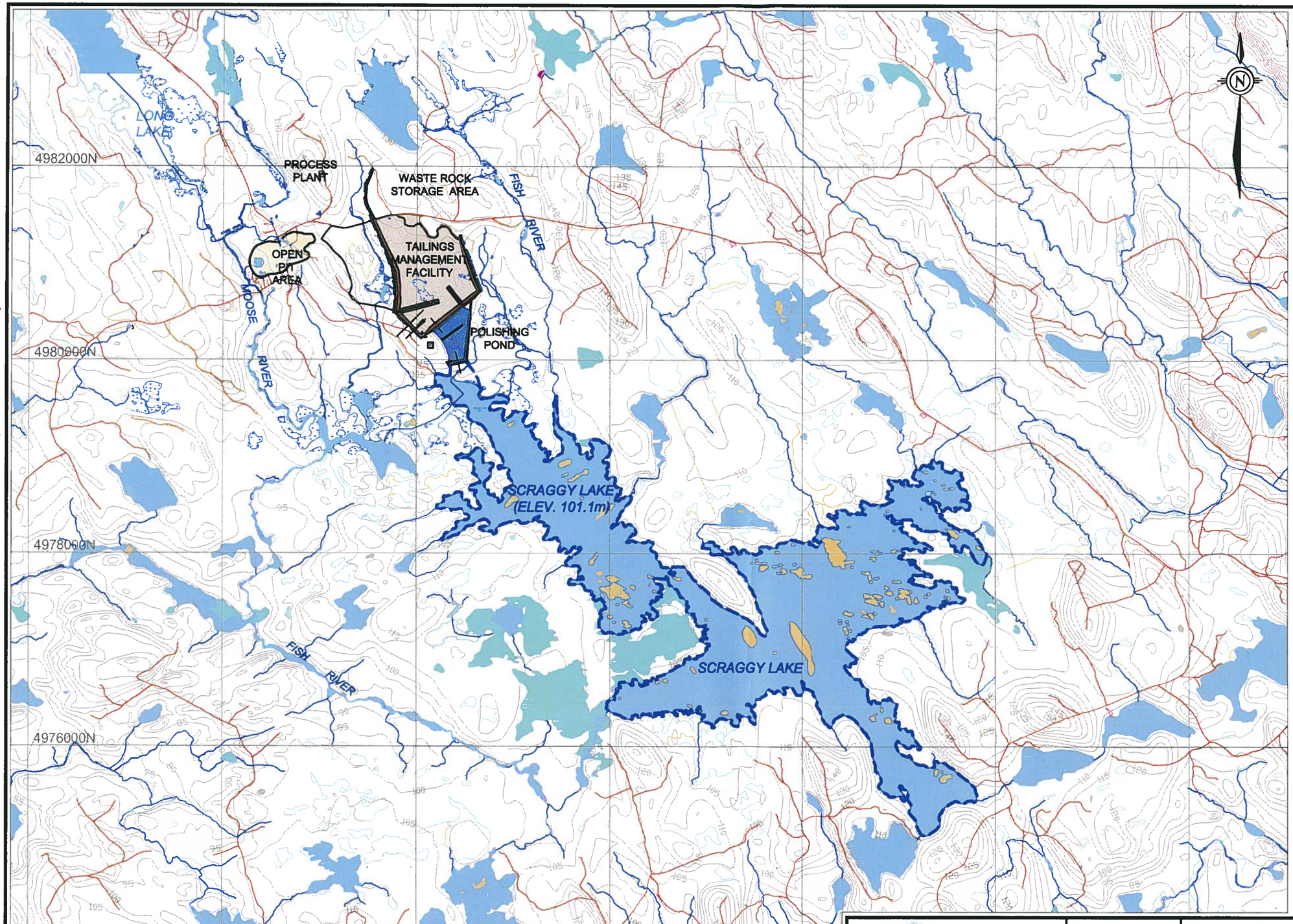


LEGEND:

- PROPOSED TAILINGS AREA
- OPEN PIT AREA
- PROPOSED POLISHING POND
- LAKE
- WETLAND
- ROAD
- RIVER
- SCHEMATIC LIMITS (NOT TO SEALS) OF THE MOST FLOODED AREA

NOTE:

1. CONTOUR INFORMATION PROVIDED BY ATLANTIC GOLD.
2. CONTOUR INTERVAL IS 2m.
3. ALL DIMENSIONS AND ELEVATIONS ARE IN METRES.

DRAFT

400 0 400 800 1600
SCALE 1:40,000 METRES

Golder Associates
Mississauga, Ontario, Canada

FILE No.	061118041CNA4.dwg
PROJECT No.	06-1118-041C
REV.	

SCALE	AS SHOWN
DATE	Aug. 30, 2007
DESIGN	NC
CAD	KL
CHECK	NC
REVIEW	

TITLE

GENERAL ARRANGEMENT PLAN AND POTENTIAL FLOODED AREA

FEASIBILITY STUDY
TOUQUOY PROJECT

FIGURE 4

PLOT DATE: September 11, 2007
FILENAME: N:\Active\2006\1118\06-1118-041C- Atlantic Gold Touquoy Project\Working File\Drawings\---NA---for Water management\061118041CNA4.dwg

Appendix B - Operational Preparedness and Response Plan (OPRP) for Upset Water Levels in the Tailings Pond Water Level within IDF Zone, No Emergency Spillway Scenario

Stantec

Memo

To:	**Ryan Keating, EIT, AMNS**	From:	Paul Deering, P.Eng.
cc	Melissa Nicholson (AMNS) Jeff Gilchrist (Stantec) Arun Valsangkar (Stantec) Dan McQuinn (Stantec)		
File:	121619250	Date:	July 28, 2020
Doc No.	**MEM-058-900.300-J-28JUL20**		

Reference: **Operational Preparedness and Response Plan for Upset Water Levels in Tailings Pond Water Level within IDF Zone and No Emergency Spillway Scenario**
Touquoy Gold Project, Halifax County, NS

In response to the request from NSE, we provide the following Operational Preparedness and Response Plan (OPRP) for the scenario where the water levels within the Tailings Pond encroach within the zone designated for Inflow Design Flood (IDF) storage. In the current scenario, the ability of the pond to contain an IDF has been eliminated, and due to the absence of an emergency spillway, the IDF is not able to be conveyed in a controlled manner from the tailings pond during an IDF event, resulting in potential overtopping of the dam.

It is understood that the information and procedures provided in this document will be incorporated into the Atlantic Mining NS Corp (AMNS) Emergency Response Plan (ERP) which contains specific sections related to the emergency response in relation to the Tailings Management Facility.

If you have any questions, please contact us at your convenience.

STANTEC CONSULTING LTD.

Paul Deering, P.Eng., P.Geo.
Engineer of Record

Stantec

Reference: Operational Preparedness and Response Plan for Upset Water Levels in Tailings Pond
Water Level within IDF Zone and No Emergency Spillway Scenario
Touquoy Gold Project, Halifax County, NS

OPERATIONAL PREPAREDNESS AND RESPONSE PLAN

UPSET WATER LEVELS IN TAILINGS POND

TAILINGS POND LEVEL ENCROACHING WITHIN THE IDF STORAGE ZONE

No Emergency Spillway Scenario – Intermittent Stage Construction

Elevated Tailings Pond Level, if not attended to, may overflow dam crest and result in a dam failure.

If forecasted precipitation and pond levels are routinely monitored, then pond levels can be managed without an emergency spillway. However, as a backup lowering of the Pond water level as outlined in this Plan, can be used to prevent overtopping.

Threat	▪ Damage / Collapse of Tailings Dam Due to Overflow ▪ Environmental Impact and Flood Risk ▪ Disruption to Production
Trigger Event	▪ If Tailings Pond Level encroaches within the zone designated for IDF Storage this plan will be activated. ▪ Zone designated for IDF Storage: o Elevation determined by measuring 0.7 m below top of Clay Core. o i.e. water levels to be maintained 0.7 m below top of Clay Core Elevation ▪ As of July, 2020; Top of the Cay Core = Elevation 125.0. o Therefore, Lower elevation of IDF designed storage = 124.3 m o Trigger Event: Water Elevation at 124.3 m. ▪ Note: As the top of the clay core is raised through ongoing construction and dam raise, the Trigger Event water elevation will vary.
Response Plan Selection	▪ The response shall follow **Plan A, B, and C** incrementally to ensure lowering the pond water levels meet the requirements as described in the attached plans. ▪ The initiation of Plan B will only occur if Plan A fails to control and lower the water levels. ▪ Similarly, Plan C will only be initiated if Plans A and B fail to control and lower the water levels. ▪ **Plan A: Discharging to Polishing Pond - "Operational Response Plan"** o Refer to attached Plan "A" o The initial response to lowering water levels through the activation of Plan A is not considered an "Emergency Response", rather is an "Operational Response". o For the scenario where Plan A is not successful in lowering the water levels within the Tailings Pond, the response shall be elevated to an "Emergency Response" and Plan B and/or Plan B plus C will be Initiated. o Therefore, the protocols and notifications required for Plan A differ from Plan B and C. ▪ **Plan B/C: Discharging to Open Pit - "Emergency Response Plan"** o Refer to attached Plans B and C o Plans B and C are considered "Emergency Response Plans" o Involvement of the Mine's Emergency Response Team (ERT) and notification of regulatory agencies and departments as well as local stakeholders is required under these plans.

PLAN "A" – OPERATIONAL RESPONSE

Initial response to Tailings Pond Water Levels encroaching within the IDF Storage Zone. This is considered an Alert Level 1 – Non-Emergency, Unusual Event as defined in the TMF Emergency Preparedness and Response Plan

Notification

- Upon initiating this Plan, all Individuals listed below shall be notified within **2 hours**.
- Upon successful resolution of the situation and return to normal operations, all individuals listed below shall be notified within **24 hours**.

Atlantic Gold Contact List

Department/Process	Name	Telephone (Business Hours)	Telephone (After Hours)
Senior Management Response Team (SMRT) and Engineer of Record (EOR)			
Manager Environment & Permitting	James (Jim) Millard	902-499-7910	
Environment Superintendent	Melissa Nicholson	902-384-3611	902-229-8743
Health & Safety Manager	Keith Closen	204-471-9015	
Security Manager	Terry Moser	902-384-3629	902-957-5729
Mill Manager	Andrew Taylor	902-384-3651	705-626-9519
General Manager	Laird Brownlie	902-384-3603	902-391-0700
Mine Manager	Scot Klingmann	902-880-6127	
Engineer of Record	Paul Deering (Stantec Consulting Ltd.)	709-576-1458	709-685-8243

Site Management Response Team (SMRT):

- General Manager, Manager Environment & Permitting, Mine Manager, Mill Manager, Health & Safety Manager, Security Manager, Environmental Superintendent, and Engineer of Record.

Response Coordinator:

- General Manager

External Agencies:

- Nova Scotia Environment (NSE)
  - Business Hours; Rachel Bower, Environmental Inspector: (902) 219-2900
  - Federal After Hours, 24 Hour Emergency Line: 1-800-565-1633

Communication

- Radio Channel 2 – Mine Operations/Pit
- Radio Channel 3 – TMF Operations
- Radio Channel 8 – Emergency

Actions / Responsibilities

- Response Coordinator will proceed to the scene and take charge.
- Response Coordinator in consultation with the Manager Environment & Permitting or designate to assess the situation and inform the SMRT the response required and resources necessary.

Response	**The following Response will be undertaken by the SMRT** Initiate lowering water levels as per details below at a rate that lowers the tailings pond water level to restore the IDF storage **in 7 days or less**. Lowering of water level rates will be determined and adjusted based on pond level monitoring. **<u>Plan A: Discharge to Polishing Pond</u>** 1. A fleet of company owned heavy equipment is onsite that could assist in this Plan. 2. Existing Facilities and Infrastructure is identified on Drawing No. OPRP-1-Rev. 3. 3. Shut down operations of the mill and associated facilities. 4. Stop inflow into the tailings pond from the mill, waste rock pile, seepage collection ponds, mill site pond, open pit, and the Scraggy Overburden Stockpile (stockpile south of the open pit). All pumping or flows that are mechanically controlled will be stopped. There are no other gravity inflows into the Tailings Pond. o All mechanical contact water inputs into the tailings pond (i.e. seepage collection ponds, waste rock storage area ponds, stormwater ponds and Scraggy Overburden Stockpile pond) shall be inspected daily to prevent overtopping and/or failure of controls. o Additional storage for these inputs may be realised by pumping to the open pit, polishing pond or other retaining structures for temporary storage when possible to mitigate overtopping and/or failure of controls. 5. Initial lowering of the water level will be completed through the Effluent Treatment Plant (ETP) and discharged into the Polishing Pond. (Note: Discharge through ETP to continue throughout activation of Plan A, B and C) o If water quality in the Polishing Pond meets MDMER discharge requirements, water can be discharged to Scraggy Lake. o Water quality to be reviewed and assessed by Manager Environment & Permitting. (Note: Water quality monitoring is routinely conducted) 6. Additional pumping capacity can be realized through installation of mobile diesel pumps along the crest of the Tailings Pond Dam between the Tailings Pond and the Polishing Pond. 7. As shown on Drawing OPRP-1-Rev. 3 at the southern end of the Polishing Pond, install diesel pumps and a flexible hose from Polishing Pond to Scraggy Lake within silt boom. 8. Continue lowering pond levels until they stabilize at or below the IDF storage elevation (currently elevation 124.3 m). 9. Monitor pond level hourly, until pond level is stabilized at or below the IDF storage elevation for 24 hours. 10. Monitor weather forecast for precipitation events, increase discharge flow rates in anticipation of an event. 11. Monitor water discharge from the tailings pond and from the polishing pond, by installing a metering device on each installed flow line. Water pumped into the Polishing Pond will be tested and if required returned to the ETP for normal treatment (following deactivation of this OPRP). 12. A water sample will be collected at the Final Discharge Point (SW-14) twice per day, with each sample spaced a minimum of 8 hours apart. Water samples shall be analyzed for MDMER

	parameters, with the exception of toxicity and radium. Results shall be sent to NSE within two days of receipt. o If water quality at SW-14 does not meet MDMER guidelines but the Polishing Pond has sufficient storage, the valve at the discharge structure will be shut so that water can accumulate in the Polishing Pond. o If water quality at SW-14 does not meet MDMER guidelines and the Polishing Pond does not have sufficient storage (350 mm freeboard from spillway invert), then Plan B/C will be activated. At this point, discharge to the Polishing Pond and Scraggy Lake will be halted until water chemistry in the Polishing Pond can be improved to meet MDMER discharge requirements. The valve at the discharge structure will be closed to prevent further discharge to Scraggy Lake until water quality in the polishing pond has been improved. 13. In the event of a power outage, install back-ups generator to power electric pumps housed in the decant barge and ETP. If required additional generators may be sourced offsite. 14. SMRT to develop a water management strategy in order to resume operations and maintain the required IDF storage capacity (i.e. 0.7 m below top of clay core) within the Tailings Pond.
Facilities and Infrastructure	The following Facilities and Infrastructure are available on site ▪ 2 x 14 inch (356 mm) reclaim barge pump: Vertical turbine 450 m3/hr per pump ▪ Water Treatment Plant at the maximum available and effective treatment rate ▪ Polishing Pond and outlet structure ▪ Several 6 inch lay down flexible hose ▪ (2) 6 x 6 inch diesel pumps ▪ Godwin Dri-prime HL200M (8 X 6 inch pump) on skid ▪ Back-up generator at plant ▪ Discharge pipe from effluent treatment plant to Polishing Pond ▪ Sediment control facilities at Scraggy Lake including sediment fencing and silt boom ▪ Additional generators will be sourced from offsite as required.

PLANS "B" & "C"– EMERGENCY RESPONSE

For the scenario where Plan A is not successful in lowering the water levels within the Tailings Pond, the response shall be elevated to an "Emergency Response" with the initiation of Plan B and if required Plan C. **This is considered an Alert Level 2 – Emergency as defined in the TMF Emergency Preparedness and Response Plan.**

Notification

- Upon initiating **Plans B or C**, all Individuals/Agencies listed below shall be notified within **2 hours**.
- Upon successful resolution of the situation and return to normal operations, all Individuals/Agencies listed below shall be notified within **24 hours**.

Atlantic Gold Contact List

Department/Process	Name	Telephone (Business Hours)	Telephone (After Hours)
Emergency Response Coordinator (ERC)	Paul Harnish	902-384-3623	902-999-9042
Supply Chain	Sara Parrill	902-384-3625	902-222-2318
Senior Management Response Team (SMRT) and Engineer of Record (EOR)			
Manager Environment & Permitting	James (Jim) Millard	902-499-7910	
Environment Superintendent	Melissa Nicholson	902-384-3611	902-229-8743
Health & Safety Manager	Keith Closen	204-471-9015	
Security Manager	Terry Moser	902-384-3629	902-957-5729
Mill Manager	Andrew Taylor	902-384-3651	705-626-9519
General Manager	Laird Brownlie	902-384-3603	902-391-0700
Mine Manager	Scot Klingmann	902-880-6127	
Engineer of Record	Paul Deering (Stantec Consulting Ltd.)	709-576-1458	709-685-8243
Corporate Response Team (CRT)			
Media Contact	Dustin O'Leary	902-407-0817	902-719-5620
VP Business Integration and People	Tom Ellard	416-844-9503	416-844-9503

Emergency Response Team (ERT):

- Emergency Response Coordinator
- ERT is listed periodically, as required, with Atlantic Gold's Shift Supervisor; list includes; Supervisor, Superintendent, Heavy Equipment Operators, Tailings Line Operator.

Site Management Response Team (SMRT):

- Manager Environment & Permitting, Health & Safety Manager, Security Manager, General Manager, Mine/TMF Superintendent, Mill Manager

Corporate Response Team (CRT):

VP Business Integration & People, Media Contact

	External Agencies: ▪ Nova Scotia Environment (NSE) o Business Hours; Rachel Bower, Environmental Inspector: (902) 219-2900 o After Hours, 24 Hour Emergency Line: 1-800-565-1633 ▪ Department of Natural Resources (DNR) o 24 Hour Emergency Line: 1-800-565-2224 o Director of Mineral Management: 902-424-5618 ▪ Environment and Climate Change Canada: (902) 426-6030 ▪ Environment Canada – Aaron Marshall, (902) 426-9224, aaron.marshall@canada.ca
Communication	▪ Radio Channel 2 – Mine Operations/Pit ▪ Radio Channel 3 – TMF Operations ▪ Radio Channel 8 – Emergency
Actions / Responsibilities	▪ Emergency Response Coordinator will proceed to the scene and take charge. ▪ Emergency Response Coordinator in consultation with the Manager Environment & Permitting to assess the situation and inform the ERT/SMRT the response required and resources necessary. ▪ Emergency Response Coordinator will notify Emergency Services (Fire, EHS and RCMP) as required. ▪ Manager Environment & Permitting to report emergency to regulatory agencies; NSE and ECCC and notify CRT.
Response	**The following Response will be undertaken by the ERT** 1. Immediately initiate the Emergency Response notification and communication protocol. 2. Shut down operations of the mill and associated facilities. 3. Stop inflow into the tailings pond from the mill, waste rock pile, seepage collection ponds, mill site pond, open pit, and the Scraggy Overburden Stockpile (stockpile south of the open pit). All pumping or flows that are mechanically controlled will be stopped. There are no other gravity inflows into the Tailings Pond. o All mechanical contact water inputs into the tailings pond (i.e. seepage collection ponds, waste rock storage area ponds, stormwater ponds and Scraggy Overburden Stockpile pond shall be inspected daily to prevent overtopping and/or failure of controls. o Additional storage for these inputs may be realised by pumping to the open pit, polishing pond or other retaining structures for temporary storage when possible to mitigate overtopping and/or failure of controls. 4. Control access by notifying all mine site personnel and setting up barricades at road access points. Restrict all activity downstream of the tailings pond, including the effluent treatment plant, polishing pond, and engineered wetland facilities. 5. Initiate lowering water levels in the TMF at a rate that lowers the tailings pond level to restore the IDF storage **in 7 days or less**. Discharge rates will be determined and adjusted based on pond level monitoring. 6. **In addition to Plan A** which has been activated at this Stage, lowering of water levels should follow **Plan B and C** incrementally to ensure water levels meet the requirements as described in the Plans below.

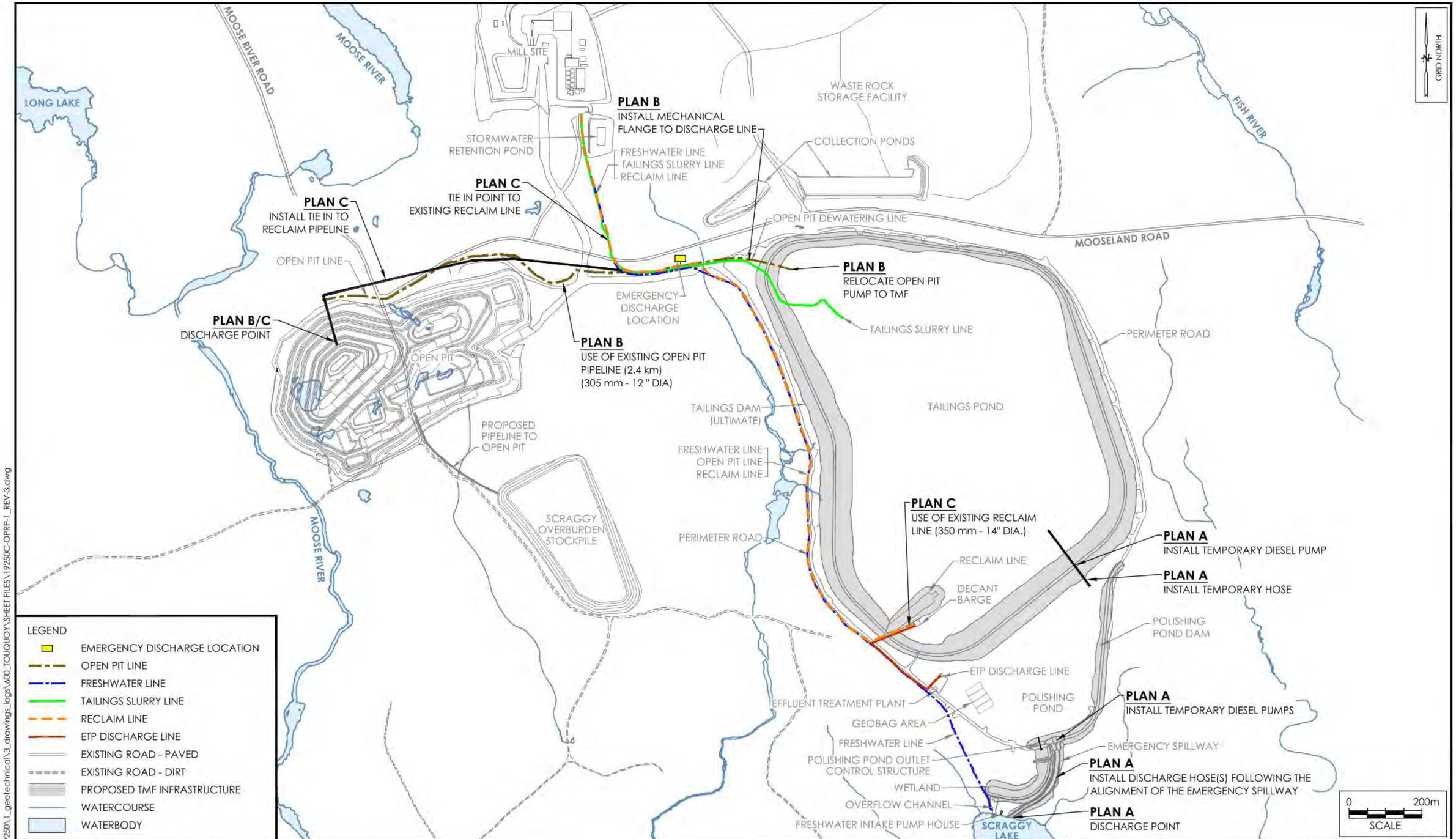
<table>
<tr><td></td><td colspan="3">7. Continue lowering water levels until pond levels stabilize at or below the IDF storage elevation (currently elevation 124.3 m).
8. Monitor pond level hourly, until pond level is stabilized at or below the IDF elevation for 24 hours.
9. Monitor weather forecast for precipitation events, increase discharge rates in anticipation of event.
10. Monitor effluent discharge from the tailings pond, by installing a metering device on each flow line.
11. In the event of a power outage, install back-ups generator to power electric pumps housed at the decant barge and ETP. If required additional generators may be sourced offsite.
12. When the emergency response is complete, the Emergency Response Coordinator will inform ERT/SMRT that the emergency is over and give the “All Clear”. The Manager Environment & Permitting will inform NSE and ECCC (verbal and written) that the emergency situation has been controlled or corrected.
13. SMRT to develop a water management strategy in order to resume operations and maintain the required IDF storage capacity (i.e. 0.7 m below top of clay core) within the Tailings Pond.
14. Following deactivation this OPRP, the excess water in the Open Pit will be pumped to the Tailings Pond for normal treatment.</td></tr>
<tr><td rowspan="15">External Response</td><td colspan="2">Local Stakeholders</td><td>Telephone Number</td></tr>
<tr><td colspan="2">Middle Musquodoboit RCMP (non-emergency)</td><td>902-384-3401</td></tr>
<tr><td colspan="2">Musquodoboit Rural High School</td><td>902-384-2320</td></tr>
<tr><td colspan="2">Parker’s Esso</td><td>902-384-2844</td></tr>
<tr><td colspan="2">Emergency Responders/Regulatory Agencies</td><td>Telephone Number</td></tr>
<tr><td colspan="2">Maritimes Regional Office Canadian Coast Guard & Fisheries and Oceans Canada</td><td>902-426-6030
1-800-565-1633</td></tr>
<tr><td colspan="2">Nova Scotia Environment (NSE)
Site Environmental Inspector: Rachel Bower
District Manager: Inspection, Compliance and Enforcement Division - Kevin Garroway</td><td>902-219-2900
1-800-565-1633</td></tr>
<tr><td colspan="2">Environment and Climate Change Canada (ECCC) (Notification required under MDMER)
Touquoy project: Aaron Marshall, Enforcement Officer</td><td>(902) 426-6030
(902) 426-9224
1-800-565-1633</td></tr>
<tr><td colspan="2">Nova Scotia Emergency Management Office</td><td>(902) 424-5620
1-866-424-5620</td></tr>
<tr><td colspan="2">Middle Musquodoboit Fire Department</td><td rowspan="3">911</td></tr>
<tr><td colspan="2">Ambulance</td></tr>
<tr><td colspan="2">RCMP (North Central Detachment)</td></tr>
<tr><td>Emergency Response Consultant</td><td>Service</td><td>Telephone Number</td></tr>
<tr><td>Stantec Consulting Ltd, Dartmouth.</td><td>24-hour Emergency Spill Response Services</td><td>Office: (902) 468-7777
Paul Deering: (709) 685-8243</td></tr>
</table>

	AECOM	Emergency Spill Response Services	Office: (902) 428-2021 Rory McNeil: (902) 292-267 Rob McCullough: (902) 717-5440 David Bugden: (902) 471-6914
	GHD – Emergency Response, Dartmouth	Emergency Spill Response Services	Office: (902) 468-1248 Jeff Parks: (901) 221-0406
	Intrinsik Consulting, Halifax	Toxicology	Office: (902) 429-0278 902-478-0395 (Christine Moore)
	McCallum Environmental Ltd., Bedford	Biology/Wetlands	Office: (902) 446-8252 Andy Walter: (902) 441-2639
	Emergency Service Providers	**Service**	**Telephone Number**
	Canadian Helicopters (Goffs, NS)	Emergency Helicopter Access	Office: (902) 873-0015
	Cougar Helicopters (Goffs, NS)	Emergency Helicopter Access	Office: (902) 873-8346
	Vision Air Helicopters (Goffs, NS)	Emergency Helicopter Access	Office: (902) 873-3488
	Battlefield – Cat Rentals	Pump Supplier	Office: (902) 454-6480 Ken Totten: (902) 292-1715
	External Contractor - Alva Construction	Contractors/Heavy Equipment Fleet	Radio Channel 3 Office: (902) 863-6445 Colin Mass: (902) 870-2087
	United Rentals	Pump Supplier	Office: (902) 468-6668 Matthew Foston: (902) 843-1153
	Sansom Equipment Ltd.	Pump & Pump Parts Supplier	Office: (902) 895-2885 Matt Carroll: (902) 890-3267
	Clean Earth Technologies	Vac truck services / Soil Remediation	Office: (902) 835-9095 Troy Canning: 902-266-9930 Matt Hersey: 902-225-8844
	Northeast Equipment Ltd.	Pipelines	Office: (902) 455-1755 Eric Smith: (902) 468-7473
	Engineered Pipe Group	Pipelines/pumps/flanges	Office: (902) 465-2200 Anthony Parker: (902) 219-3850
	Aquaterra Ressources	Environmental Sampling Supplies	Office: (902) 861-3866 David Robinson: (902) 488-0016
	Terrapure	Hazardous Waste Disposal	Office: (902) 468-9011 Micheal Bettle: (902) 292-7900
	Bureau Veritas Laboratories	Analytical Laboratory	Office: (902) 420-0203 24/7 Emergency Line: 1-844-287-7455

PLAN "B"

Plan B	A fleet of company owned heavy equipment is onsite that could assist in Emergency Preparedness and Response. Existing Facilities and Infrastructure is identified on Drawing No. OPRP-1-Rev. 3. **Plan B: Discharge to Open Pit by Reverse Flow on Existing Open Pit Pumping Infrastructure** ▪ The existing infrastructure will be retrofitted to pump water from the Tailings Pond to the open pit within 2 hours of notification of Tailings Line Operator. ▪ Retrofit will include; o Relocate existing pump from open pit to crest elev. of Tailings Pond embankment using heavy equipment fleet (Fork lift, pick-up truck, and excavator) o Install 12-inch (305 mm) diameter mechanical flange on existing pipe discharge line to connect to 8-inch pipes. o Install one 8-inch (203 mm) diameter suction hose in tailings pond, approx. 10 m in length. ▪ If by implementing Plan A and B, the Tailing Pond water levels can be lowered to restore the IDF storage in 7 days or less, no other Plan will be initiated. If not, Plan C will be initiated. Facilities and Infrastructure ▪ Discharge Pipeline: 12-inch (305 mm) diameter HDPE – 1,500 m in length ▪ Open Pit Pump: Godwin Dri-prime HL200M (8 X 6-inch pump) on skid ▪ Pump Head: 3.5 m suction, 26 m discharge ▪ Max Pump Capacity: 760 m^3/hr ▪ NOTE: o In preparation for Plan B, mechanical flanges and fittings should be ordered and on site. ▪ **For the scenario where Plan A plus Plan B is not successful in lowering the water levels within the Tailings Pond, Plan C shall be initiated.**

PLAN "C"	
Plan C	A fleet of company owned heavy equipment is onsite that could assist in Emergency Preparedness and Response. Existing Facilities and Infrastructure is identified on Drawing No. OPRP-1-Rev. 3. **Plan C: Discharge to Open Pit by Using Decant Structure** ▪ Plan involves retrofitting existing reclaim pump at decant barge and Reclaim Pipeline to pump from the Tailings Pond into Open Pit. ▪ Retrofit will include; o Install pipeline to tie into the existing reclaim waterline to the Open Pit; 12-inch diameter HDPE pipelines from tie in point on reclaim line to Open Pit. Facilities and Infrastructure ▪ 2 x 14 inch (356 mm) reclaim barge pump: Vertical turbine 450 m3/hr per pump ▪ Discharge Pipe Diameter: 14-inch (356 mm) reclaim line ▪ NOTE: o In preparation for Plan C, the additional pipeline should be installed and associated fittings available and on site. o Source back-up generator from equipment supplier as per Item 11 under Response.



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THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

Reference:

DATA SOURCE: SNSMR (REPRODUCED AND DISTRIBUTED WITH THE PERMISSION OF SERVICE NOVA SCOTIA & MUNICIPAL RELATIONS); MINING ATLANTIC NS CORP.

OPRP PUMPING PLANS

TOUQUOY MINE TAILINGS MANAGEMENT FACILITY

HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC MINING NOVA SCOTIA CORPORATION

Job No.:	121619250
Scale:	1 : 10,000
Date:	2020 07 27
Dwn. By:	JL
App'd By:	JG

Dwg. No.: OPRP-1 REV. 3

Stantec

Appendix C – Dewatering Plans

Dewatering Plan 1 and 2
Drawing No.3

TMF Dewatering Plans

The following plans are provided for any emergency situation that requires lowering of the TMF or Polishing Pond water levels. Dewatering Plan 1 should be used for the initial response. If the TMF or Polishing Pond water levels are not being lowered at a rate that meets the requirements of the Emergency situation, Dewatering Plan 2 should be initiated.

Dewatering Plan 1

Dewatering Plan 1

Mill Manager (or delegate) to initiate dewatering as per details below at a rate that lowers the tailings or polishing pond(s) to the water level required for the specific emergency. Dewatering rates will be determined and adjusted based on pond level monitoring and the situation.

- A fleet of company owned heavy equipment is onsite that could assist in this Plan.
- Existing Facilities and Infrastructure is identified on Drawing No. 3 (below).

1. Stop inflow into the impacted pond:
    a. For the Tailings Pond stop inflow from the mill, waste rock pile, seepage collection ponds, and open pit. All pumping or flows that are mechanically controlled will be stopped. There are no other gravity inflows into the Tailings Pond.
    b. For the Polishing Pond stop inflow from the ETP, unless emergency requires lowering of Tailings Pond at the same time.
2. Initial dewatering:
    a. Initial dewatering of the Tailings Pond will be completed through the Effluent Treatment Plant (ETP) and discharged into the Polishing Pond.
        i. Water quality to be reviewed and assessed by Manager Environment & Permitting.
    b. Initial dewatering of the Polishing Pond will be completed through the Polishing Pond Outlet Control Structure.
        i. Water quality to be reviewed and assessed by Manager Environment & Permitting.
        ii. If water quality in the Polishing Pond meets MDMER discharge requirements, water can be discharged to Scraggy Lake.
        iii. If water quality does not meet MDMER discharge requirements and the emergency still requires dewatering, flow quantities should be metered and reporting requirements under MDMER and the Industrial Approval must be met.
3. Additional pumping capacity can be realized through installation of mobile diesel pumps as shown on Drawing No.3:
    a. For additional pumping capacity from the Tailings Pond, install diesel pumps along the Tailings Pond Dam between the Tailings Pond and the Polishing Pond.
        i. Construction of ramp/platform may be required for installation of diesel pump dependent on water elevation and pump suction head.
        ii. Pump into the Polishing Pond while monitoring quality and pond capacity.
    b. For additional pumping capacity from the Polishing Pond, install diesel pumps at southern end of Polishing Pond, pump into the emergency spillway, install a silt boom at the outflow to Scraggy Lake.
4. If dewatering rate is not sufficient, initiate Dewatering Plan 2.

TMF Dewatering Plans	
	5. Continue dewatering until pond levels stabilize at or below the required elevation, to be determined by the Mill Manager (or delegate), SMRT and/or the EOR based on the situation. 6. Monitor pond level(s) hourly, until pond level is stabilized at or below the required elevation. 7. Monitor weather forecast for precipitation events, increase dewatering flow rates in anticipation of an event. 8. Monitor water discharge from the Polishing Pond, by using a metering device on each flow line. Any water from the Polishing Pond that does not meet the required water quality will be reported as per MDMER and the Industrial Approval. 9. In the event of a power outage, install back-up generator at decant pump to power electric pumps housed in the decant barge/tower. Otherwise, install a high-lift diesel pump. 10. If required, complete mitigations to emergency situation such as fixing erosion or slope stability concerns using the procedures outlined in this document. 11. The Mill Manager, SMRT and/or the EOR will develop a water management strategy in order to resume operations and/or maintain the required water levels.
Dewatering Plan 2	
Dewatering Plan 2	1. In addition to the response outlined above under Dewatering Plan 1 which has been activated at this point, dewatering should follow the plans below to lower pond levels as quickly as possible. 2. Continue dewatering until pond levels stabilize at or below the required elevation, to be determined by the Mill Manager (or delegate), SMRT and/or the EOR based on the situation. 3. Monitor pond level(s) hourly, until pond level is stabilized at or below the required elevation. 4. Monitor weather forecast for precipitation events, increase dewatering flow rates in anticipation of an event. 5. Monitor water discharge from the Polishing Pond, by using a metering device on each flow line. Any water from the Polishing Pond that does not meet the required water quality will be reported as per MDMER and the Industrial Approval. 6. In the event of a power outage, install back-up generator at decant pump to power electric pumps housed in the decant tower. An existing diesel generator is housed at the plant and can be relocated to the decant tower. 7. If required complete mitigations to emergency situation such as fixing erosion or slope stability concerns using the procedures outlined in this document. 8. The Mill Manager, SMRT and/or the EOR will develop a water management strategy in order to resume operations and/or maintain the required water levels. **<u>Dewatering to Open Pit by Reverse Flow on Existing Open Pit Dewatering Infrastructure</u>** 9. The existing dewatering infrastructure will be retrofitted to pump water from the Tailings Pond to the open pit within ~2 hours of activation of the plan 10. Retrofit will include; a. Relocate existing dewatering pump from open pit to the Tailings Pond using heavy equipment fleet (Fork lift, pick-up truck, and excavator) i. Construction of ramp/platform may be required for installation of diesel pump dependent on water elevation and pump suction head.

TMF Dewatering Plans	
	b. Install 12-inch (305 mm) diameter mechanical flange on existing pipe discharge line to connect to one 8-inch pipes. c. Install one 8-inch (203 mm) or diameter suction hose in tailings pond, approx. 10 m in length. 11. Facilities and Infrastructure a. Discharge Pipeline: 12-inch (305 mm) diameter HDPE – 1,500 m in length b. Open Pit Dewatering Pump: Godwin Dri-prime HL200M (8 X 6-inch pump) on skid c. Pump Head: 3.5 m suction, 26 m discharge d. Max Pump Capacity: 760 m^3/hr **Dewatering to Open Pit by Using Decant Structure** 12. Plan involves retrofitting existing reclaim pump in Decant Structure and Reclaim Pipeline to dewater Tailings Pond into Open Pit. 13. Retrofit will include; a. Install an 300-m long pipeline to tie into the existing reclaim waterline to the Open Pit; 12-inch diameter HDPE pipelines from tie in point on reclaim line to Open Pit. 14. Facilities and Infrastructure a. 14-inch Decant Pump (x2): Flowserve MSX, Solids Handling Submersible Pump; Max Capacity: 740 m^3/hr (per pump) b. Discharge Pipe Diameter: 14-inch (356 mm) reclaim line
Equipment (if required)	**Available Suppliers -** See Section 4 of TMF EPRP for Emergency Service Providers and Appendix D for on-site emergency preparedness supplies.
Follow Up	Dewatering of Open Pit back to the TMF to proceed only when directed by the SMRT.

GRID NORTH

LONG LAKE
MOOSE RIVER ROAD
MOOSE RIVER
MILL SITE
STORMWATER RETENTION POND
FRESHWATER LINE
TAILINGS SLURRY LINE
RECLAIM LINE
WASTE ROCK STORAGE FACILITY
COLLECTION PONDS
FISH RIVER
MOOSELAND ROAD

PLAN 2
INSTALL TIE IN TO RECLAIM DEWATERING PIPELINE

PLAN 2
TIE IN POINT TO EXISTING RECLAIM LINE

OPEN PIT DEWATERING LINE

PLAN 2
RELOCATE OPEN PIT DEWATERING PUMP TO TMF

PLAN 2
DISCHARGE POINT

EMERGENCY DISCHARGE LOCATION

WATERCOURSE No. 4

TAILINGS SLURRY LINE

PERIMETER ROAD

PLAN 2
USE OF EXISTING OPEN PIT DEWATERING PIPELINE (1.4 km) (305 mm - 12 " DIA)

OPEN PIT

TAILINGS DAM (ULTIMATE)

TAILINGS POND

WESTERN DIVERSION ROAD

FRESHWATER LINE
RECLAIM LINE

TOPSOIL STOCKPILE

PERIMETER ROAD

PLAN 2
USE OF EXISTING RECLAIM LINE (350 mm - 14" DIA.)

PLAN 1
INSTALL TEMPORARY DIESEL PUMP

RECLAIM LINE

PLAN 1
INSTALL TEMPORARY HOSE

DECANT BARGE

PLAN 2
INSTALL MECHANICAL FLANGE TO DISCHARGE LINE

POLISHING POND DAM

ETP DISCHARGE LINE

OPEN PIT DEWATERING LINE

EFFLUENT TREATMENT PLANT

POLISHING POND

PLAN 1
INSTALL TEMPORARY DIESEL PUMPS

GEOBAG AREA

FRESHWATER LINE

EMERGENCY SPILLWAY

POLISHING POND OUTLET CONTROL STRUCTURE

PLAN 1
INSTALL DISCHARGE HOSE(S) FOLLOWING THE ALIGNMENT OF THE EMERGENCY SPILLWAY

WETLAND

OVERFLOW CHANNEL

PLAN 1
DISCHARGE POINT

FRESHWATER INTAKE PUMP HOUSE

SCRAGGY LAKE

MOOSE RIVER

LEGEND
- EMERGENCY DISCHARGE LOCATION
- OPEN PIT DEWATERING LINE
- FRESHWATER LINE
- TAILINGS SLURRY LINE
- RECLAIM LINE
- ETP DISCHARGE LINE
- EXISTING ROAD
- PROPOSED TMF INFRASTRUCTURE
- WATERCOURSE
- WATERBODY

0 200m
SCALE

Reference:
DATA SOURCE: SNSMR (REPRODUCED AND DISTRIBUTED WITH THE PERMISSION OF SERVICE NOVA SCOTIA & MUNICIPAL RELATIONS); MINING ATLANTIC NS CORP.

TMF EPRP DEWATERING PLANS

TOUQUOY MINE TAILINGS MANAGEMENT FACILITY
HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC MINING NOVA SCOTIA CORPORATION

Job No.:	121619250
Scale:	1 : 10,000
Date:	2020 08 24
Dwn. By:	JL
App'd By:	JG

Dwg. No.: 3

Stantec

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Appendix D - Emergency Preparedness Supplies

EMERGENCY PREPARDNESS SUPPLIES

Atlantic Gold Emergency Supplies		
Equipment Description	**Quantity/Length**	**Location**
Pumping Equipment		
Generator (Mill Backup) - CAT	(1)	Mill
HDPE fusion welder	(1)	TMF – Sea-can adjacent to ETP
6 x 6 inch (152mm x 152 mm) diesel pumps	(2)	Stormwater Collection ponds
4x4 inch 100 mm x 100mm) diesel pump	(6)	TMF Seepage Ponds/Waste Rock Pond
8 x 6 inch (203 mm x 152 mm) high lift pump on skid - max capacity 760 m^3/hr	(1)	Open Pit
14 inch (356 mm) reclaim pump: Vertical turbine 450 m3/hr	(2)	Decant Barge
12 inch (305 mm) diameter HDPE Pipeline	1500 m	From Open Pit to TMF
14 inch (356 mm) diameter HDPE Pipeline	2000 m	From Decant Tower to Mill
4 inch (100 mm) diameter HDPE Pipeline	2500 m	From Scraggy Lake to Mill
6 inch (152 mm) diameter HDPE Pipeline	2500 m	From Scraggy Lake to Mill & seepage ponds to TMF
8 inch (203 mm) diameter HDPE Pipeline	250 m	From Decant to ETP
Extra 6 inch (152 mm) diameter lay flat Pipeline	200 m	Mine Ops Laydown
Extra 6 inch (152 mm) diameter HDPE Pipeline	800 m	TMF
Extra 12 inch diameter HDPE pipeline (For tailings line moves)	225 m	TMF
Extra 14 inch diameter HDPE pipeline (For decant to Pit Contingency)	225 m	TMF
Flanges/connections/gaskets/fittings	Assorted	Mill Maintenance & Mine Operations & TMF
8 inch (203 mm) suction hose	10 m	Open Pit
Metering equipment for water pumped from Polishing Pond to Scraggy Lake	(2)	Environmental Department
Spill Containment Equipment		
30 Gallon Spill Kit – Oil Only	(7)	Warehouse (S10FULLPAL)
30 Gallon Universal Spill Kit Refill	(5)	Warehouse (F7A)
30 Gallon Universal Spill Kit	(4)	Warehouse (S10FULLPAL)
Oil Dry Sorbent	12 bags	Warehouse (TS2D)
Spill Pads – Oil Only	5 bags	Warehouse (S1R2D)
Spill Pads - Universal	5 bags	Warehouse (D2C)
Silt Curtain	(2)	Scraggy Lake Pumphouse
Silt Fence 100’ Bundle	(20)	Warehouse (3LD1)
Hay Bales	(10)	Behind Environmental Sea-can
1000 L plastic holding tank	Variable	Geobag Laydown
170 L (45 gallon) Metal drums	(8)	Warehouse (Mill1A)
Assorted hand tools – long handed spade shovels, pick axe, etc.	Assorted	Site Services
Generator - CAT 6500 W	(1)	Site Services
Inverter Generator - CAT 1800 W	(1)	Site Services
Heavy Equipment (Breakout by different sizes)		
Lighting – Diesel Portable Light Stand	(12)	Mine Ops
Backhoe – CAT	(1)	Site Services
Crane - Terex	(1)	Mine Ops
Dump Truck – CAT	(1)	Site Services

EMERGENCY PREPARDNESS SUPPLIES

Dozer – CAT	(3)	Mine Ops
Excavator – CAT	(4)	Mine Ops
Grader – CAT	(1)	Mine Ops
Haul Truck – CAT	(6)	Mine Ops
Articulated Truck – CAT	(2)	Mine Ops
Loader – CAT	(3)	Mine Ops
Roller – CAT	(1)	Mine Ops
Skid Steer - Bobcat	(1)	Mill Ops
Telehander – CAT	(1)	Mill Ops

Appendix E – TMF EPRP Forms

EMERGENCY RESPONSE REPORT

1. REPORT

- Name and position of person calling in:

Name _____ Date _____

Tel No. _____ Time _____

- Identification of Dam:

Type of Event: _____ Breach _____ Potential Breach

_____ Structural Damage _____ Cloudy Seepage

_____ High Water Levels _____ Other

Size/location of Breach _____

Location of Breach _____

Rate of Enlargement _____

Size of Uncontrolled Flow _____

Rate of Increase in Flow _____

Time of Start of Breach _____

Cause _____

- Other Observation

Reservoir Water Level _____

Water Level _____

Rising/Falling _____

Is the Situation Worsening _____

Current Weather Condition _____

Weather Forecast _____

- General Comments

_____

_____

_____

- Call Received By

Name _____ Job Title _____

2. VERIFICATION

- Method of Verification

_____ Recognition of Caller

_____ Caller's demonstrated knowledge of CBPPL system

_____ Report is consistent with current weather conditions

_____ Obtaining the observer's name, tel. no., location

3. NOTIFICATION

Time of Notification of:

Energy Manager _____

Other ( ) _____

_____

ENVIRONMENTAL INCIDENT REPORT FORM

AGC ENV FRM 002 REV 3

NOTIFY: environmental.incident@atlanticgold.ca

STEP 1. INITIAL REPORT OF THE INCIDENT (Supervisor)

Date of Event	Time of Event	Date Reported	Time Reported	Main Person Involved	Reported By

Employer
- ❑ Atlantic Gold
- ❑ Contractor

Contractor (If Applicable)	Department	Location

UTM Coordinates	Northing		Easting	
Geographic Coordinates	Latitude		Longitude	

Environment

❑ Spill/Release ❑ Wildlife Interaction ❑ Other: _____

Spill / Release

	Quantity (Estimate Acceptable)	**Receiving Environment (i.e. Where did the spill go?)**

Is the spill controlled/contained? Yes ❑ No ❑

Is the spill into a watercourse or wetland? Yes ❑ No ❑

Does the spill have potential to travel off-site? Yes ❑ No ❑

Initiating Event	Method of Cleanup

Spill Waste (i.e. contaminated soil, oil-soaked pads, etc.) Storage Location

Detailed Description

ENVIRONMENTAL INCIDENT REPORT FORM

AGC ENV FRM 002 REV 3

Immediate Actions Taken to Secure Scene, Protect Peoples or Environmental and Equipment

Immediate Cause of the Incident

Using the Incident Classification, the **Actual** Consequence of this incident was _____

Using the Incident Classification, the **Reasonable** Potential Consequence of this incident was _____

Consequences	Insignificant	Minor	Moderate	Major	Catastrophic
Environment	Non-reportable event No impact	Reportable Event No Impact	Reportable Event Reversible Impact	Reportable Event Long-Term Impact	Reportable Event Irreversible Impact

STEP 2. INFORMATION GATHERING (Investigator)

Investigator (s)

Lead Investigator

Others

❑ Witnesses Present ❑ Photos available of the Incident?

Witness Statements (Attach as Appendix)
1
2
3

FOR ENVIRONMENTAL DEPARTMENT TO COMPLETE

Reportable? ❑ Yes ❑ No

Regulator Notified? ❑ Yes ❑ No

Regulator Name

Date Reported

Reference Number

Contact Name

STEP 3. CAUSAL ANALYSIS (Investigator)

At least one must be selected (two or three are typical).

Contact Environmental Department for guidance, if necessary.

Equipment Failure Issues	Procedural Issues	Communication Issues	Engineering Issues
☐ 1.1 Defective Parts/Tools/ Equipment	☐ 3.1 No Procedure	☐ 5.1 Shift Change Impact	☐ 7.1 Workplace/ Roadway Layout/ Design/ Conditions
☐ 1.2 Design Issue	☐ 3.2 Error in Procedure	☐ 5.2 Failure to Agree on how task to be Performed	☐ 7.2 Congested Work Area/ Restricted Action
☐ 1.3 Preventative Maintenance Issue	☐ 3.3 Procedure too Complex	☐ 5.3 Failure to Understand Communication	☐ 7.3 Inadequate display, signs, labels, alarms, warnings
☐ 1.4 Repeat Failure	☐ 3.4 Procedure not Followed	☐ 5.4 Inadequate Communication	☐ 7.4 Inadequate Guards of Barriers
☐ 1.5 Tolerable Failure		☐ 5.5 Cross-Department Communication Issue	☐ 7.5 Noise/ Vibration/ Light
			☐ 7.6 Poor Body Mechanics, Body Placement, Positioning, Repetitive
Natural Elements Issue	**Training Issue**	**Work Direction Issue**	**Quality Control Issue**
☐ 2.1 Temperature Extremes	☐ 4.1 No Training	☐ 6.1 No Direction Provided	☐ 8.1 No Quality Controls
☐ 2.2 Weather Conditions	☐ 4.2 Training not Followed, Unintentional	☐ 6.2 Inadequate Direction Provided	☐ 8.2 Inadequate Quality Controls
☐ 2.3 Ground Movement	☐ 4.3 Trained but Inexperienced	☐ 6.3 Failure to Follow Work Direction	**Other**
☐ 2.4 Flooding		☐ 6.5 Fatigue	☐ 9.1 Other (explain below)
		☐ 6.6 Impairment	

Cause Explanation (For Each Cause Identified in Casual Analysis - Provide a Brief Explanation of Why)

Code	Explanation

Corrective Actions:

No.	Description	Issued To (Name)	Due Date

Investigation Team and Factors Limiting		
Name	**Position**	**Signature**
		❑ Investigation Accepted
		❑ Investigation Accepted
		❑ Investigation Accepted

STEP 4. FINAL COMMENTS BY INVESTIGATORS OR MANAGEMENT		
Name	**Comment**	**Date**

Appendix 7

Emergency Response Plan – Propane

Atlantic Gold

ATLANTIC GOLD

Emergency Response Plan – Propane

AGC-PLN-HS-007

RELEASE DATE

August 2020

DOCUMENT REVISION RECORD

Pages affected by the current revision are listed in the table below and are identified by hash marks (lines) on the right side of the affected pages.

Table to be completed by AG GM (or Assistant) Only					
Revision Level	**Revised By**	**Date MM/DD/YYYY**	**DC Approved**	**DC Release Date**	**Pages Affected**
0	Draft by Stantec Consulting Ltd. for Melissa Nicholson	19-Nov-2018			
01	Jennifer Adshade	12-Nov-2019			17 (tank)
02	Jennifer Adshade	24-Aug-2020			Header/Footer, Logo, pages 6 (address), 8-10 (definitions), 31 (contacts), 33 (controlled documents), 34 (distribution list). Update “AGC” with “AMNS”

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Purpose

This manual describes the procedures to be followed by Atlantic Mining NS Inc. (AMNS) personnel in the event of an emergency at the Touquoy Mine site related to propane or propane facilities. AMNS is a wholly owned subsidiary of St. Barbara Limited.

1.2 Objective of the emergency response plan

The objective of this Environmental Emergency (E2) Plan is to implement a structured program for the prevention of, preparation for, response to and recovery from an environmental emergency or danger to human life or health related to propane or propane facilities at the Touquoy Mine site located at 409 Billybell Way, Mooseland, Middle Musquodoboit, NS.

This plan is meant to be a supplemental plan to the Site Emergency Response Plan (Site ERP) and should be used in conjunction with the Site ERP.

1.3 Scope of the plan

Emergencies involving hazardous materials can occur with equipment in-service, in storage or during transportation. These emergencies may include:

- Fires;
- Spills;
- Gas leaks;
- Explosions;
- Power outages;
- Threats to people, property, and goods;
- Other types of site-specific incidents.

The site-specific E2 Plan included in this manual applies only to the propane storage facilities and systems identified at the Touquoy Mine site. The E2 Plan addresses emergencies related to fire or product release associated with the noted storage systems only, and focuses mainly on the environmental and the human health and safety aspects of the emergencies. For all other emergencies at the site refer to the Site ERP.

1.4 Regulatory Framework

The “Regulations Amending the Environmental Emergency Regulations” (E2 Regulations) under section 200 (1) of the Canadian Environmental Protection Act, 1999 outline the requirements for site specific environmental emergency response plans

The E2 Regulations may apply to any person who owns, or has the charge, management, or control of any of the 215 hazardous substances listed in Schedule 1 of the E2 regulations that exceeds the specified

quantity. If the criteria are met, notification of the minister of the Environment containing the required information set out in the E2 Regulations is required.
The E2 Regulations are focused on fixed, land-based facilities and can apply to various industrial sectors and facilities across Canada.

The requirements for an E2 Plan at this facility are triggered by the storage of Propane (CAS# 74-98-6) in quantities greater than 4.5 tonnes (appx. 2380 USWG).

1.5 Company Profile

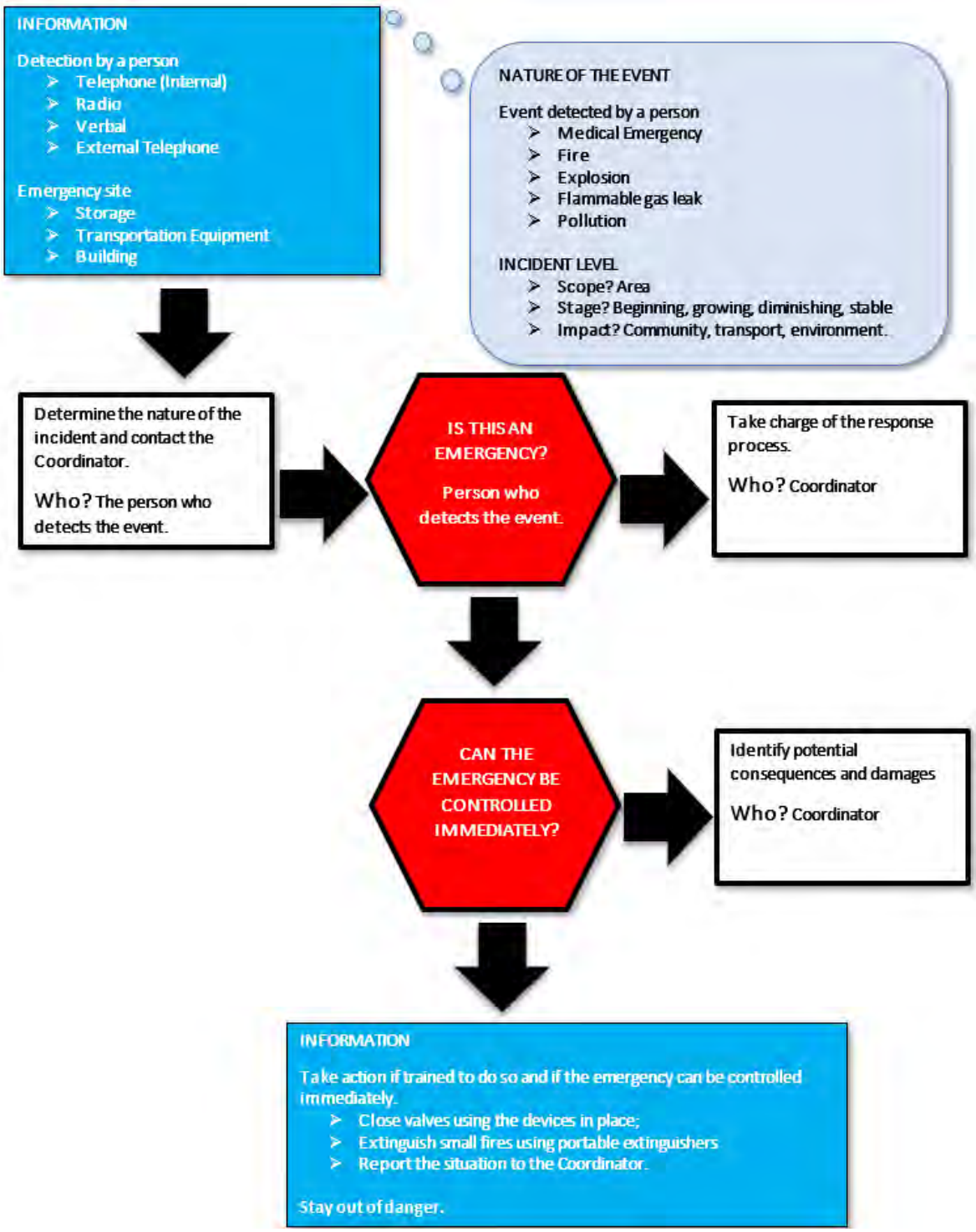
The Touquoy Gold Mine is located approximately 110 km northeast of Halifax in the Moose River Gold Mines District in Halifax County, Nova Scotia. The Touquoy Property covers an area of approximately 1,760 ha.

Name and Company Description	Touquoy Mine site – Gold mine consisting of an open pit, a tailings management facility, milling facility, waste rock storage area and administrative offices
Address	409 Billybell Way, Mooseland
City/Municipality	Middle Musquodoboit, Halifax Regional Municipality, Nova Scotia
Postal Code	B0N 1X0
Telephone Number	902.384.2772
Coordinates	44º59’24.68”N 62º56’08.53”W

1.6 Emergency Response Management Model

- AMNS is the first-level responder in the event of an emergency situation at the Touquoy Mine site. However, the Halifax Regional Municipality is the first level of government to respond in an emergency situation and it is responsible for managing the emergency response if an incident occurs on its territory.
- AMNS implements procedures to limit the impacts of an emergency situation, and may call upon the municipality’s support in containing the cause of an incident.
- AMNS responders help control an emergency situation by advising municipal responders in order to facilitate their work.

1.7 Assessing the Situation and Issuing the Alert



2. DEFINITIONS

Term	
Accident	Any unplanned or undesired event that causes harm to health, the environment, or property.
Alternative Accident Scenarios	An alternative scenario represents other potential accidents that could occur in the event a hazardous substance is released. This scenario takes into account the proximity or interconnection of vessels containing the substance involved. It also takes into account passive and active mitigation measures.
BLEVE: (Boiling Expanding Vapour Explosion)	A BLEVE is caused by the catastrophic failure of a pressurized vessel containing a liquid whose temperature highly exceeds its atmospheric boiling point. In short: • Explosion (bursting) of a vessel containing an overheated liquid • The presence of a combustible product is an aggravating factor • Involves a rapid Vapourization of the liquid
CAS	Chemical Abstract Service – a division of the American Chemical Society in the United States, which assigns chemicals a unique identification number that is used internationally.
Danger	An intrinsic property of a substance, agent, energy source or a situation which could cause undesirable consequences. Major Industrial Accidents Reduction Council (MIARC) guide (2007) – Organization for Economic Cooperation and Development (OECD) Guiding Principles for Chemical Accident Prevention, Preparedness and Response. 2003.
Damages	Consequences that may cause physical injuries, or harm to health, or damage to property or the environment.
Emergency Response Plan (ERP)	A written document that sets out the procedures to be followed in case of an incident, the responsibilities of the response team, and the resources available. The document also contains a specific response plan for situations involving propane.
Emergency	An emergency is an unusual situation that requires extraordinary measures to be taken as quickly as possible to limit damages caused to persons, property, or the environment.
Evacuation Procedure	An indoor plan of all floors (to scale) and a specific action plan for the safe evacuation of occupants in case of an incident.
Flash Fire	Combustion of a flammable air/gas mixture that produces a short-term thermal radiation with negligible overpressure. Centre for Chemical Process Safety 2010 - (Guidelines for Vapour

Term	
	Cloud Explosion, Pressure Vessel Burst, BLEVE and Flash Fire Hazards)
Hazardous Substances	Toxic, flammable, explosive or reactive substances
Mitigation Measures	Equipment and/or procedures intended to minimize the impact of an accident on the public and on sensitive areas ACTIVE: Systems intended to lessen the consequences of an accident on the public and on sensitive areas and that require human intervention or external mechanisms or energy sources. PASSIVE: Systems intended to lessen the consequences of an accident on the public and on sensitive areas, but that do not require human intervention, external mechanisms or energy sources.
Overpressure	Overpressure following an explosion **20.89 kPa (3 psi)**: may cause significant damages to steel building structures, which may lead to a collapse. **6.89 kPa (1 psi)**: may cause significant damages to load-bearing walls (brick or wood walls, with 90% of windows broken), which may lead to a collapse. **2.09 kPa (0.3 psi)**: may cause window breakage, which may cause injuries due to flying glass fragments (10% of windows broken). This corresponds to the impact distance to which fragments may be projected.
Recovery TIME	Time required to return to a normal situation after an emergency situation. The emergency response plan usually includes measures for minimizing recovery time.
Risk	Result of the probability of an accident and its consequences
Risk LEVEL	An incident's risk level is determined by the combination of its probability class and severity level. (MIARC Guide for Risk Management of Major Industrial Accidents 2007)
Sensitive Areas and Populations	Sensitive areas and populations are elements that are external to an establishment and that could be affected during an accident, e.g. residential areas, storage areas for chemical products, hospitals, teaching institutions, communication lines, specific natural sites, ecological zones, drinking water supply, groundwater, etc.
VCE, Vapour Cloud Explosion	Combustion of a flammable air/gas mixture at a more rapid rate than in a flash fire (often due to a flame's interaction in a congested or confined space), resulting in the development of an overpressure (i.e., blast wave). Most VCEs are deflagrations (low overpressure) Centre for Chemical Process Safety 2010 - (Guidelines for Vapour Cloud Explosion, Pressure Vessel Burst, BLEVE and Flash Fire Hazards), p. 4)

Term	
Worst-Case Scenario	This accident scenario represents the release of the greatest quantity of a hazardous substance, held in the largest container, whose impact distance is the greatest. Whether the substance is toxic or flammable, conditions are preset to develop worst- case scenarios. These standard conditions include weather conditions, the choice of the container, the duration of the release, and the product's quantity. In the case of interconnected containers, the largest container, and not all containers, is used to establish the worst-case scenario. (Implementation Guidelines for the Environmental Emergency Regulations 2011, Annex 5 and the 2007 MIARC Guide).

3. RESPONSIBILITIES

During an emergency, the following personnel have been assigned specific roles and responsibilities. For further information on roles and responsibilities detailed herein, please refer to the Site Emergency Response Plan (AGC-PLN-HS-001) Section 3.

General Manager	• Ensure appropriate resource availability for Emergency Response Team (ERT) • Responsible for timely and effective communication of events as per reporting and notification structure • Liaise with regulatory agencies when required including Nova Scotia Environment (NSE), Labour and Advanced Education Nova Scotia Occupational Health & Safety Division (LAE NS OHS Division), Department of Natural Resources (DNR), etc.
Department Manager	• Provide timely and effective communication of ERP to department personnel • Participate in timely and effective communication during an event as per reporting and notification structure and procedures
Emergency Response Coordinator (ERC)	• Act as liaison between ERT, H&S Manager & Environment Manager • Provide scene control and direction in the event of an emergency • Establish response plans for emergency events • Act as ERT team lead and provide resource support in the form of training, information and guidance for ERT members • Ensure ERT is adequately prepared and trained to respond to emergency events • Establish inspection protocols for ERT controlled supplies and equipment ensuring sufficient supplies are on site in preparedness for a potential emergency event • Provide secondary assistance as medical first responder if necessary • Maintain direct oversight of site ERT programming

	• Properly don supplementary PPE when working in hazardous areas during an emergency
Emergency Response Team (ERT)	• Act as first responders in the event of an emergency • Provide area control in specific emergency circumstances • Work under the direction and oversight of the ERC • Participate in training and emergency response professional development as deemed necessary by the ERC • Respond in a timely manner and as directed to emergency calls while on site • Ensure ERT equipment inspections are completed and documented routinely • Properly don supplementary PPE when working in hazardous areas during an emergency
Health & Safety Department	• Act as liaison between ERC and site management; chiefly the site General Manager • Provide situational updates as necessary and as per notification and reporting procedures • Liaise with external regulators • Provide secondary assistance to ERC in regards to scene control and ERT direction as necessary • Maintain functional oversight of site ERT programming, training and development • Provide resource support to ERC and ERT as requested • Properly don supplementary PPE when working in hazardous areas during an emergency • Ensure that the ERP is updated • Prepare detailed report after every exercise and emergency
Superintendent / Supervisor	• Ensure availability of ERT members in the event of an emergency (in a timely manner) • Act as liaison between ERC, Environmental Manager and Department Manager if necessary • Provide area subject matter expertise as requested during an emergency event; provide direct support if requested
Security Department	• Establish area or boundary control as requested during an emergency event • Communicate with emergency services providers as requested (situationally dependent) • Properly don supplementary PPE when working in hazardous areas during an emergency
Environment Department	• Act as liaison between ERC and site management as required in any type of environmental event • Provide situational updates as necessary and as per notification and reporting procedures related to environmental events

	• Liaise with external environmental regulators • Provide secondary assistance to ERC in regards to scene control and ERT direction as necessary during environmental events • Assist as subject matter experts related to spills and remediation
Human Resources Department	• Provide personnel information to emergency services if necessary
Employees / Business Partners	• Review and acknowledge requirements and procedures outlined in Emergency Response Plan • Actively participate in AMNS safety programing to ensure due diligence is practiced in the prevention of emergency events • Properly don supplementary PPE when working in hazardous areas during an emergency • Evacuate as directed in a fast, safe manner and await further instructions including “All Clear” in the event of an emergency

4. PREVENTATIVE MEASURES

4.1 Existing Control Measures

The equipment is installed correctly according to regulations. Equipment installation and maintenance is the responsibility of Irving Energy. Delivery drivers complete a visual inspection of the tanks upon delivery of product. A qualified technician conducts a visual inspection of the tanks every four to six (6) weeks, utilizing the Plant/Dispenser Inspection Check List (Appendix A). Irving also services the vaporizers twice annually.

Other existing control measures currently being applied for the propane storage and distribution system at the Touquoy Mine site include:

- The propane tank and pipes are painted, not corroded, and in good condition;
- The vegetation around the propane storage area is controlled;
- The propane tank and associated installations (i.e. pipes) are protected against vehicle damage;
- Placards installed around the installation identifying the product;
- Emergency shut off;
- Security measures for the propane tank are in place and include;
    - pressure gauge/regulator
    - an internal excess flow valve;
    - an emergency shut off button (located inside the plant – South East corner);
    - relief valve;
    - breakaway coupling.

In the event of an accident, such as a broken hose or excessive flow rate, these measures will limit the amount of propane released to the atmosphere to the quantity contained in the hose. In addition, the emergency button allows pumps and valves on propane pipes to be shut down. This mechanism is

equipped with pressurized tubing that keeps the valves open. In the event of a fire, this polymer tubing melts, releasing the nitrogen pressure, and causing the immediate shutoff of all propane loading and unloading valves.

Another safety component is the installation of a secondary control device on the quick-closing internal valve. This device is composed of a fuse wire or plug whose melting point is not higher than 220ºF (105ºC) and which, when it melts, causes the internal valve to close in the event of a fire.

See Appendix B for the propane tank skid and equipment layout.

5. IDENTIFICATION OF POTENTIAL ACCIDENT SCENARIOS

5.1 Basic Information on Propane

For additional information on propane, see the Safety Data Sheet (SDS) included in Appendix C of this manual.

- The CAS registry number for propane is 74-98-6.
- Propane is colorless gas with a faint odor at high concentrations;
- Fuel grades contain mercaptans that give propane an unpleasant smell;
- Propane is **EXTREMELY FLAMMABLE GAS**. It is a **LIQUID PRESSURIZED GAS**;
- Propane is classified as a simple asphyxiant (can replace oxygen available for breathing);
- Propane is slightly soluble in water (62 ppm at 25ºC);
- Frostbite may occur during fast evaporation of liquid propane from a cylinder;
- When subject to fire, tanks, cylinders and tankers can rupture violently and project fragments;
- Propane in its natural state is a gas with a boiling point of -42ºC;
- One (1) litre of liquid propane equals to 270 litres of propane gas;
- Propane is denser than air and will spread over the ground and follow contours of the terrain until its temperature reaches the ambient temperature;
- Propane tends to form a dense cloud of gas in normal atmospheric conditions;
- When propane is spilled, it will accumulate at the lowest points before slowly dispersion to fill the rest of the space;
- Propane related risks are higher in enclosed space due to the possibility of being exposed to an ignition source.

5.2 Facility location and surroundings

- Area of the mine site: approximately 10 km²
- Distance from tanks to Moose River road: 0.4 km
- Distances between tanks and the milling complex and associated buildings: 50 metres (milling complex) to 500 metres (administration building)
- Distance between tanks and the reagent building: 35 m
- Distance between tanks and fuel tanks: 310 m
- Distance between tanks (E2) and other tanks (non-E2): 100 m

- Maximum amount of propane anticipated at any time within a calendar year: 81.38 tonnes (includes E2 regulated tanks and others)
- Capacity of the largest propane vessel: 18,000 USWG
- Number of tanks: 6 (Two E2 regulated tanks)
- Quantity of available water: 14 hydrants (1000 gpm/each)

No sensitive areas (i.e. schools, hospitals, residential areas) are noted near the propane tanks storage area. Other industrial buildings such as the milling complex, administration office, truckshop/warehouse, laboratory and crushed ore storage are located within a 500 metres radius. A plan view of the propane tank installation in relation to other buildings, property limits, roads, and fences as well as the muster point location during a propane related emergency is detailed in Figure 5-1.

Refer to Figure 5-2 for a detailed site plan of the mill grounds showing fire hydrant locations, locations of fire protection and emergency response equipment locations and buildings. For additional information on emergency equipment locations, please refer to Site ERP - Appendix 3.

Figure 5.1 General Site Plan

V:\1216\active\121619250\1_geotechnical\3_drawings_logs\600_TOUQUOY\SHEET FILES\13_PROP_ERP\C19250_PROP_ERP_FIG_5-1_REV1.dwg

THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

Reference:
Esri, HERE, DeLORME, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, © 2018 Microsoft Corporation ©2018 DigitalGlobe ©CNES (2018) Distribution Airbus DS © 2018 HERE.

GENERAL SITE PLAN

TOUQUOY GOLD PROJECT

HALIFAX COUNTY, NOVA SCOTIA

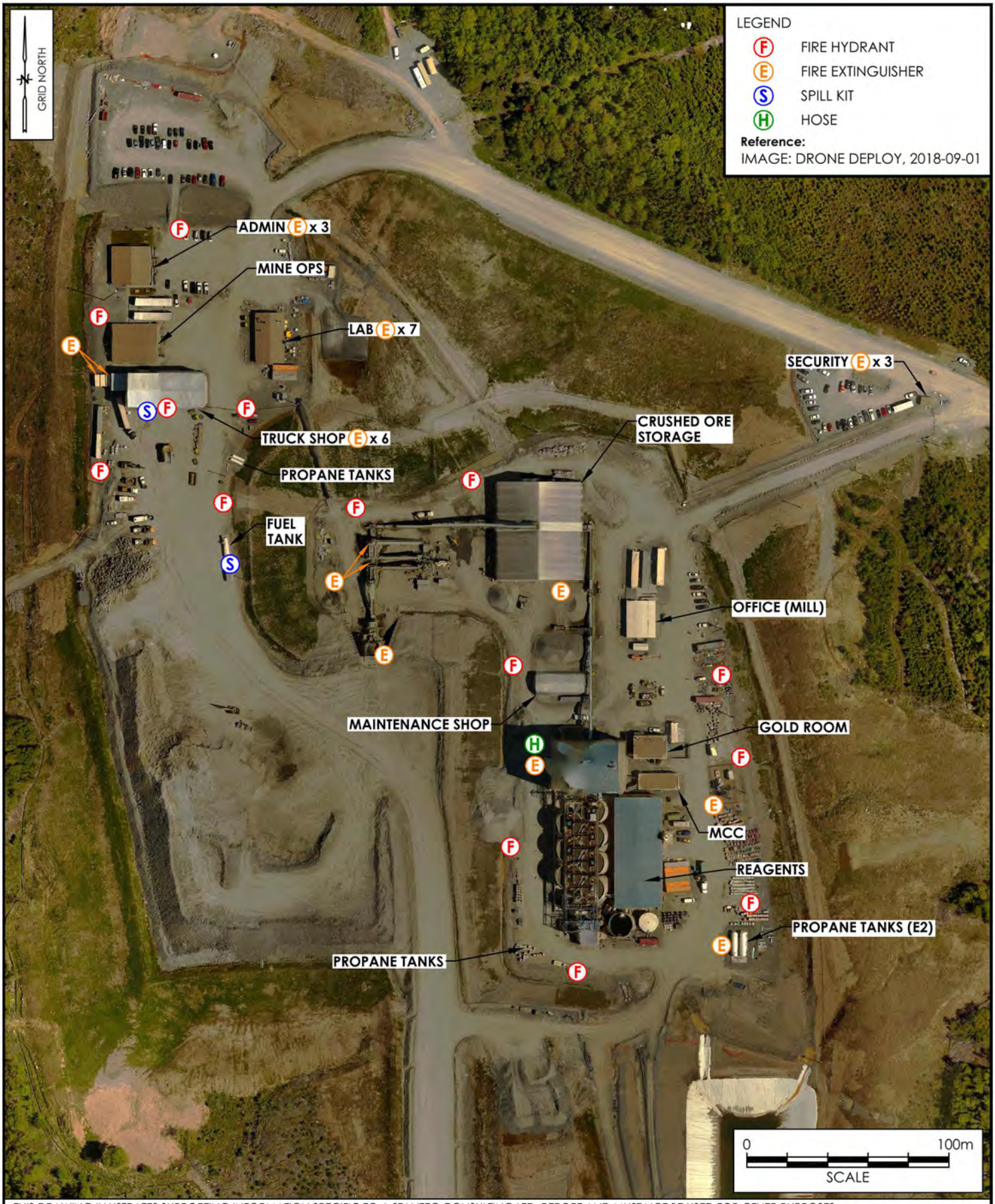
Client: ATLANTIC MINING NS CORPORATION

Job No.:	121619250
Scale:	1 : 12,500
Date:	2018 11 23
Dwn. By:	JL
App'd By:	EA

Fig. No.: 5-1

Stantec

Figure 5.2 Emergency Response Equipment Locations



EMERGENCY RESPONSE EQUIPMENT LOCATIONS

TOUQUOY GOLD PROJECT

HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC MINING NS CORPORATION

Job No.:	121619250
Scale:	1 : 2500
Date:	2020 08 17
Dwn. By:	JL
App'd By:	EA

Fig. No.: 5-2

Stantec

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5.2.1 Storage and Distribution System

Tank No.	Tank Location	Product	Liquid Type	CAS #	Capacity (tonne)
1*	South east of milling complex	Propane	Flammable	74-98-6	33.6 (18,000 USWG)
2*	South east of milling complex	Propane	Flammable	74-98-6	33.6 (18,000 USWG)
3	North west of the milling complex (truck shop)	Propane	Flammable	74-98-6	3.4 (1800 USWG)
4	North west of the milling complex (truck shop)	Propane	Flammable	74-98-6	3.4 (1800 USWG)
5	South west of the milling complex	Propane	Flammable	74-98-6	3.74 (1000 USWG)
6	South west of the milling complex	Propane	Flammable	74-98-6	3.74 (1000 USWG)
7	South west of the milling complex	Propane	Flammable	74-98-6	3.74 (1000 USWG) 74-98-6

***Triggers E2 Regulations**

5.2.2 Surrounding Properties

The Project site encompasses most of the previous Moose River Gold Mines, a former gold mining community with a peak population of up to 5000 during its most productive period in the late 1800s (CRA, 2007). By the 2000's the population was less than 30 and the area is noted to have numerous vacant dwellings (Stantec, 2017). By October 2006, the permanent population of Moose River Gold Mine was eight and since the development of the new open pit, no permanent population remain in the immediate vicinity of the mine site.

A small museum, which was the former schoolhouse and today operates in the summer months under the auspices of the Musquodoboit Valley Tourism Association remain near the main entry point to the mine site off Moose River road.

Moose River Road is a provincially designated road which divides the mine site area in two and travels from east to west. The majority of the mine site is surrounded by wooded areas, cut blocks and natural features such as lakes and watercourses.

5.2.3 Processes and Activities

The two Propane tanks that trigger the E2 Regulations at the Touquoy Gold Mine site are used to heat the milling complex, as well as supply gold processing equipment such as regeneration kiln burners (x3), an elution burner, and a barring furnace burner.

5.3 Worst Case Scenario

Since propane exceeds the threshold quantities under the E2 Regulations, an offsite consequence analysis is required. In order to calculate worst-case scenario distances for the Touquoy site, a web-based software called RMP*Comp™ was used.

RMP*Comp is an offsite consequence analysis program developed jointly by the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency (EPA).

The worst-case scenario assumes the explosion of all propane contained in the largest tank with a TNT factor of 10%. The largest tank at Touquoy has a capacity of 33,600 kg. Since the two largest tanks at Touquoy are installed side-by-side, it was assumed that both tanks would explode if one were to explode. As such, a second, more realistic worst-case scenario was calculated using 67.2 tonnes (i.e. 2 x 33.6 tonnes) of propane. Both scenario results are shown in Figure 5-3.

Scenario Summary:

- Scenario type: Worst-case
- Threat type: Flammable gas
- Physical state: Liquified under pressure
- Quantity released:
    - Scenario 1- 33,600 kg; and
    - Scenario 2- 67,200 kg
- Release type: Vapour cloud explosion

Assumptions About the Scenario (taken from RMP*COMP results):

- Wind speed: 1.5 metres/second
- [1]Stability class: F

[1] Pasquill atmospheric stability classes – commonly used method of categorizing the amount of atmospheric turbulence present. Atmospheric turbulence categorized into six stability classes named A, B, C, D, E and F with class A being the most unstable or most turbulent class, and class F the most stable or least turbulent class.

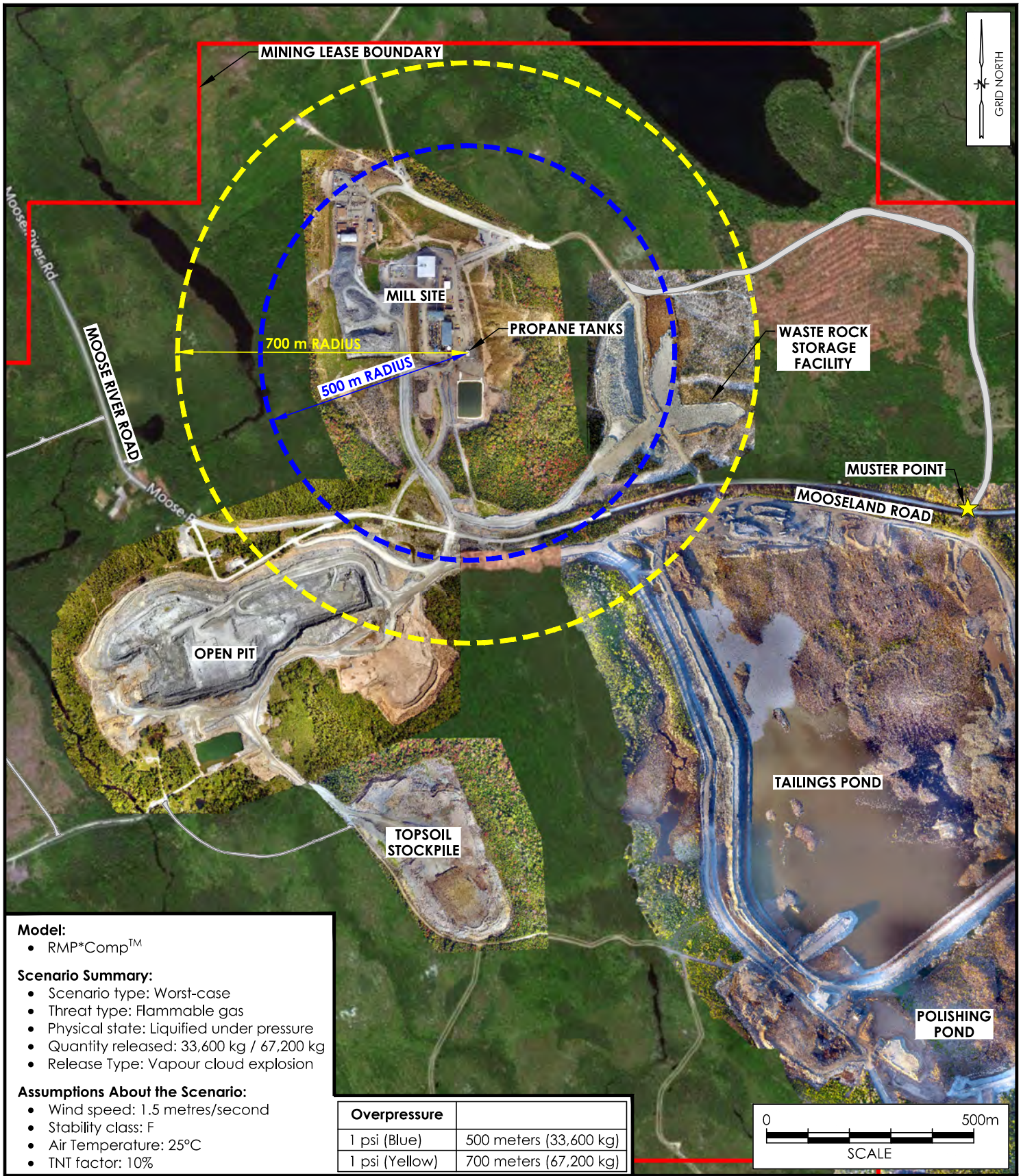
- Air Temperature: 25 °C
- TNT factor: 10%

Results:

- Scenario #1 - For a tank capacity of 33,600 kg (i.e. 1 x 33.6 tonnes), the distance to 1 psi (69 kPa) overpressure is **0.5 kilometres**.
- Scenario #2 - For a tank capacity of 67,200 kg (i.e. 2 x 33.6 tonnes), the distance to 1 psi (69 kPa) overpressure is **0.7 kilometres**.

Excluding on-site mining personnel and infrastructure as well as a portion of Moose River Road, the public nor public infrastructure should be affected by the explosion(s) as currently modeled.

Figure 5.3 Worst Case Scenario – Propane Blast Radius



Model:
- RMP*Comp™

Scenario Summary:
- Scenario type: Worst-case
- Threat type: Flammable gas
- Physical state: Liquified under pressure
- Quantity released: 33,600 kg / 67,200 kg
- Release Type: Vapour cloud explosion

Assumptions About the Scenario:
- Wind speed: 1.5 metres/second
- Stability class: F
- Air Temperature: 25°C
- TNT factor: 10%

Overpressure	
1 psi (Blue)	500 meters (33,600 kg)
1 psi (Yellow)	700 meters (67,200 kg)

Reference:
Esri, HERE, DeLORME, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, © 2018 Microsoft Corporation ©2018 DigitalGlobe ©CNES (2018) Distribution Airbus DS © 2018 HERE.

WORST CASE SCENARIO - PROPANE BLAST RADIUS

TOUQUOY GOLD PROJECT

HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC MINING NS CORPORATION

Job No.:	121619250
Scale:	1 : 12 500
Date:	2018 11 22
Dwn. By:	JL
App'd By:	EA

Fig. No.: 5-3

Stantec

V:\1216\active\121619250\1_geotechnical\3_drawings_logs\600_TOUQUOY\SHEET FILES\13_PROP_ERP\C19250_PROP_ERP_FIG_5-3_REV1.dwg

5.4 Alternative Accident Scenarios

Alternative scenarios take into consideration the proximity and the interconnection of the tanks that hold the substance. It takes into account passive and active mitigation measures.

5.4.1 Possible Accident Scenarios Include:

- Leak through hoses during transfer from truck to tank or tank to truck;
- Leak from a gasket;
- Leak at one of the pumps;
- Broken or torn away hose;
- Broken or torn away pipe;
    - The most probable consequence of the above scenarios is a flash fire or a flashback. The effect will be a thermal radiation at short distance. Overpressure in these cases is negligible. The gas cloud from these scenarios could cause an explosion (Vapour Cloud Explosion) if the gas release is in a congested or confined space. This is unlikely to occur at Touquoy due to the outdoor tank installations.
- Tank BLEVE (Boiling Expanding Vapour Explosion).
    - A BLEVE could occur when a tank containing pressurized liquid ruptures. When this accident occurs, it may cause a fire ball that produces extreme heat. This scenario is reduced by the implementation of safety mechanisms, proper maintenance and site safety measures, thus reducing the risk of an occurrence at Touquoy.
- VCE (Vapour Cloud Explosion).
    - A VCE occurs when a component fails and releases an explosive gas cloud which may ignite if the air-gas mixture falls within flammability range. The force of an explosion and its consequences depend on the immediate environment (i.e. confined or congested). Most VCE's are deflagrations (weak overpressure).

5.4.2 Selected alternative scenario:

After a review of the tank design, it was determined that an applicable alternative scenario would be due to broken or torn-away piping during tank filling. According to a tank drawing provided by Irving Energy, the filling piping is 75 millimeter (mm) diameter (Appendix B). Therefore, an uncontrolled release from the filling piping was also simulated using RMP*COMP. A release was assumed to occur from only one of the tanks for the alternative scenario. The primary hazard for the torn-away pipe is from a jet fire or flash fire. The extent of a jet fire or flash fire is characterized by the lower flammability extent of the Vapour cloud that occurs during the release. The selected scenario result is shown in Figure 5.4.

Scenario Summary:

- Scenario type: Alternative Case
- Threat type: Flammable gas
- Physical state: Liquified under pressure
- Quantity source: 33,600 kg

- Release type: Vapour cloud fire

Assumptions About the Scenario (taken from RMP*COMP results):

- Wind speed: 3 metres/second
- Stability class: D
- Air Temperature: 25 °C

Results:

For a tank capacity of 33,600 kg and a hole diameter of 75 mm, the maximum distance to the flammable limit was predicted to be **0.2 kilometres**.

Excluding on-site mining personnel and infrastructure, neither the public nor public infrastructure should be affected by the hazard for the alternative case as currently modeled.

Figure 5.4 Alternative Accident Scenario

Model:
- RMP*Comp™

Scenario Summary:
- Scenario type: Alternative-case
- Threat type: Flammable gas
- Physical state: Liquified under pressure
- Quantity released: 33,600 kg
- Release Type: Vapour cloud fire

Assumptions About the Scenario:
- Wind speed: 3 metres/second
- Stability class: D
- Air Temperature: 25°C

Lower Flammability Limit (LFL)
- 36 mg/L

Reference:
Esri, HERE, DeLORME, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, © 2018 Microsoft Corporation ©2018 DigitalGlobe ©CNES (2018) Distribution Airbus DS © 2018 HERE.

ALTERNATIVE ACCIDENT SCENARIO

TOUQUOY GOLD PROJECT

HALIFAX COUNTY, NOVA SCOTIA

Client:	ATLANTIC MINING NS CORPORATION
Job No.:	121619250
Scale:	1 : 10 000
Date:	2018 11 23
Dwn. By:	JL
App'd By:	EA
Fig. No.:	5-4

Stantec

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6. SPECIFIC RESPONSE PLANS

6.1 Response Equipment

Emergency supplies locations are described in detail in Appendix 3 and 4 of AMNS Emergency Response Plan. For the purpose of this plan, equipment supplied on-site by AMNS is listed herein.

- First aid kits
- Spill kits
- Fire extinguishers
- Fire hydrants & Hoses

Refer to Figure 5-2 of this report for emergency response equipment locations.

6.1.1 Equipment and manpower supplied by Irving Energy

As the owners of the on-site propane tanks, Irving has identified that they are responsible and accountable for all equipment and personnel provision in the event of a propane related emergency as per Irving's Emergency Response Assistance Plan (ERAP) #2-0010-039.

6.2 Emergency Procedures – Propane Related

For general site emergency response procedures and communications, refer to the Site ERP. For emergencies related to propane, the following procedures are outlined to specifically deal with propane related incidents. Furthermore, this plan covers all of Irving owned tanks located at the Touquoy mine site. As such, **during a propane related emergency, Irving has directed Atlantic Gold to close valves if safe to do so, call 911, and contact Irving (1-888-310-1924) which will evoke their E2 plan.**

6.2.1 Procedure for a building fire not involving propane

For information on how to handle a fire not involving propane, refer to the Site Emergency Response Plan: Appendix A2.5 – Fire Fighting.

6.2.2 Procedure for a fire during propane transfer tanker to tank/tank to tanker

If you discover a fire:

1. Stay calm and do not yell fire;
2. If possible, shut off the following valves, without putting yourself at risk:
    a. Transfer motor (pump)/truck engine
    b. Supply valve
    c. Emergency valve
    d. Secondary shut off
3. Evacuate everyone from the danger zone and notify anyone at the site of the situation;
4. Call Channel 7 to notify Security. Specify when the fire was found and whether it has spread to propane tanks;

5. Move away and go to the appropriate safe muster point (located outside the 0.7 km worst case scenario radius – intersection of Billybell Way and Moose River Road);
6. Notify Irving Energy (gas and installation supplier);
7. Reporting – refer to Section 8 of this document for further reporting instruction.

For additional information on how to handle a fire during a propane transfer, refer to the Site Emergency Response Plan: Appendix A2.21 – LPG Release.

6.2.3 Procedure in the event of a propane leak or spill

Gas can start leaking at any time of the day or night. The employee who detects the leak must notify Security as soon as possible who will then notify the Emergency Response Team (ERT) Coordinator and others, as required.

As soon as a gas leak is detected:

1. Shut off the gas flow to the leak without putting yourself at risk;
2. Keep unauthorized people away;
3. Call Channel 7 and report the incident to Security;
4. For all major leaks: immediately evacuate the area.
5. Notify Irving Energy (gas and installation supplier);
6. Prevent gas from entering low lying areas, basements and low confined spaces since propane fumes are heavier than air and will spread at ground level until they collect in a low spot or in a confined space;
7. Ensure that the area around the leak is well ventilated to prevent fumes from concentrating to the point where they become explosive;
8. Eliminate all possible ignition sources, including those that are not normally considered a risk;
9. Refer to the SDS for propane for more details (Appendix C);
10. Coordinate the response in cooperation with the fire department;
11. Reporting – refer to Section 8 of this document for further reporting instruction.

For additional information on how to handle a propane leak or spill, refer to the Site Emergency Response Plan: Appendix A2.21 – LPG Release.

6.2.4 Procedure in the event of an ignited propane leak

1. Keep unauthorized people away;
2. Call Channel 7 to notify Security;
3. Move away and go to the appropriate muster point (located outside the 0.7 km worst case scenario radius – intersection of Billybell Way & Moose River Road);
4. Notify Irving Energy (gas and installation supplier);
5. Reporting – refer to Section 6 of this document for further reporting instruction.
   FIRST, STOP THE LEAK AND THEN THE FIGHT THE FIRE.
6. Do not try to put out the fire unless the fuel feed is shut off. Otherwise, the fuel could explode and start burning again. If you must get close to the tank to shut off the gas, <u>always approach from the side, never from the ends</u>.
7. If flames are touching the tank, **EVACUATE THE AREA IMMEDIATELY**.

8. **If the tanks are exposed to heat but not in direct contact with flames:**
    a. If you do not have the proper equipment or if Touquoy personnel have not been properly trained, immediately evacuate the area.
    b. If Halifax Fire Service arrives on-site, they can spray water uniformly over the tank to cool it and reduce the pressure inside. If not enough water is available to cool down the tank, watch it carefully to observe if the fire gets bigger and the pressure relief valve is hissing louder. **THIS IS THE SIGNAL TO EVACUATE THE AREA IMMEDIATELY**.

For additional information on how to handle an ignited propane leak, refer to the Site Emergency Response Plan: Appendix A2.5 – Fire Fighting.

6.2.5 Evacuation procedure

When the general alarm sounds or the order to evacuate is given (Propane Related):

1. Immediately stop all activities;
2. Eliminate all ignition or heat sources if possible, but without putting yourself at risk;
3. Evacuate the building through the closest emergency exit;
4. Follow any directions given;
5. Close doors behind you;
6. Go the indicated muster point (located outside the 0.7 km worst case scenario radius – intersection of Billybell Way & Moose River Road);
7. Wait for the authorization to return to the area and resume activities.

Never:

1. Take time to collect personal effects or clothing;
2. Go back inside for any reason.

For additional information on how to proceed with an evacuation alert, refer to the Site Emergency Response Plan: Appendix A2.1 – Evacuation.

6.2.6 Procedure in the event of an earthquake

1. In the event of an earthquake, protect yourself from falling objects.
2. If possible, stay at least six metres away from any window in case the glass shatters.
3. Do not leave the premises until you have been told to do so by the ERT Coordinator unless you are in danger.

Once the evacuation order has been given:

4. Stay calm;
5. Watch for debris, electrical wires, broken glass and other objects that present a threat;
6. Follow directions to the letter;
7. Go to the appropriate safe muster point;
8. Do not re-enter the building until the ERT Coordinator gives the all clear.
9. During the earthquake, pipes, fittings, and other components on the tanks may have been damaged and may require repairs. When safe to do so, shut off propane supply to the mill until

the tanks and associated components have been inspected by a certified technician and given the all clear.

For additional information on how to proceed in the event of an earthquake, refer to Atlantic Gold Emergency Response Plan: Appendix A2.17 – Natural Event.

6.2.7 Procedure in the event of a power failure

Refer to Atlantic Gold Emergency Response Plan: Appendix A2.25 – Power Failure.

6.2.8 Procedure in the event of a ruptured hose

Assessment of the situation:

1. Evidence of a leak:
    a. Visible propane cloud
    b. Sound of leaking gas
    c. Liquid propane puddle

2. Emergency communications:
    a. Call 911, depending on the size of the leak
    b. Notify employees in the affected area
    c. Call ECCC and provincial authorities
    d. Call Irving Energy (i.e. propane supplier)

3. Goals of the response:
    a. Rescue
    b. Control vapours/liquids
    c. Evacuate
    d. Ventilate the area
    e. Eliminate ignition sources
    f. Contain hazard

4. Contain hazards – liquid propane:
    a. Conditions can change quickly, be aware of surroundings at all times.
    b. Shut off supply
        i. Dispenser nozzle, remote controller, main valve, PTO, etc.
    c. Control liquid propane to prevent it from entering into sanitary or storm water systems, low points, etc.
    d. If it can be done safely, spray water to dissipate liquid and contain Vapours.

5. Reduce risks – propane Vapour:
    a. Shut off supply source.
    b. Spray water mist to dissipate Vapours and move away from buildings, vehicles, and ignition sources.
    c. Control and plug leak(s).
    d. Eliminate gas from the area.

6. Remove damaged equipment:
    a. Make sure that flammable Vapours are no longer present.
    b. Remove damaged equipment from the area.

7. Perform a post-incident analysis:
    a. An analysis must be performed immediately after the incident, and all responding parties must take part in drafting the report.

For additional information on how to proceed in the event of a ruptured hose, refer to the Site Emergency Response Plan: Appendix A2.8 Hazardous Substance Release (Other than Cyanide); Appendix 2.20 – Hazardous Substance Release and Appendix A2.21 – LPG Release.

7. RECOVERY RESTORATION

After a product release emergency has occurred on the site, various measures may be required:

- Assess the damage and notify the emergency teams and the public in an open and transparent manner. Refer to Section 6 of this document for further notification and communication procedures;
- Establish a system that can provide access to the necessary material and human resources in an efficient and timely manner;
- If necessary, complete subsurface investigations and/or remediation of impacted soil, groundwater or surface water;
- If necessary, the removal and disposal of impacted soil, groundwater or surface water or spilled petroleum products must be carried out in accordance with existing environmental regulations and the industrial approval (IA);
- The storage tank system must be fully inspected, with any damaged components repaired or replaced before the storage tank system is put back into service. Dependent on the extent of the damage, particularly if the product release emergency was also associated with a fire emergency, it may be necessary to remove the product (i.e. propane) from the storage tank system and replace the entire system;
- A temporary storage tank system may be required for the site until the damaged system is inspected and repaired or replaced;
- Depending on the nature and circumstances of the product release emergency, it may be necessary to revise the storage tank system's operations, inspection and/or maintenance procedures or to revise the emergency plan. This will be established post-incident during a debriefing session including appropriate site personnel, contractors and incident responders;
- Seek outside help if required in order to facilitate the restoration process.

7.1 Organization of Emergency Measures

7.1.1 Emergency Response Model

The emergency response model described herein is based on the Site Emergency Response Plan (Figure 7-1).

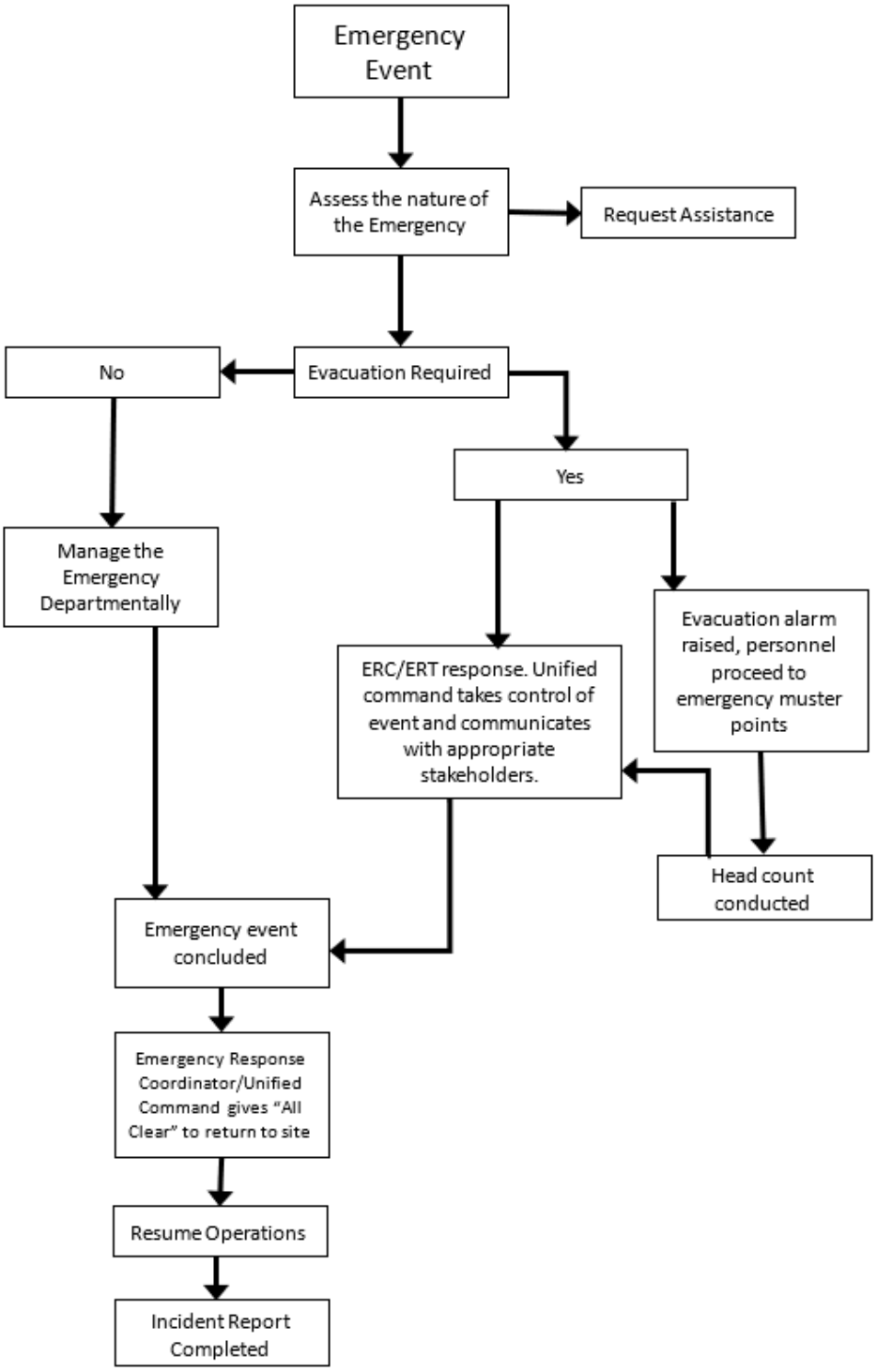


Figure 7-1 Emergency Response Management (AG ERP, 2018)

8. NOTIFICATION AND COMMUNICATION

Notification and communication during an emergency is detailed in Atlantic Gold Emergency Response Plan (AGC-PLN-HS-001) Section 6.3.

8.1 Emergency event notification

Please refer to Atlantic Gold Emergency Response Plan Section 6.3.1 for further details on "Emergency Event Notification".

8.2 Emergency communication

24 Hour Emergency Contact Numbers

Fire/Police/Emergency Health Services (Ambulance)	911
Irving Energy (Propane)	1-888-310-1924
Nova Scotia Environment	1-800-565-1633
Occupational Health and Safety Nova Scotia	1-800-952-2687
Poison Control	1-800-565-8161
Environment and Climate Change Canada (24 hours)	1-800-565-1633
Transport Canada (CANUTEC) (24 hours)	1-888-226-8832
Nova Scotia Power	1-800-428-6230
Halifax Fire (non-emergency)	902-490-5530

AMNS Contact Numbers

Department	Function	Phone
All	General Manager	902-384-3603
All	Communications Manager	902-407-0817
Health & Safety	H&S Manager	902-384-3691
Environment & Community	Manager Environment & Community	902-384-3616
	Environment Superintendent	902-384-3611
Security	Security Manager	902-384-3629
Mine	Mine Superintendent	902-384-3672
Mill	Mill Operations Superintendent	902-384-3655

Local Stakeholders

Middle Musquodoboit RCMP (non-emergency)	902-384-3401
Musquodoboit Rural High School	902-384-2320
Parker's Esso	902-384-2844

Please refer to the Site Emergency Response Plan Section 6.3.2 for further details on "Emergency Communication".

8.3 Emergency Command Structure

Please refer to the Site Emergency Response Plan Section 6.3.3 for further details on "Emergency Command Structure".

9. PROPANE EMERGENCY RESPONSE PLAN TRAINING AND DRILLS

9.1 Scope

To increase preparedness in the event that the Propane Emergency Response Plan is activated, the ERT Coordinator will provide applicable employees with regular training, so they are familiar with the ERP. Drills will be conducted to confirm that the plan is effective. Drills are conducted to improve first response capability, preparedness and identify areas to improve the plan. Training and drills are used to prepare personnel, to test the ability of the person in charge of the plan to conduct the response effectively, and to demonstrate to governments, agencies, municipalities and the public that AMNS is well prepared to respond.

9.2 Training Requirements

The following is a non-inclusive list of the training that employees will receive, according to the positions they hold. The training program covers procedures, the hazards posed by materials stored at the site, where to find response equipment, how to use that equipment, and how to obtain external resources. This allows employees to maintain their work skills and learn emergency response skills. The training schedule will be determined by management. Details on the training received by each employee are recorded in their employee file. Required training requirements are summarized in Table 9-1.

Table 9-1 Training/Testing requirements

Training	Employee (Title)	Frequency
Propane ERP - Awareness	o Mill leadership and Supervision, o Emergency Response Team Members o Identified Stakeholders (Table 11-2)	Yearly
Propane ERP Testing	o Mill leadership and Supervision, o Emergency Response Team Members	Yearly testing required. This can be testing of one component of the E2 ERP, with a full test of the entire E2 ERP conducted once every five years. (documentation of annual testing is required)
Evacuation Exercise	All	Yearly

10. RELATED DOCUMENTS AND RECORDS

- Atlantic Gold Corporation (2018) - Emergency Response Plan (AGC-PLN-HS-001).

11. REVIEW AND CONTINUOUS IMPROVEMENT

11.1 Version Update and Managing Change

This document contains information that must be kept accurate and up-to-date. As such, this document is issued as a controlled document. Each copy distributed is assigned to a specific location (when applicable, a specific individual). Uncontrolled digital copies are available on Touquoy's shared drive while controlled hard copies of this document are located at the following locations:

- Main Administration Building Health and Safety Office;
- Main Environment Office;
- Mill Operations Superintendent Office;
- Emergency Response Coordinator Office.

This E2 Plan will be updated annually and/or as part of a post-release review following response to a spill or exercise. Maintenance and review of this plan is the responsibility of the Health and Safety Manager. All revisions will be evaluated and distributed to all plan holders by the Health and Safety Department. Report version update summary will be detailed in the Document Revision Record (second page of this document).

11.2 Distribution of Material

In accordance with Section 6(2) of the E2 Regulations:

> 6(2) The person must keep a copy of the plan readily available for the individual who are to carry into effect the plan in the event of an environmental emergency and, if the place where one or more substances are located is a place of work, a copy must be available at that place.

A copy of this plan will be kept with the Health and Safety Manager. Additional copies will be provided to the E2 plan Stakeholders (Table 11-2). The electronic master copy will be saved and maintained by the Health & Safety Department, under the direction of the Health & Safety Manager.

Table 11-1 Distribution List

Individual/Organization	Date Issued
Health and Safety Manager (Owner)	24-Aug-2020
Environment Superintendent	24-Aug-2020
Emergency Response Team (ERT)	24-Aug-2020
General Manager	24-Aug-2020
Mill Operations Superintendent	24-Aug-2020
Security Manager	24-Aug-2020
Site Services Supervisor	24-Aug-2020
Mine Superintendent	24-Aug-2020
Mobile Maintenance Supervisor	24-Aug-2020
Irving Energy	24-Aug-2020
Halifax Fire Station 38	24-Aug-2020

12. REFERENCES

Atlantic Gold Corporation (2018). Emergency Response Plan. AGC-PLN-HS-001. Release date August 1, 2018.

City of Salaberry-de-Valleyfield, Qc, Budget Propane, Conseil pour la Réduction des Accidents Industriels Majeurs (2012). Emergency Response Plan – ERP Model for Propane. Release date December 2012. ISBN: 978-2-922820-00-3.

Conestoga-Rovers & Associates (2007). Environmental Assessment Registration Document for the Touquoy Gold Project – Moose River Gold Mine, Nova Scotia. Prepared for DDV Gold Limited. Release date March 2017. Ref. No. 820933(3).

CSA Group (2015). Propane storage and handling code (B149.2-15). ISBN 978-1-77139-762.9.

Google Earth (2018). Touquoy Mine Site Layout Distances. Consulted on September 12, 2018.

Irving Energy (2018). Emergency Response Assistance Plan (ERAP) #2-0010-039.

National Oceanic and Atmospheric Administration and the U.S. Environmental Protection Agency (2018). RMP*Comp™ https://cdxnodengn.epa.gov/cdx-rmp-maintain/action/rmp-comp;jsessionid=2E010C33DA90461FF2BAAD289D311E29. Consulted on-line on August 30, 2018 and on September 13, 2018.

Stantec Consulting Ltd. (2017). Final – Phase I Environmental Site Assessment Historical Tailings Deposits at the Atlantic Gold Touquoy Gold Project. Moose River Gold Mines, NB. Prepared for Atlantic Gold Corporation. Release date October 6, 2017.

APPENDIX A: PROPANE CHECKLIST

Plant / Dispenser Inspection Check List

Business Name: _____ Date: _____

Address: _____

Items Inspected	OK	NO	N/A		OK	NO	N/A
Tank / Cylinders							
Proper base / hold down bolts				Protection from vehicle impact damage			
Proper clearances to buildings / property lines				Gauges / pressure, temperature, roto gauge			
Test date serial #:				Vegetation / debris			
Relief under dome / cover / rain cap				Relief valve inspected			
(over 2000 using relief stacks)				Fusible links inspected			
Step if fill connection over 5' above grade				Fencing complete and secure			
Tank decal				Tested ISC valves			
Clearances to building openings and sources of ignition				Signage			
				Condition of paint / rusted, peeling			
Equipment							
Condition of equipment				Test emergency shut down system / load rack			
Isolated for vibration				Equipment Operation			
Visible leaks							
Piping / Tubing							
Plastic Underground has visible tracer				Identified every 20 feet			
Wire tape and anodeless risers				Properly supported and clamped			
Steel Underground piping / catholic protection records				Approved fittings / valves			
Expansion Protection between underground building / tank piping				Hydrostatic relief valves			
Piping / tubing—Protected from impact damage				Test ESV			
				Exterior piping painted / coated on all sides and no rust			
Loading Rack				**Filling Building & Dock**			
Hose condition / certified				Non Combustible Materials			
Hose support rack				Explosion relief panels			
Hose end caps / plugs				No latches on doors			
Hydrostatic relief valves				Cylinders properly stored			
Breakaways properly anchored				Fire extinguisher			
ESV actuators at loading racking, filling building and remote				Signage			
				Nitrogen pressure			
Electrical							
No overhead transmission lines (over 2000 gallon)				Sealed switch & lighting			
Visible seals on leck cable				Lighting if used after dark			

Comments:

APPENDIX B: PROPANE TANK SKID PIPING & EQUIPMENT LAYOUT

IRVING ENERGY

TOUQUOY MINE SITE
PROPANE STORAGE

MOOSELAND, NOVA SCOTIA

ISSUED FOR PERMIT

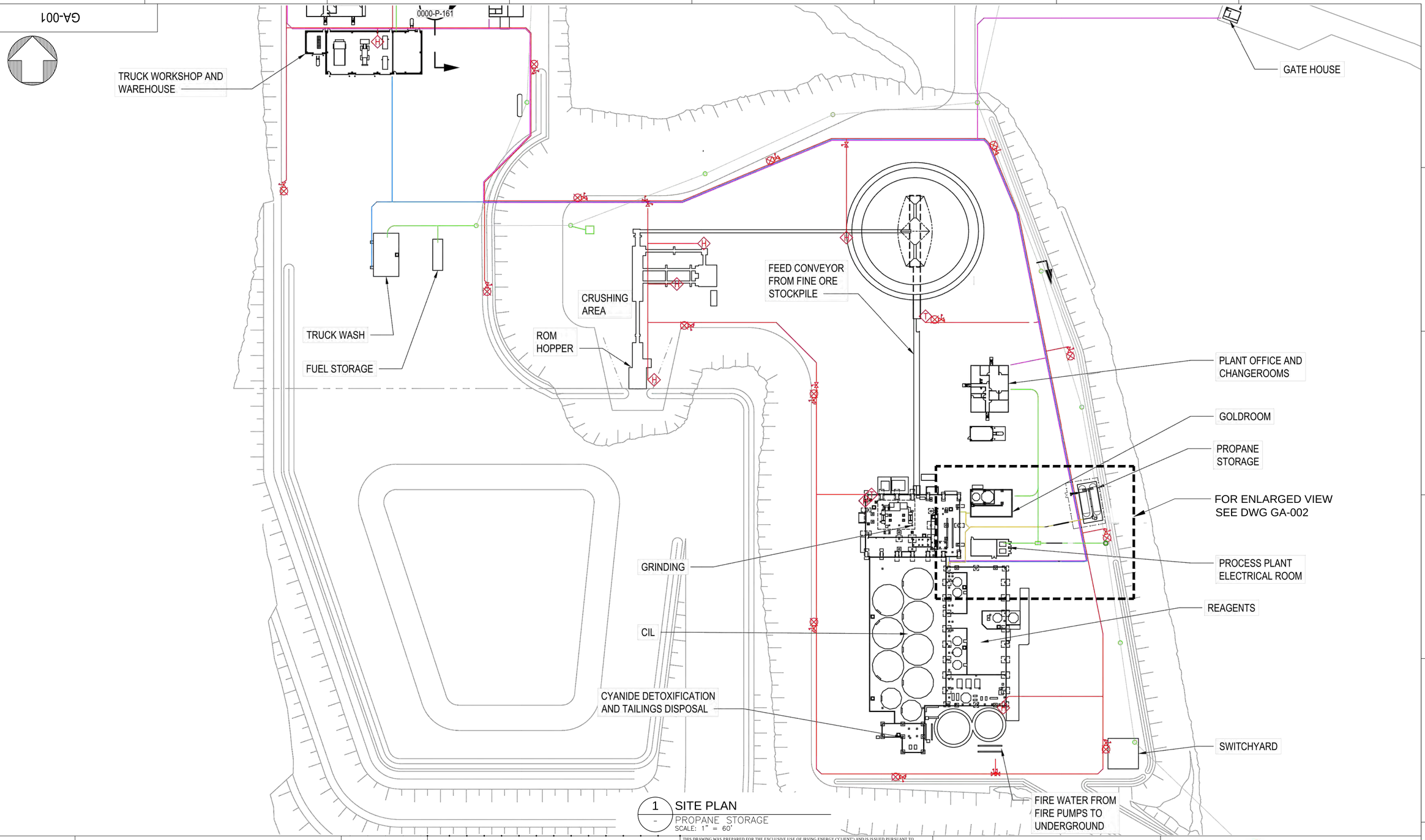
IRVING Irving Energy

HATCH SYDNEY, NOVA SCOTIA
PROJECT NO.
MARCH 2017

DRAWING LIST

DWG. No.	TITLE
1. GA-001	PROPANE STORAGE SITE PLAN
2. GA-002	PROPANE STORAGE GENERAL ARRANGEMENT
3. C-001	PROPANE STORAGE CONCRETE PLAN
4. C-002	PROPANE STORAGE CONCRETE SECTIONS & DETAILS
5. M-001	PROPANE STORAGE PIPING & EQUIPMENT PLAN
6. M-002	PROPANE STORAGE PIPING & EQUIPMENT SECTIONS & DETAILS

GA-001



1 SITE PLAN
PROPANE STORAGE
SCALE: 1" = 60'

REGISTERED PROFESSIONAL ENGINEER
DATE 3/23/17
6790
PROVINCE OF NOVA SCOTIA

No.	DESCRIPTION	BY	CHK'D	DATE
A	ISSUED FOR PERMIT	SS	PC	17-03-22

DRAFTSPERSON	J. BUTTS	NR	17-03-13
DESIGNER	J.BECK	NR	17-03-10
CHECKER	M. MacINTYRE		17-03-20
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER			

ROLE	NAME	SIGNATURE	DATE
DRAWING APPROVAL STATUS:	ISSUED FOR PERMIT		

HATCH

IRVING Irving Energy

MOOSELAND, NS
TOUQUOY MINE SITE

PROPANE STORAGE
SITE PLAN

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	REG. PROFESSIONAL

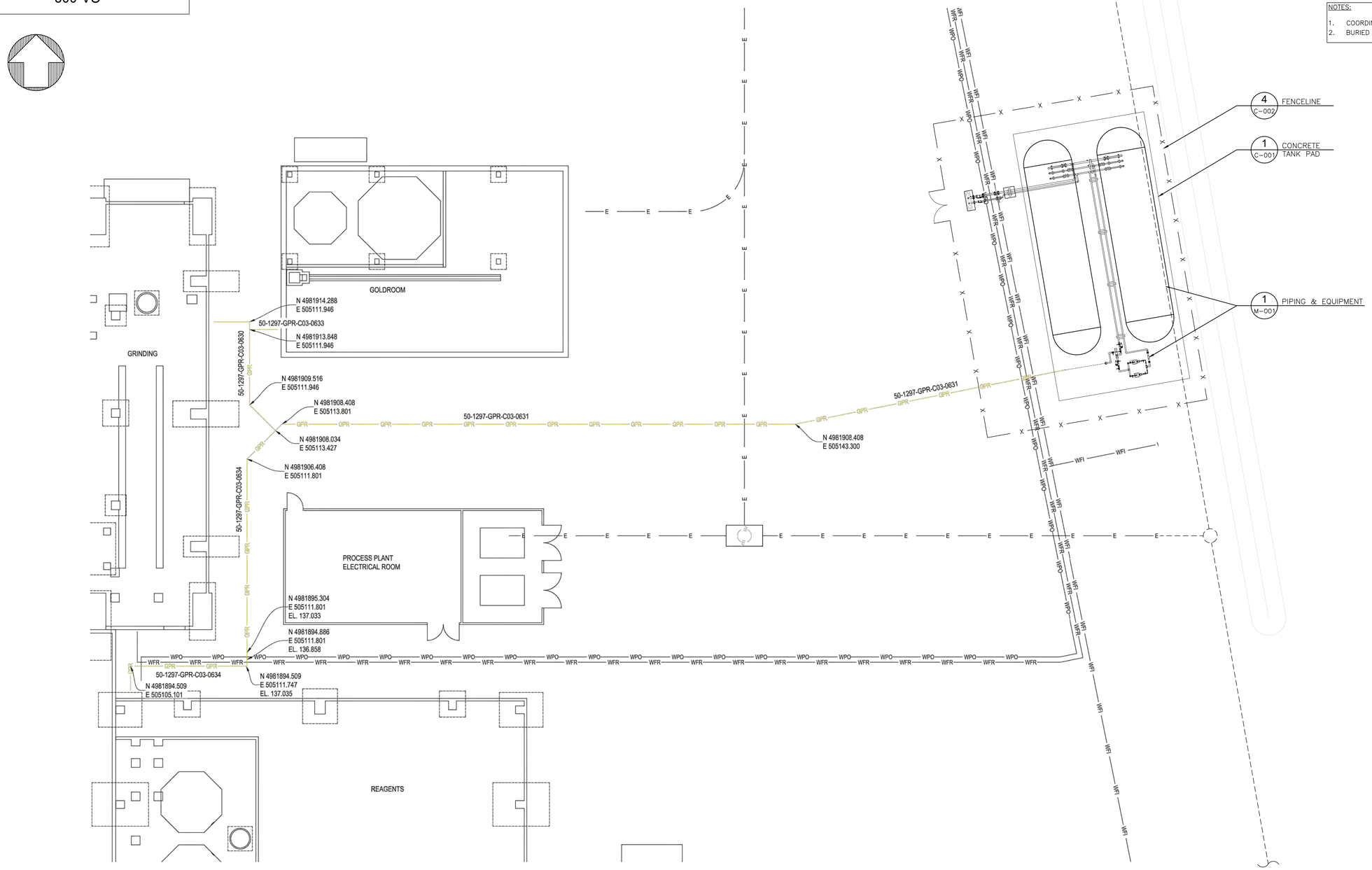
SCALE	DWG. No.	REV
1"=60' OR AS NOTED	GA-001	A

SHEET SIZE: A1

GA-002

NOTES:

1. COORDINATES ARE METRIC.
2. BURIED UTILITIES TO BE VERIFIED PRIOR TO PLACEMENT OF CONCRETE PAD.



1 - GENERAL ARRANGEMENT
PROPANE STORAGE
SCALE: 1" = 10'

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
DATE 3/23/17
Jordan MacLean
6790

No.	DESCRIPTION	BY	CHK'D	DATE
A	ISSUED FOR PERMIT	SS	PC	17-03-22

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	J. BUTTS	NR	17-03-13
DESIGNER	J.BECK	NR	17-03-10
CHECKER	M. MacINTYRE		17-03-20
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER			

DRAWING APPROVAL STATUS: ISSUED FOR PERMIT

HATCH

IRVING Irving Energy

MOOSELAND, NS
TOUQUOY MINE SITE

PROPANE STORAGE
GENERAL ARRANGEMENT

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

REG. PROFESSIONAL

REVISIONS

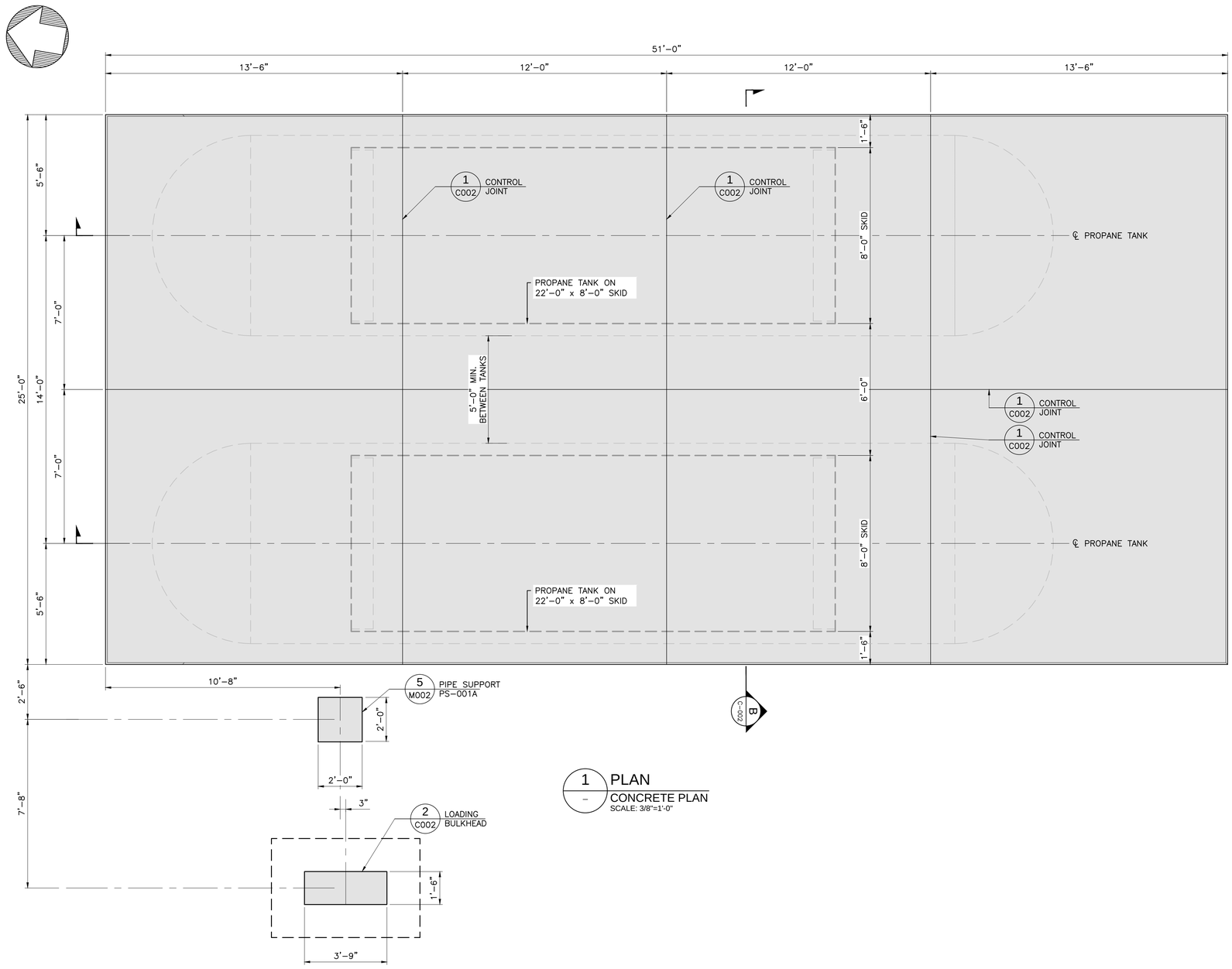
SCALE 1"=10' OR AS NOTED

DWG. No. GA-002

REV A

SHEET SIZE: A1

C-001



1 – PLAN
CONCRETE PLAN
SCALE: 3/8"=1'-0"

CONCRETE NOTES

1. ALL CONCRETE WORK TO BE IN ACCORDANCE WITH CSA A23.1/A23.2 & CSA A23.3 LATEST EDITIONS.
2. CONCRETE MIX: SLABS AND FOOTINGS
   - CEMENT TYPE: GU
   - EXPOSURE CLASS: C–1
   - MINIMUM COMPRESSIVE STRENGTH @ 28 DAYS: 5000 psi
   - AIR CONTENT: 5–8%
   - MAXIMUM W/C RATIO: 0.4
   - NOMINAL SIZE OF COARSE AGGREGATE: ¾" in
3. CONCRETE COVER FOR REINFORCEMENT:
   - AS SHOWN
4. REINFORCING STEEL TO CSA G30.18, GRADE 400R
5. REINFORCING STEEL AND SLICES TO CSA A23.1/A23.2 & CSA A23.3 LATEST EDITIONS.
6. REINFORCEMENT TO BE CONTINUOUS THROUGH CONTROL & CONSTRUCTION JOINTS.
7. ALL SAWCUTS TO BE MADE WITHIN 48 HOURS OF CONCRETE BEING PLACED.
8. LOCATION AND DETAILS OF CONSTRUCTION JOINTS TO BE APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.
9. SLAB–ON–GRADE TO RECEIVE SIL–ACT ATS–42 SEALER OR APPROVED EQUIVALENT.

EXCAVATION & BACKFILL NOTES

1. FOOTINGS DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 3000 psf ON ENGINEERED FILL OR UNDISTURBED NATIVE SOIL. BEARING SURFACES TO BE APPROVED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF NOVA SCOTIA PRIOR TO FOUNDATION CONSTRUCTION.
2. GRANULAR SUB–BASE AND BACKFILL MATERIALS TO MEET NOVA SCOTIA TRANSPORTATION AND INFRASTRUCTURE RENEWAL SPECIFICATIONS.
3. ALL BEARING SURFACES AND SLABS MUST BE PROTECTED AGAINST FREEZING DURING COLD WEATHER.
4. AT UNDERSIDE OF SLABS SOFTENED OR OTHERWISE DISTURBED MATERIAL SHOULD BE COMPLETELY REMOVED AND REPLACED WITH CONCRETE AS SPECIFIED FOR THE FOUNDATION U.N.O.
5. ALL EXCAVATION AND BACKFILL TO BE APPROVED BY ENGINEER PRIOR TO FOUNDATION CONSTRUCTION.

REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — DATE 03/23/17 — P. CASHIN — 7859

No.	DESCRIPTION	BY	CHK'D	DATE
A	ISSUED FOR PERMIT	SS	PC	17-03-22

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	J. BUTTS	NR	17-03-14
DESIGNER	K. MacLEAN	NR	17-03-10
CHECKER	M. MacINTYRE		17-03-20
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER			

DRAWING APPROVAL STATUS: ISSUED FOR PERMIT

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IRVING Irving Energy

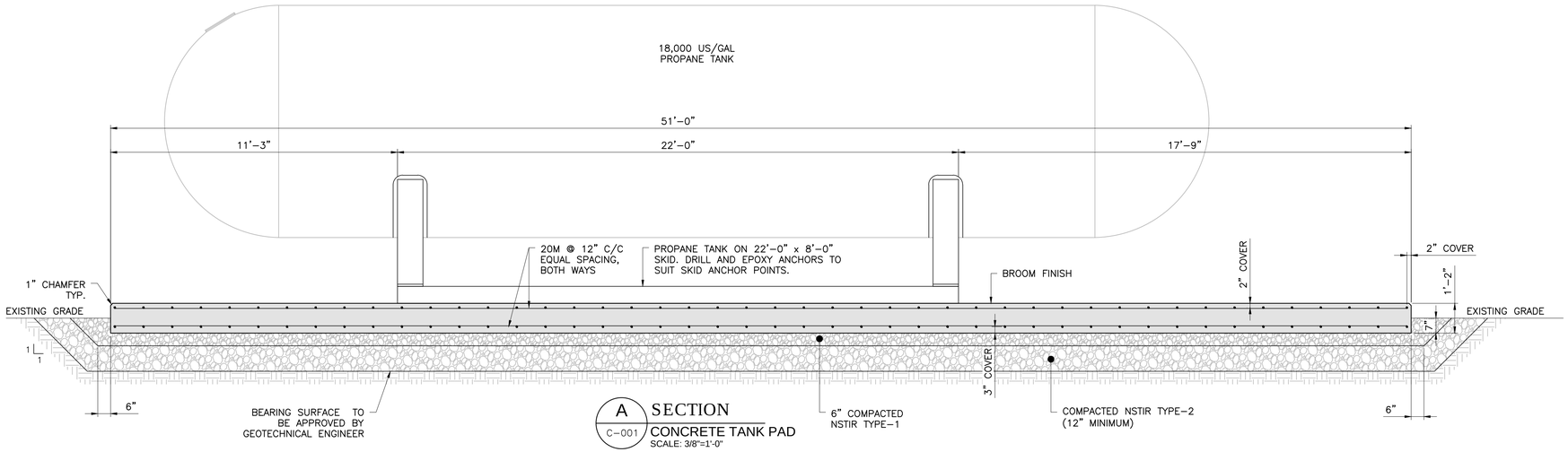
MOOSELAND, NS
TOUQUOY MINE SITE

PROPANE STORAGE
CONCRETE PLAN

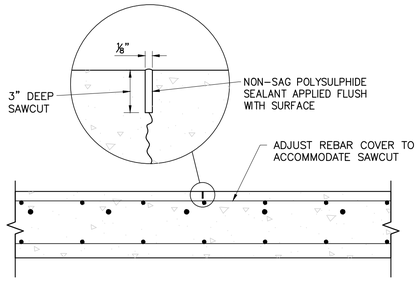
DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	REG. PROFESSIONAL

SCALE: AS NOTED OR AS NOTED | DWG. No. C-001 | REV A

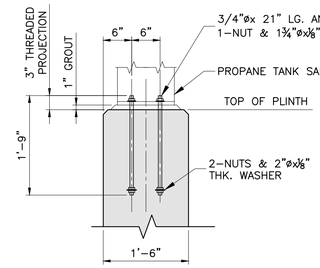
SHEET SIZE: A1



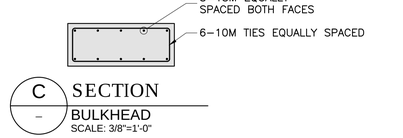
A SECTION
C–001 CONCRETE TANK PAD
SCALE: 3/8"=1'-0"



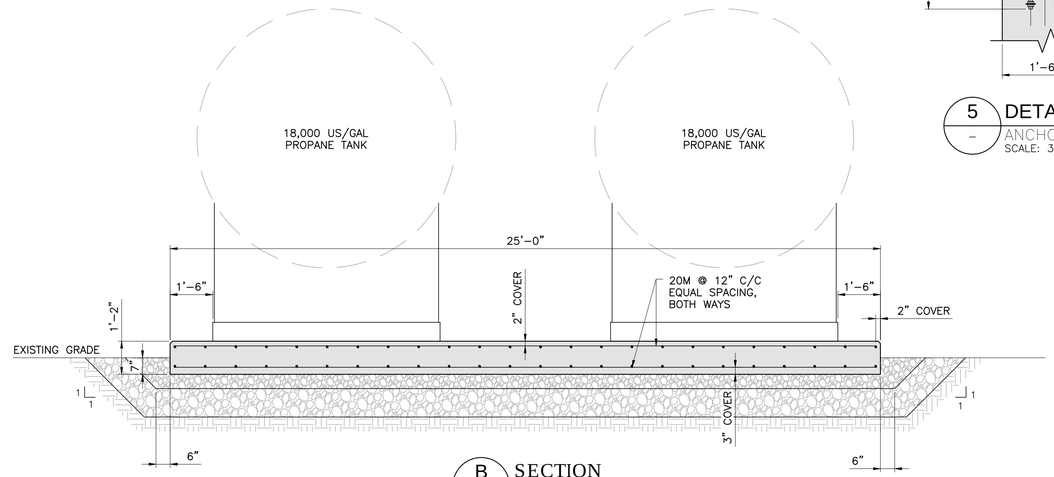
1 DETAIL
C–001 CONTROL JOINT
SCALE: 3/4" = 1'–0"



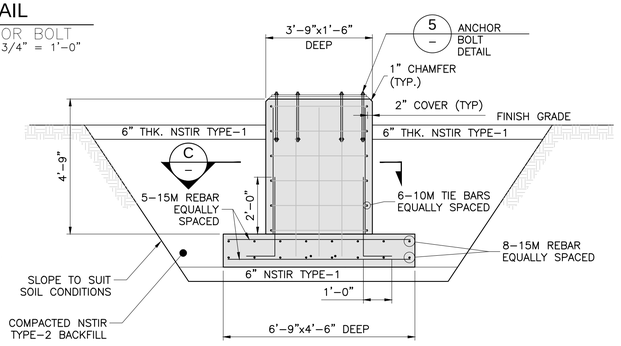
5 DETAIL
– ANCHOR BOLT
SCALE: 3/4" = 1'–0"



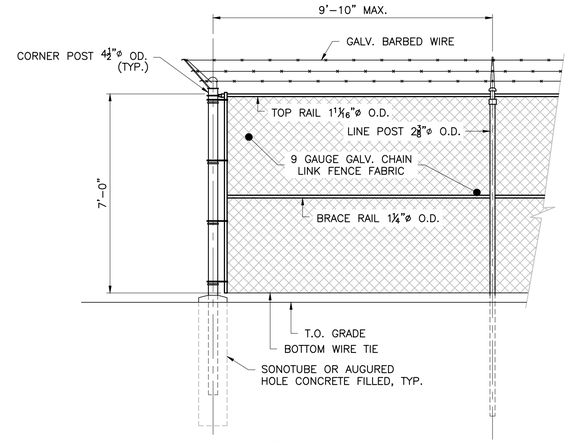
C SECTION
– BULKHEAD
SCALE: 3/8"=1'-0"



B SECTION
C–001 CONCRETE TANK PAD
SCALE: 3/8"=1'-0"



2 DETAIL
C–001 LOADING BULKHEAD
SCALE: 3/8"=1'-0"



4 DETAIL
GA–002 TYPICAL FENCING
SCALE: 3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF NOVA SCOTIA
DATE 03/23/17
P. CASHIN
7859

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

REG. PROFESSIONAL

No.	DESCRIPTION	BY	CHK'D	DATE
REVISIONS				

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PROJ. MANAGER			

DRAWING APPROVAL STATUS: ISSUED FOR PERMIT

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IRVING Irving Energy

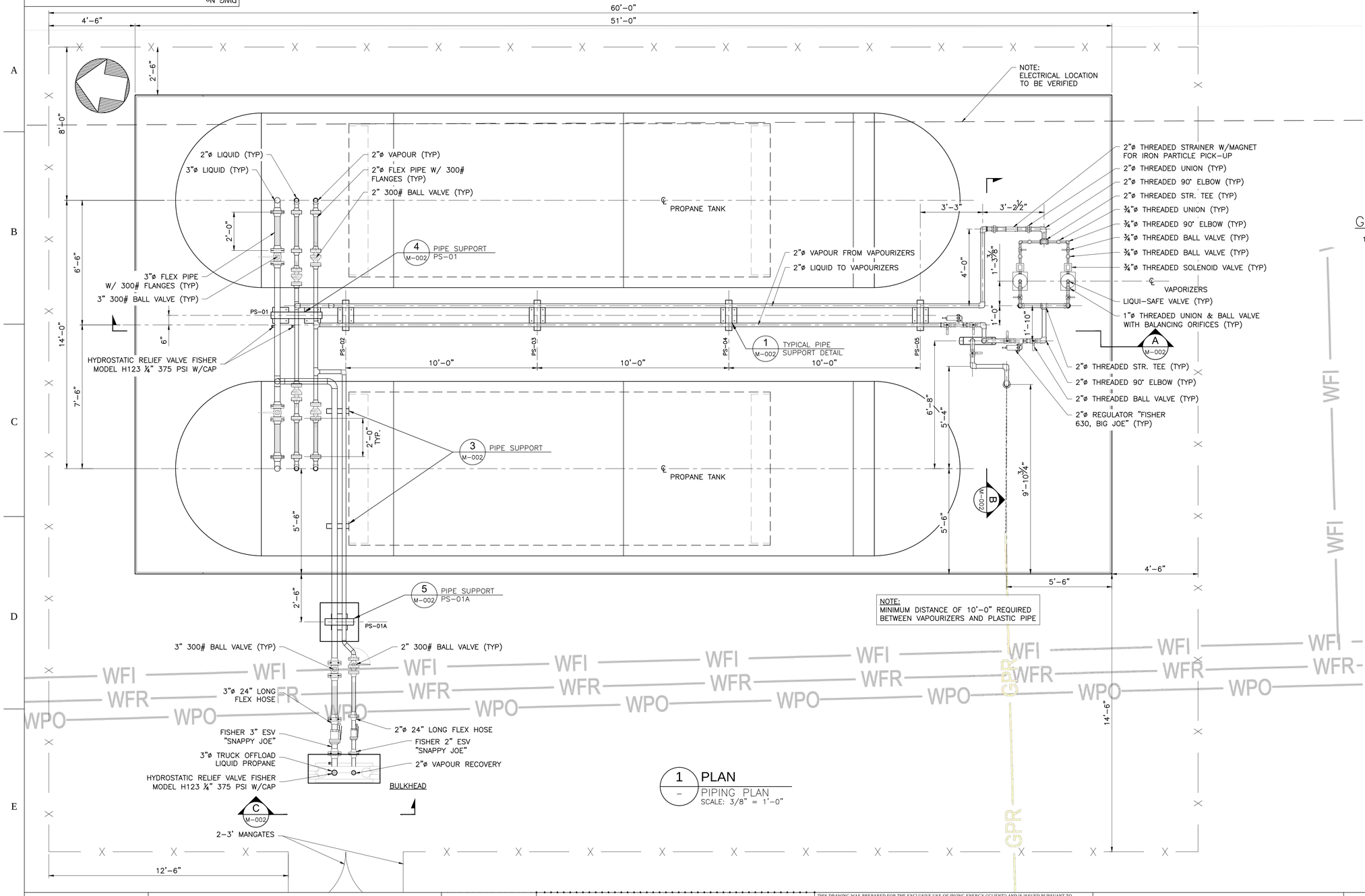
MOOSELAND, NS
TOUQUOY MINE SITE

PROPANE STORAGE
CONCRETE
SECTIONS & DETAILS

SCALE	DWG. No.	REV
1"=10' OR AS NOTED	C-002	A

SHEET SIZE: A1

DWG. NO. M-001



LEGEND:

- FIRE HYDRANT
- FIRE HOSE STATION TAKE OFF
- SPRINKLER TAKE OFF
- POST INDICATOR VALVE
- WFI — FIRE WATER
- WPO — POTABLE WATER
- WFR — FILTERED RAW WATER
- GPR — PROPANE
- E — U/G ELECTRICAL

GENERAL NOTES

1. INSTALLATION PER PROPANE STORAGE AND HANDLING CODE CSA B 149.2.

1 – PLAN
PIPING PLAN
SCALE: 3/8" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF NOVA SCOTIA
DATE 3/23/17
6790

No.	DESCRIPTION	BY	CHK'D	DATE
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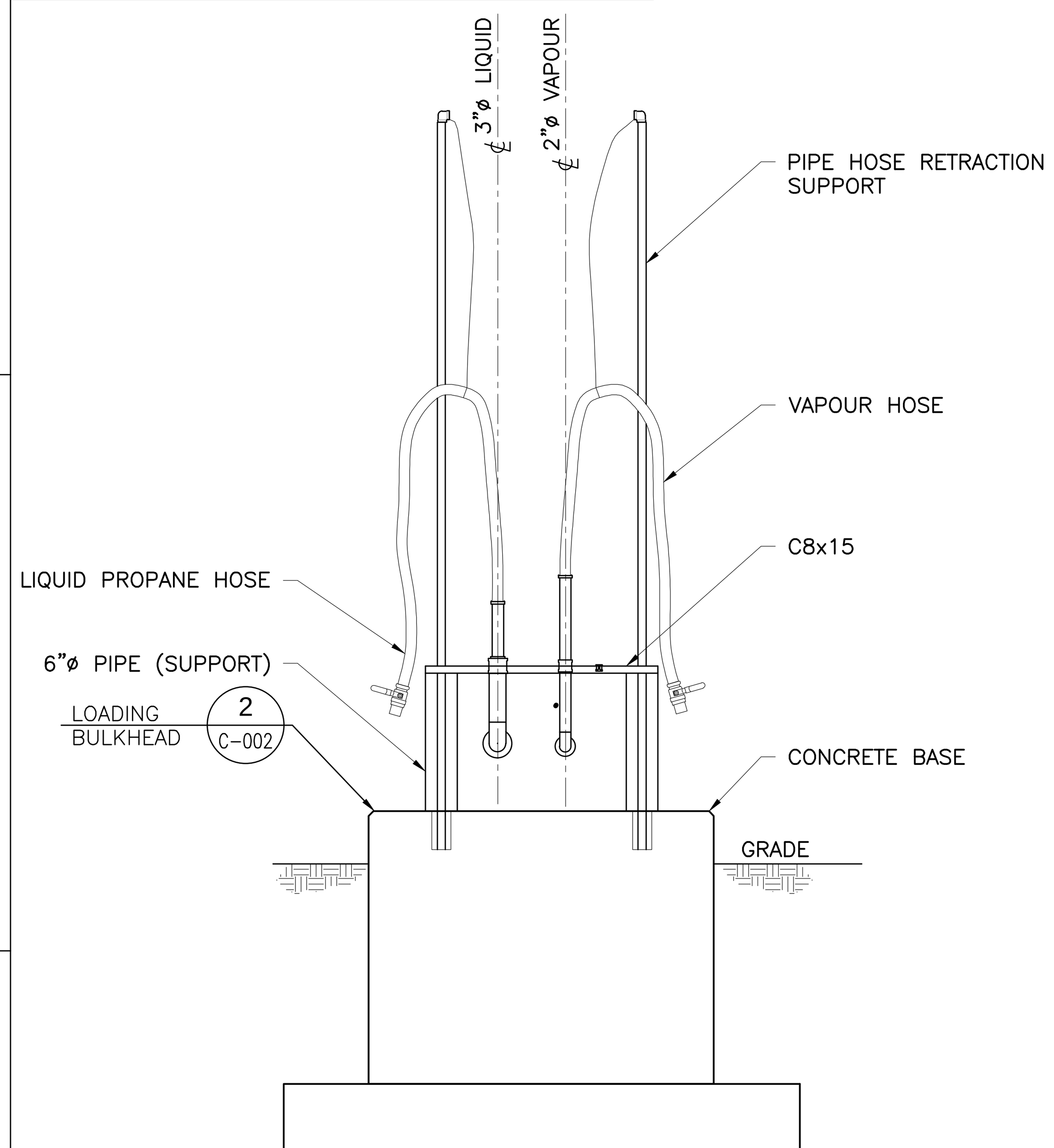
MOOSELAND, NS
TOUQUOY MINE SITE

PROPANE STORAGE
PIPING & EQUIPMENT
PLAN

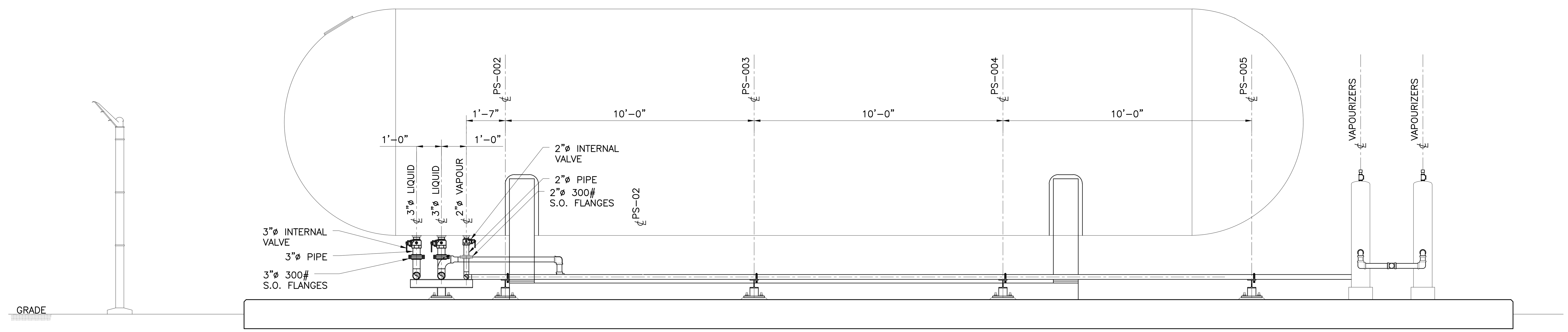
SCALE	DWG. No.	REV
1"=10' OR AS NOTED	M-001	A

DRAWING No. | DRAWING TITLE
REFERENCE DRAWINGS
REG. PROFESSIONAL
REVISIONS

SHEET SIZE: A1



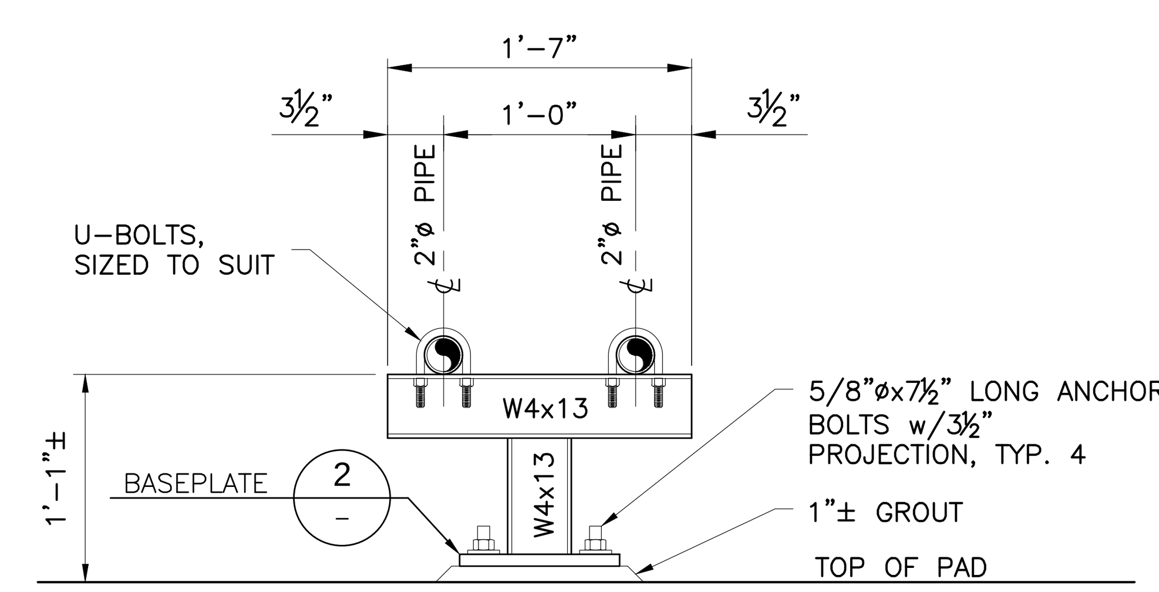
C SECTION
M-001
LOADING BULKHEAD
SCALE: 3/8"=1'-0"



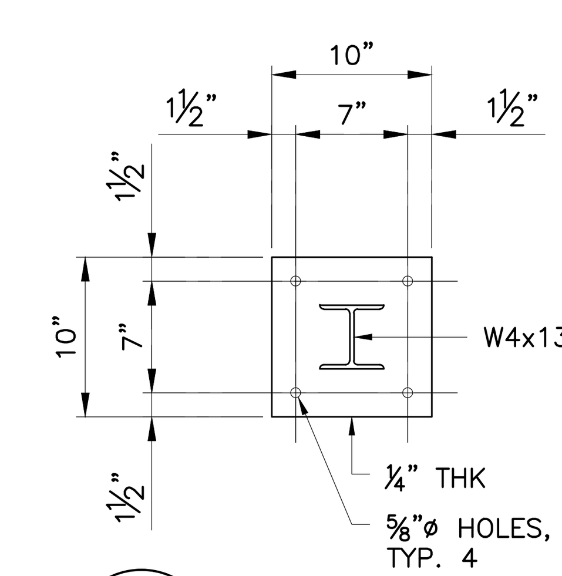
NOTES:

1. INSTALLATION OF PIPE AND EQUIPMENT AS PER CSA B149.1-15 – NATURAL GAS AND PROPANE INSTALLATION CODE

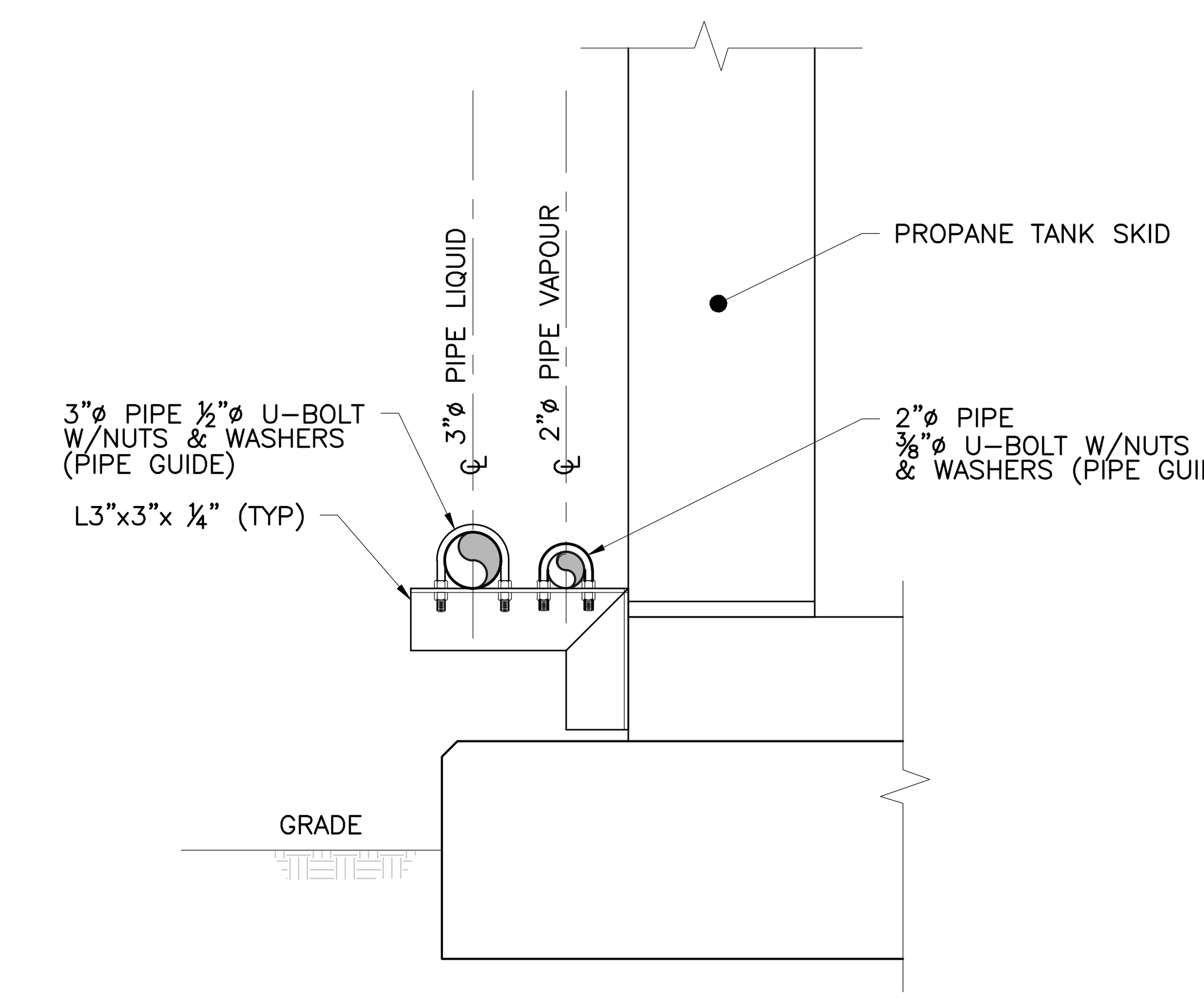
A SECTION
M-001
PIPING @ TANK
SCALE: 3/8"=1'-0"



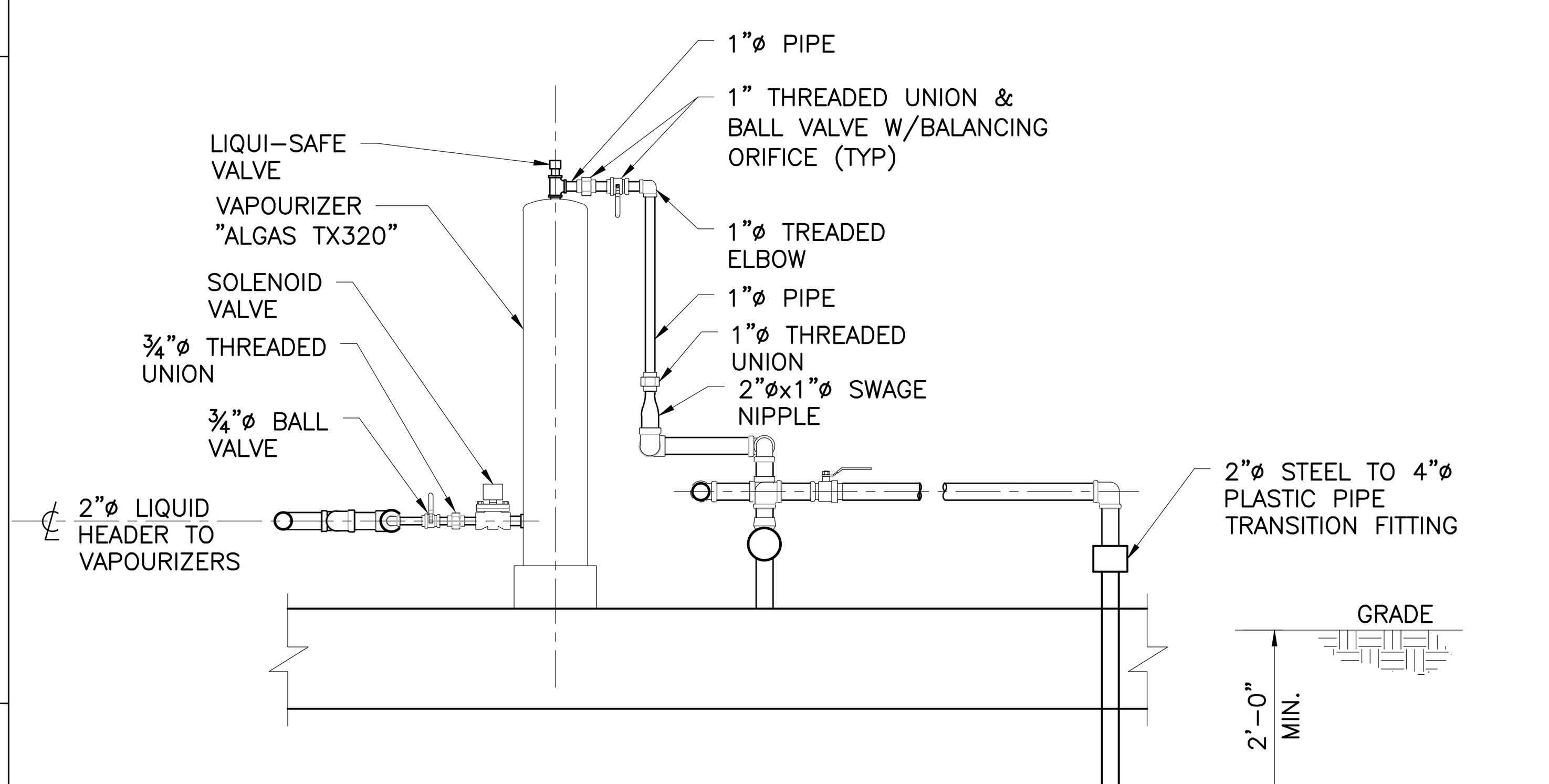
1 DETAIL
M-001
TYPICAL PIPE SUPPORT PS-02, PS-03. PS-04 & PS-05
SCALE: 1"=1'-0"



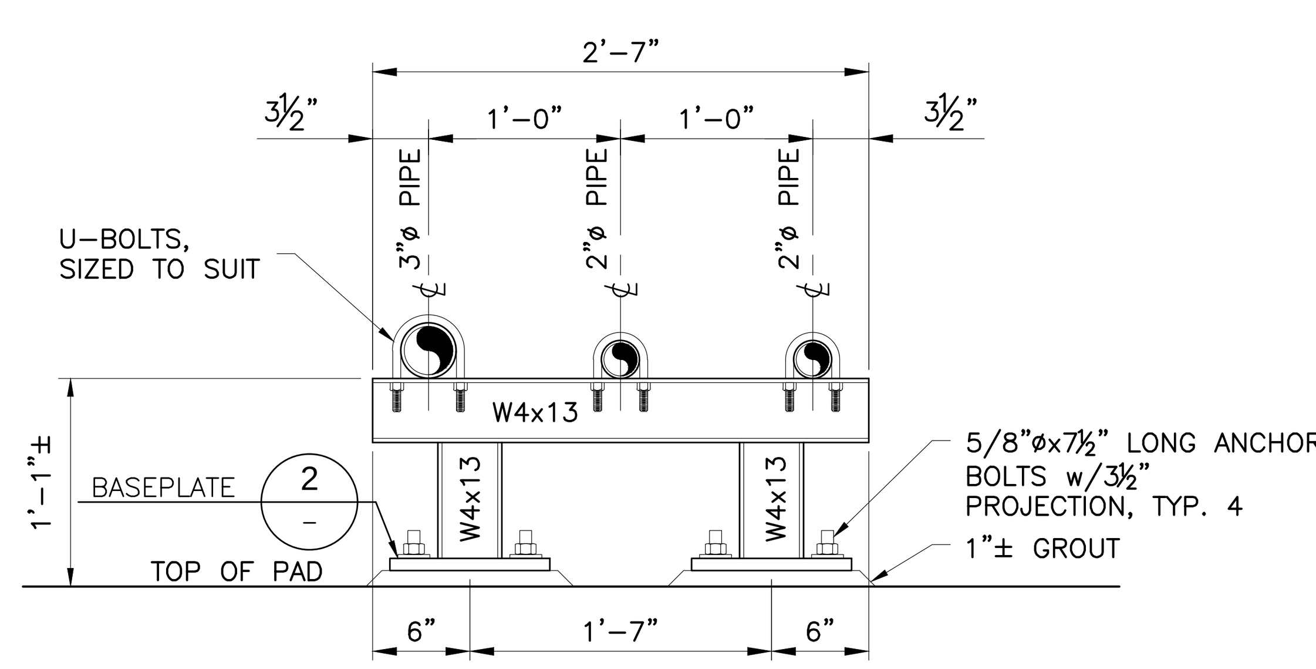
2 DETAIL
TYPICAL BASEPLATE
SCALE: 1"=1'-0"



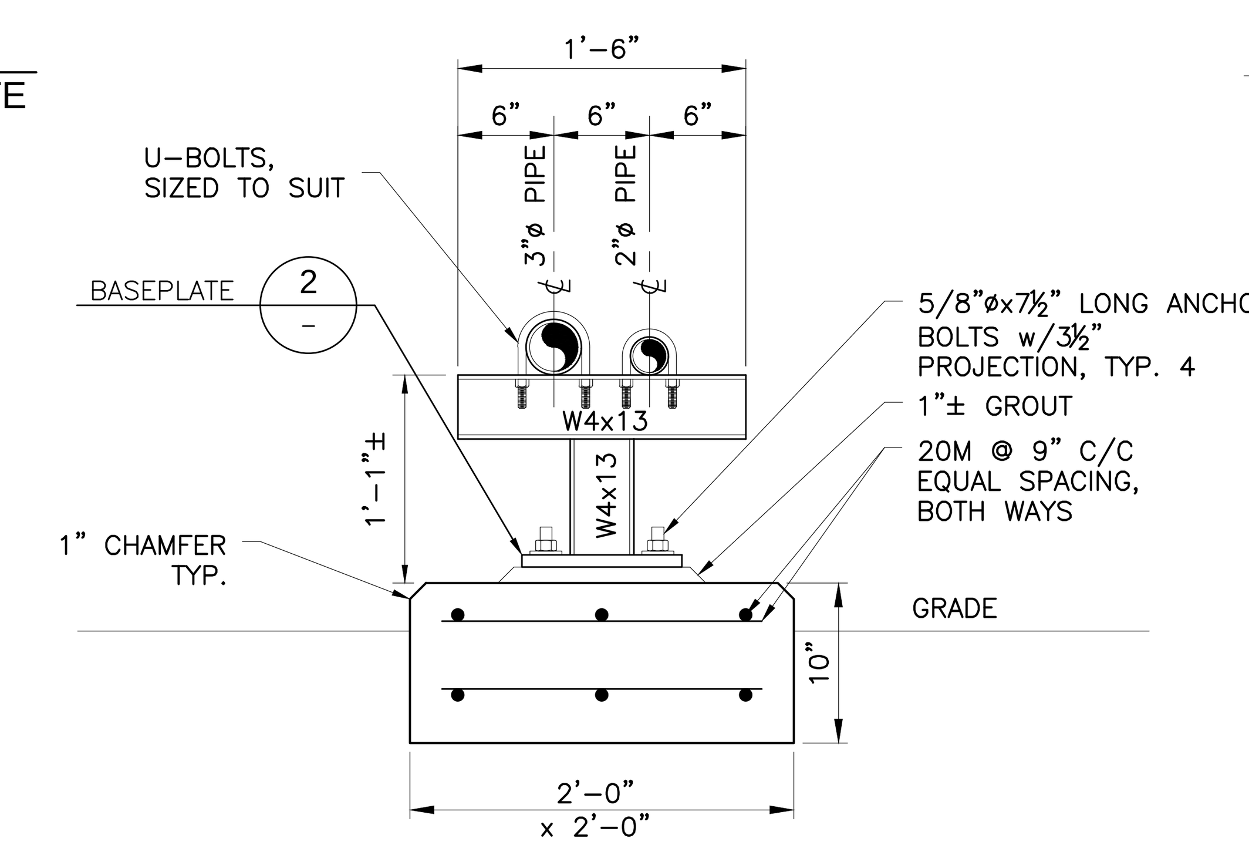
3 DETAIL
M-001
PIPE SUPPORT
SCALE: 1"=1'-0"



B SECTION
M-001
PIPING @ VAPOURIZERS
SCALE: 1/2"=1'-0"



4 DETAIL
M-001
TYPICAL PIPE SUPPORT PS-01
SCALE: 1"=1'-0"



5 DETAIL
M-001
TYPICAL PIPE SUPPORT PS-01A
SCALE: 1"=1'-0"

STRUCTURAL STEEL NOTES

1. CONTRACTOR TO CONFIRM ALL DIMENSIONS PRIOR TO FABRICATION OF ANY PORTION OF THIS WORK.
2. ALL STRUCTURAL STEEL TO CSA G40.20/G40.21 LATEST EDITION; GRADE 350W.
3. STRUCTURAL STEEL WORK TO BE IN ACCORDANCE WITH CSA S16 & CSA S136.
4. ALL WELDING TO BE IN ACCORDANCE WITH CSA W59 LATEST EDITION & WELDERS QUALIFIED IN ACCORDANCE WITH CSA W47.1 LATEST EDITION.
5. BOLTS, NUTS & WASHERS TO ASTM A325 GALVANIZED.
6. ANCHOR BOLTS TO ASTM F1556 GRADE 36 GALVANIZED.

HATCH

IRVING Irving Energy

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	J. BUTTS	NR	17-03-13
DESIGNER	J.BECK	NR	17-03-10
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REVISIONS

DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

REG. PROFESSIONAL

DATE 3/23/17 — 6790 — PROVINCE OF NOVA SCOTIA

MOOSELAND, NS
TOUQUOY MINE SITE

PROPANE STORAGE
PIPING & EQUIPMENT
SECTIONS & DETAILS

SCALE AS NOTED OR AS NOTED
DWG. No. M-002
REV A

SHEET SIZE: A1

APPENDIX C: SDS PROPANE

SAFETY DATA SHEET

1. Product and Company Identification

Product identifier **Propane**

Other means of identification n-propane
dimethyl methane
liquefied propane
propyl hydride

Recommended use Fuel

Recommended restrictions None known.

Manufacturer Irving Oil Refining G.P.
Box 1260
Saint John, NB E2L 4H6 CA
Phone: (506) 202-2000
Refinery: (506) 202-3000
Emergency Phone: 1-800-424-9300 (CHEMTREC)

2. Hazards Identification

Physical hazards Flammable gases — Category 1
Gases under pressure — Liquefied gas

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Extremely flammable gas. Contains gas under pressure; may explode if heated.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Response Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.

Storage Protect from sunlight. Store in a well-ventilated place.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information 99% of the mixture consists of component(s) of unknown acute oral toxicity.

3. Composition/Information on Ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Propane		74-98-6	93 - 97
Ethane		74-84-0	1 - 5
Butane		106-97-8	0.1 - 1

Composition comments All concentrations are expressed as % volume.

4. First Aid Measures

Inhalation Remove affected person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Skin contact	Briefly flush the affected area with lukewarm, gently flowing water until the chemical is removed. Do not attempt to re-warm the affected area. Do not rub the affected area or apply dry heat. Carefully cut around clothing that sticks to the skin and remove the remainder of the garment. Loosely cover the affected area with a sterile dressing. Do not permit affected person to drink alcohol or smoke. Quickly transport affected person to an emergency medical facility.
Eye contact	Flush eye with lukewarm, gently flowing fresh water for at least 15 minutes. Do not attempt to re-warm. Cover both eyes with sterile dressing. Do not permit affected person to drink alcohol or smoke. Quickly transport affected person to an emergency medical facility.
Ingestion	Not a normal route of exposure as this product is a gas at room temperature and pressure.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Show this safety data sheet to the doctor in attendance. Keep away from sources of ignition. No smoking.

5. Fire Fighting Measures

Suitable extinguishing media	Stop the flow of gas. Dry chemical. High expansion foam.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Contents under pressure. Container may explode in heat of fire. Firefighters should wear a self-contained breathing apparatus. It is extremely dangerous to extinguish the fire without stopping the flow of gas. Gas and air will mix resulting in an explosion which may be more destructive than the original fire. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. May accumulate in confined spaces, resulting in an explosion and/or asphyxiation hazard.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Firefighters should wear full protective clothing including self contained breathing apparatus. Cool containers with flooding quantities of water until well after fire is out.
Fire-fighting equipment/instructions	DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED. In case of fire: Stop leak if safe to do so. Do not move cargo or vehicle if cargo has been exposed to heat. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. In the event of fire, cool tanks with water spray. Move containers from fire area if you can do so without risk. Do not direct water at source of leak or safety devices as icing may occur. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. In the event of fire and/or explosion do not breathe fumes.
General fire hazards	Extremely flammable gas.
Hazardous combustion products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Hydrogen sulfide. Oxides of sulfur.
Explosion data	
Sensitivity to mechanical impact	Not expected to be sensitive to mechanical impact.
Sensitivity to static discharge	Accumulates static charge by flow or agitation. Ignites in response to static charge of sufficient energy.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep out of low areas. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Refer to attached safety data sheets and/or instructions for use. Extinguish all flames in the vicinity. This product is miscible in water. Stop leak if you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Isolate area until gas has dispersed. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewers, basements or confined areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Prevent entry into waterways, sewers, basements or confined areas.

7. Handling and Storage

Precautions for safe handling

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. All equipment used when handling the product must be grounded. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.
Non-sparking equipment. Explosion-proof ventilation. Intrinsically safe electrical equipment.

Conditions for safe storage, including any incompatibilities

This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store away from incompatible materials (see Section 10 of the SDS). Containers should be vented and equipped with a flame arrester.
Keep away from heat, open flames or other sources of ignition.
Store in a cool well-ventilated area. Consider leak detection and alarm equipment for storage area.

8. Exposure Controls/Personal Protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Propane (CAS 74-98-6)	PEL	1800 mg/m3 1000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Butane (CAS 106-97-8)	STEL	1000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Butane (CAS 106-97-8)	TWA	1900 mg/m3 800 ppm
Propane (CAS 74-98-6)	TWA	1800 mg/m3 1000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Oxygen concentrations in work spaces must not be permitted to fall below 19%.

Individual protection measures, such as personal protective equipment

Eye/face protection

Face shield or chemical goggles.

Skin protection

Hand protection

Insulated gloves for contact with liquid. Confirm with a reputable supplier first.
Neoprene. Tychem™ Responder™.

Other

Use of fire resistant protective coveralls and long sleeves is recommended.

Respiratory protection

For confined spaces, wear a NIOSH-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Appearance	gaseous
Physical state	Gas.
Form	Liquefied gas.
Color	Colorless
Odor	Odorless Ethyl mercaptan, with a penetrating odor of garlic or rotten cabbage is added to give the product a distinctive odor.
Odor threshold	Not available.
pH	Not applicable
Melting point/freezing point	-306.4 °F (-188 °C)
Initial boiling point and boiling range	-43.6 °F (-42 °C)
Pour point	Not available.
Specific gravity	Not applicable
Partition coefficient (n-octanol/water)	Not available
Flash point	Flammable gas
Evaporation rate	Not applicable
Flammability (solid, gas)	Flammable gas.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	> 2.1 %
Flammability limit - upper (%)	< 9.5 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	855 kPa (8.4 atm) @ 21.1°C
Vapor density	1.45 (air = 1)
Relative density	Not available.
Solubility(ies)	Not available
Auto-ignition temperature	842 °F (450 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Flash point class	Flammable IA

10. Stability and Reactivity

Reactivity	This product may react with strong oxidizing agents.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Heat, open flames, static discharge, sparks and other ignition sources. Reacts vigorously with alkaline material or metals. Vapours may form explosive mixture with air.
Incompatible materials	Acids. Oxidizers. Halogenated compounds.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Hydrogen sulphide. Oxides of sulfur.

11. Toxicological Information

Routes of exposure	Eye, Skin contact, Inhalation.
Information on likely routes of exposure	
Ingestion	Not a normal route of exposure.
Inhalation	This product is an asphyxiant gas which can cause unconsciousness/death if OXYGEN levels are sufficiently reduced. Signs and symptoms of preceding asphyxiation include and are not limited to rapid respiration, loss of mental alertness and co-ordination, dizziness, nausea and vomiting. Continued exposure may result in prostration, convulsions, coma and death.

Skin contact	Contact with liquid may cause frostbite.
Eye contact	Contact with liquid may cause frostbite.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

Components	**Species**	**Test Results**
Butane (CAS 106-97-8)		
Acute		
Inhalation		
LC50	Mouse	680 mg/l, 2 Hours
	Rat	276000 ppm, 4 Hours
		658 mg/l/4h
Oral		
LD50	Not available	
Ethane (CAS 74-84-0)		
Acute		
Inhalation		
LC50	Rat	658 mg/l/4h
Oral		
LD50	Not available	
Propane (CAS 74-98-6)		
Acute		
Inhalation		
LC50	Rat	> 1442.8 mg/l, 15 Minutes
Oral		
LD50	Not available	

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Exposure minutes	Not available.
Erythema value	Not available.
Oedema value	Not available.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Corneal opacity value	Not available.
Iris lesion value	Not available.
Conjunctival reddening value	Not available.
Conjunctival oedema value	Not available.
Recover days	Not available.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	Non-hazardous by WHMIS/OSHA criteria.
Mutagenicity	Non-hazardous by WHMIS/OSHA criteria.
Carcinogenicity	Non-hazardous by WHMIS/OSHA criteria.
Reproductive toxicity	Non-hazardous by WHMIS/OSHA criteria.
Teratogenicity	Non-hazardous by WHMIS/OSHA criteria.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	Prolonged inhalation may be harmful.
Further information	Not available.

Name of Toxicologically Synergistic Products	Simple asphyxiants (chemicals that displace air in confined spaces).

12. Ecological Information

Ecotoxicity	Not available
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	Not available.
Mobility in soil	This product has not been tested.
Mobility in general	Not available.
Other adverse effects	This product has not been tested.

13. Disposal Considerations

Disposal instructions	Consult authorities before disposal. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. Review federal, provincial, and local government requirements prior to disposal.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

UN number	UN1978
Proper shipping name	Propane
Hazard class	2.1
Special provisions	19, T50
Packaging exceptions	306
Packaging non bulk	304
Packaging bulk	314, 315

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

UN number	UN1978
Proper shipping name	Propane
Hazard class	2.1

DOT

TDG

15. Regulatory Information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Canada DSL Challenge Substances: Listed substance

Butane (CAS 106-97-8)	Listed.

Canada NPRI VOCs with Additional Reporting Requirements: Mass reporting threshold/Identification Number

Butane (CAS 106-97-8)	1 TONNES
Propane (CAS 74-98-6)	1 TONNES

Canada WHMIS Ingredient Disclosure: Threshold limits

Butane (CAS 106-97-8)	1 %

WHMIS status Controlled

WHMIS classification Class A - Compressed Gas, Class B - Division 1 - Flammable Gas

WHMIS labeling

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US CAA Section 112(r) Accidental Release Prevention - Regulated Flammable Substance: Listed substance

Butane (CAS 106-97-8)	Regulated flammable substance.
Ethane (CAS 74-84-0)	Regulated flammable substance.
Propane (CAS 74-98-6)	Regulated flammable substance.

US CAA Section 112(r) Accidental Release Prevention: Threshold quantity

Butane (CAS 106-97-8)	10000 LBS
Ethane (CAS 74-84-0)	10000 LBS
Propane (CAS 74-98-6)	10000 LBS

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

US CAA Section 612 SNAP Program: Listed substance

Butane (CAS 106-97-8)	Listed.
Propane (CAS 74-98-6)	Listed.

US CAA VOCs with Negligible Photochemical Activity: Listed substance

Ethane (CAS 74-84-0)	Listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA) Not regulated.

US state regulations See below California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Hazardous Substances (Director's): Listed substance

Butane (CAS 106-97-8)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

US - Illinois Chemical Safety Act: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US - Louisiana Spill Reporting: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US - Minnesota Haz Subs: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US - New Jersey RTK - Substances: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US - Texas Effects Screening Levels: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US. Massachusetts RTK - Substance List

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US. Pennsylvania RTK - Hazardous Substances

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

US. Rhode Island RTK

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Propane (CAS 74-98-6)	Listed.

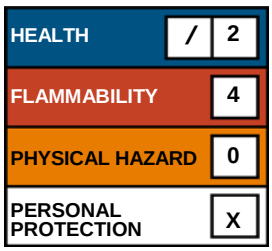
Inventory status

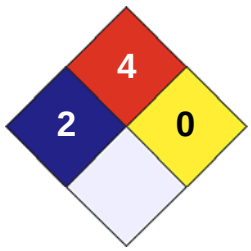
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0





Disclaimer	The information contained in this form is based on data from sources considered to be reliable but Irving Oil Refining G.P. does not guarantee the accuracy or completeness thereof. The information is provided as a service to the persons purchasing or using the material to which it refers and Irving Oil Refining G.P. expressly disclaims all liability for loss or damage including consequential loss or for injury to persons including death. The information shall not be reproduced, published or distributed in any manner without prior consent in writing of Irving Oil Refining G.P.
Issue date	06-November-2014
Effective date	01-November-2014
Expiry date	01-November-2017
Further information	For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.
Prepared by	Dell Tech Laboratories, Ltd. Phone: (519) 858-5021
Other information	This Safety Data Sheet was prepared to comply with the current OSHA Hazard Communication Standard (HCS) adoption of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Appendix 8

Spill Contingency Plan

ATLANTIC GOLD

Spill Contingency Plan

AGC-PLN-ENV-001

RELEASE DATE

August 26, 2020

DOCUMENT REVISION RECORD

Pages affected by the current revision are listed in the table below and are identified by hash marks (lines) on the right side of the affected pages.

Table to be completed by AG GM (or Assistant) Only					
Revision Level	**Revised By**	**Date MM/DD/YYYY**	**DC Approved**	**DC Release Date**	**Pages Affected**
01	Danielle Finlayson-Bourque	08/08/2017			
02	RK/BB/JA	03/01/2019			All
03	JA/MN/LS/BM	08/24/2020			All

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1. INTRODUCTION

1.1 Purpose

This Spill Contingency Plan (SCP) provides a plan of action for prevention, response to, and recovery of the uncontrolled release of hazardous material to the environment. This Plan is intended to supplement all site Emergency Response Plans (ERP) and should be read in conjunction with the ERP.

1.2 Scope

This Plan applies to Atlantic Mining NS Corporation's (AMNS's) Moose River Consolidated Project at the Touquoy Mine. AMNS is a wholly owned subsidiary of St Barbara Limited.

The SCP identifies potential spill scenarios that could occur during the operation of the Moose River Consolidated Project and establishes the framework for response and recovery from such an event. This framework includes personnel responsibilities, training, spill response/containment/cleanup procedures, notification and reporting requirements. All AMNS employees and contractors are required to comply with both the ERP and SCP.

1.3 Health, Safety and Environment Policies

AMNS is committed to providing a healthy and safe work environment for its employees and integrating that commitment into our everyday activities. We believe all accidental loss of resources, including employee and physical assets, is preventable.

As a company, we acknowledge our responsibility to the environment and to local communities in which we work and do business. AMNS actively encourages its staff to recognize these responsibilities and behave in a positive manner toward the society in which we function.

2. PROJECT DESCRIPTION

2.1 Location

The Touquoy Mine is located at 409 Billybell Way, Mooseland, Halifax Regional Municipality, Nova Scotia, approximately 110 km northeast of Halifax, NS (Figure 2.1.1). The Touquoy Mine comprises a total area of approximately 1760 hectares, encompassing 70 parcels of land. The major Project components include the Plant Site, Open Pit Mine, Tailings Management Facility (TMF), Waste Rock Storage Area (WRSA), and ancillary features including topsoil, organics and till stockpiles, and haul roads.

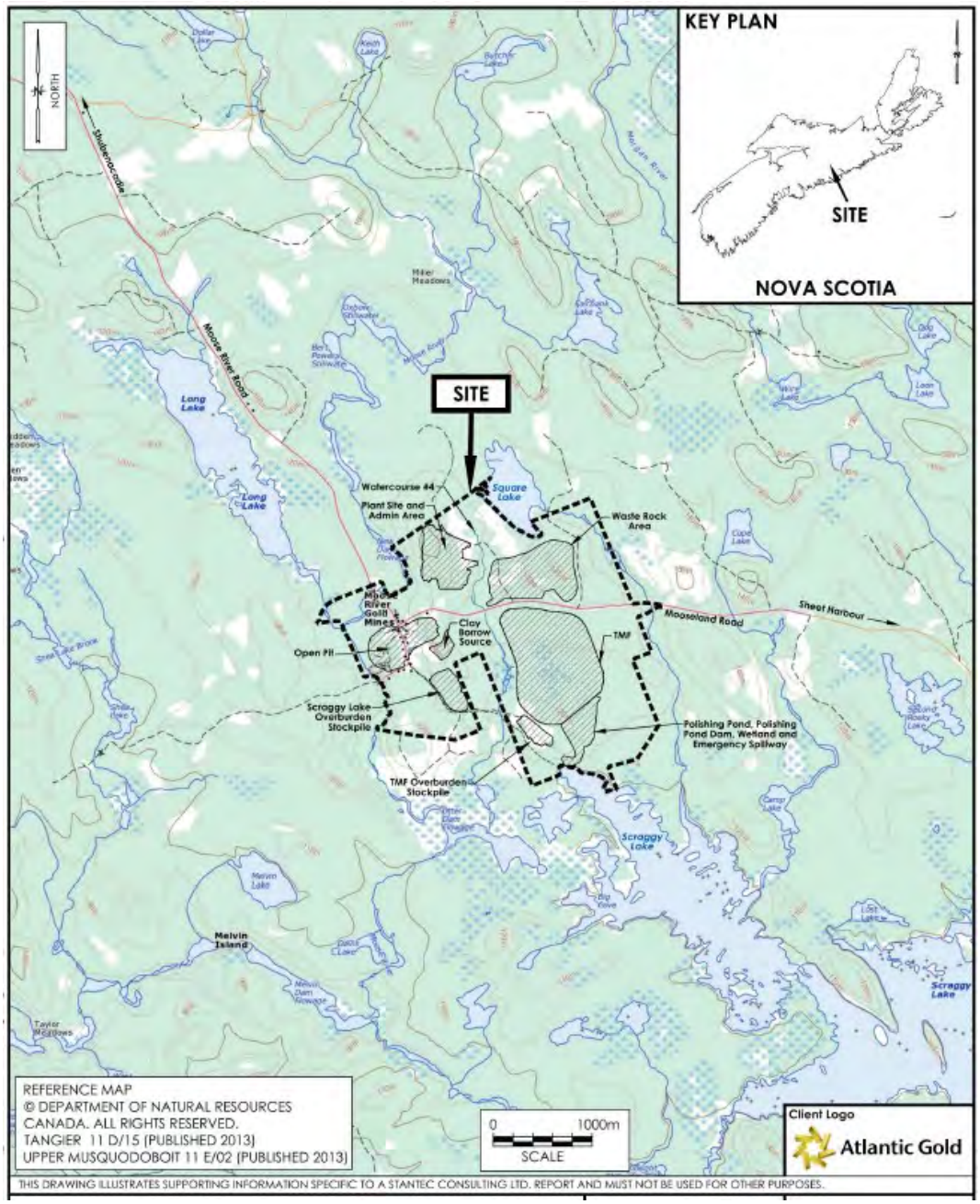


Figure 2.1.1 General Site Location

2.2 Nature of Activities

The Touquoy Mine, part of the Moose River Consolidated Project, is a fully permitted gold mine that began construction in 2016. Full operation of the site commenced in fall 2017. Site areas associated with major project components include the Mill Site, Open Pit Mine, Tailings Management Facility, Waste Rock Area, and ancillary facilities. Drawing-1 of Appendix A shows major project components and storage areas of bulk hazardous material located on the project site. Hazardous material is used and stored on-site for mill processing, equipment operation, and blasting activities. A list of hazardous material can be found in Appendix I.

3. DEFINITIONS

Term	
Ammonium Nitrate (AN)	The most commonly used oxidizer in explosives and blasting agents.
Corrosive Agent	A substance that has the power to cause irreversible damage or destroy another substance by contact.
Emergency	A serious unplanned event that poses potential harm to health, safety, production, equipment or environment that requires immediate action.
Emergency Response Coordinator (ERC)	Person responsible for the management of incident activities at the site of the emergency.
Emergency Response Plan (ERP)	A course of action developed to mitigate the potential damage of serious sudden or unplanned events that have the potential to endanger health, safety or business continuity.
Emergency Response Team (ERT)	A group of employees trained in emergency response and rescue that provide the field response activities to an emergency.
Emulsion	An explosives material containing substantial amounts of oxidizers suspended in water droplets surrounded by an immiscible fuel.
Hazardous Material	An item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.
Haze(ing)	Hazing is a process where you disturb the animal's sense of security to such an extent that it decides to leave and move on.
Hydrocarbon	A compound of hydrogen and carbon, such as any of those that are the chief components of petroleum and natural gas.
NSE	Nova Scotia Department of Environment. Environmental regulatory body.
Process Water	Water which is used in connection with mining operational processes.
Rehabilitation	The action of restoring something that has been damaged to its former condition.
Senior Management Response Team (SMRT)	A group consisting of department managers and/or supervisors that provide internal resources (people, equipment, materials) to support the emergency response activities. An authority structure in which the role of the incident commander is shared.
Spill	A release of a hazardous product out of its containment and into the environment.
Spill Contingency Plan	A comprehensive plan of action for spill prevention, response to, and recovery of hazardous material released (spill) to the environment (land or fresh water). The plan also identifies the resources and their locations that are needed to implement spill response.
Tailings Management Facility (TMF)	The Tailings Management Facility (TMF) receives process water and tailings from the mill via tailings slurry. Additional water is pumped to

Term	
	the TMF from stormwater discharge, seepage collection ditches, and open pit dewatering. Discharge from the TMF flows through an effluent treatment plant (ETP) to a polishing pond, then to a constructed wetland, before being released to Scraggy Lake.
Tailings Slurry	Tailings are the ore waste from mining processes. These wastes are mixed with water, creating a slurry.

4. ROLES AND RESPONSIBILITIES

The general responsibilities of both internal and external responders during an emergency are outlined in the site ERP and presented in the table below:

General Manager	• Ensure appropriate resource availability for ERT and SMRT • Responsible for timely and effective communication of events as per reporting and notification structure • Liaise with regulatory agencies when required (incl. NSE, LAE NS OHS Division, DNR, etc.)
Department Manager	• Provide timely and effective communication of ERP to department personnel • Participate in timely and effective communication during an event as per reporting and notification structure and procedures
Emergency Response Coordinator (ERC)	• Act as liaison between ERT and H&S Manager • Provide scene control and direction in the event of an emergency
Emergency Response Team (ERT)	• Act as first responders in the event of an emergency • Provide area control in specific emergency circumstances • Work under the direction and oversight of the ERC
Health and Safety Department	• Act as liaison between ERC and site management; chiefly the site General Manager • Provide situational updates to the SMRT as necessary and as per notification and reporting procedures • Liaise with external OHS regulators
Environmental Department	• Act as liaison between ERC and site management as required in any type of environmental event • Provide situational updates to the SMRT as necessary and as per notification and reporting procedures related to environmental events • Liaise with external environmental regulators • Provide secondary assistance to ERC in regards to scene control and ERT direction as necessary during environmental events • Assist as subject matter experts related to spills and remediation
Human Resources Department	• Provide personnel information to emergency services if necessary
Superintendent / Supervisor	• Provide area subject matter expertise as requested during an emergency event; provide direct support if requested
Employees / Business Partners	• Review and acknowledge requirements and procedures outlined in SCP
Technical Consultants (Including Engineer of Record)	• Provide technical input in the case of an emergency or potential emergency.

5. REGULATORY FRAMEWORK

The SCP has been developed and implemented to ensure that AMNS respects all applicable laws, regulations, and requirements from federal and provincial regulatory bodies.

As required by AMNS's Industrial Approval (2012-084244-06 Condition 23), the contingency plan is developed in accordance with Nova Scotia Environment's (NSE) *Contingency Planning Guidelines* (NSE 2016).

The following federal and provincial statutes and regulations also apply to spill contingency planning, response and reporting.

Canadian regulatory agencies administering explosives:

- Transportation of Dangerous Goods (TDG)
- Natural Resource Canada (NRC)

Nova Scotia *Environment Act:*

- *Dangerous Goods Management Regulations*
    - *Environment Act, Section 84 - Dangerous Goods Management Regulations (amended to N.S. Reg. 57/2016)*
- *Environmental Emergency Regulations*
    - *Environment Act, Sections 74, 136 and 171 and subsection 122A (3) - Environmental Emergency Regulations (N.S. Reg. 16/2013)*
- *Contaminated Sites Regulations*
    - *Environment Act, Clause 25(1)(g) and Section 91 - Contaminated Sites Regulations (amended to N.S Reg. 36/2020)*
- *Petroleum Management Regulations*
    - *Environment Act, Sections 25 and 84 - Petroleum Management Regulations (N.S. Reg. 44/2002)*
- *Approval and Notification Procedures Regulations*
    - *Environment Act, Section 66 - Approval and Notification Procedures Regulations (amended to N.S. Reg. 8/2017)*

Nova Scotia *Occupational Health and Safety Act:*

- *Workers' Compensation General Regulations, Section 184 – Workers Compensation Act (amended to N.S. Reg. 183/2018)*
- *Workplace Hazardous Materials Information System (WHMIS) Regulations*

Occupational Health and Safety Act, Section 82 - Workplace Hazardous Materials Information System (WHMIS) Regulations (amended to N.S. Reg. 143/2014)

Contaminated Sites Regulations

Spills that occur may be subject to the *Contaminated Sites Regulations* and the following protocol:

> "The *Notification of Contamination Protocol* provides requirements for notification when required under Section 8 and Section 9 of the Contaminated Sites Regulations. The protocol addresses two contamination situations: a) free product presence in soil or groundwater; and b) soil, sediment, surface water or groundwater contamination." (NSE 2013)

Remediation of the spill site may proceed as prescribed by the *Contaminated Sites Regulations* under the direction of a qualified site professional.

6. APPROACH TO SPILL RESPONSE

A spill is defined as the uncontrolled release of a hazardous product out of its containment and into the environment. Such releases may result in potential hazards to humans, vegetation, water resources, fish and wildlife which vary in severity, depending on several factors including the nature of the spilled material, quantity spilled, location and season.

There are generally two types of spills that could occur:

Operational Spills

> Spills of this nature result from the mine or mill operations. The area of concern in this context is the immediate vicinity of the Touquoy Mine site. Spilled material could include reagents, diesel fuel, gasoline, tailings slurry and/or process water to on-site land, waterbodies, watercourses, or wetlands.

Carrier Spills

> These are spills which could result from an isolated incident. Spills of this nature normally involve an independent carrier or a site vehicle and would occur on the site access/haul roads or on the public roads. Most spills would likely be on land, however since roads do cross watercourses there is potential danger of these spills entering a water system.

AMNS requires all site personnel to be trained on the specific procedures required for spill response initiation and reporting. All site personnel must comply with the following procedure upon initiation of a spill involving a regulated substance:

- Immediately warn other personnel working near the spill area;
- Evacuate the area if the health and safety of personnel is threatened;
- In the absence of danger, and before the ERT arrives at the scene, take any safe and reasonable measure to stop, contain and identify the nature of the spill;
- Notify the Environmental Department, who will aid in spill response operations as required. Notification of the area Supervisor is also required; and
- Complete necessary reporting documentation

6.1 Response Process

Upon initiation of spill response, the following procedure shall be completed by site personnel:

Source Control – If safe to do so, reduce or stop the flow of product. This may include actions such as turning off a pump, closing a valve, sealing a puncture, raising a leaking or discharging hose to a level higher than the material inside the tank, or transferring the material to a secondary container.

Contain and Control the Free Product – If safe to do so, prevent or minimize the spread of spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms (socks), dykes, berms, or trenches.

Protection – Evaluate the risk of the impacted area to the surrounding environment. If safe to do so, protect sensitive ecosystems and natural resources at risk by isolating the area and/or diverting the spilled material away from sensitive receptors such as watercourses, water bodies and wetlands.

Report the Spill – Provide basic information such as location, date and time of the spill, type and an estimate of material discharged, cause, photographic records, location, personnel involved, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or environment.

An accurate record of the time and type of action taken, and people contacted, must be maintained by the on-scene Supervisor or respondent.

Reports shall be completed as per AMNS's Spill Report Incident Heads Up Form or Environmental Incident Report Form (see Appendix B) and emailed to: environmental.incident@atlanticgold.ca

Spill Clean-up – Recover and contain as much free material as possible. Ensure proper clean-up and spill controls are in place.

6.2 Levels of Emergency Spill Response

To effectively manage emergency response, a tiered emergency classification scheme is implemented. Each level of emergency, based on the significance of the event, requires varying degrees of response, effort and support. The impact on normal business operations will also differ as will the requirements for investigation and reporting. The emergency spill response classifications are defined by the following three emergency levels:

Level 1 Emergency (Low Risk) – Minor accidental release of a hazardous substance with;

- No threat to public safety; and/or
- Negligible environment impact to receiving environment

Level 2 Emergency (Medium Risk) – Moderate accidental release of a hazardous substance with;

- Some threat to public safety and threat to project personnel safety; and/or
- Moderate environmental impacts to receiving environment

Level 3 Emergency (High/Extreme Risk) – Major accidental release of a hazardous substance with;

- A threat to public safety and jeopardizes project personnel safety; and/or
- Significant environmental impacts to receiving environment

Emergency response levels are determined by the potential impact to human and environmental health. The potential impact is based on substance released, quantity spilled, and receiving environment. This includes specific consideration given to spills occurring within engineered secondary containment. In general, a level 1 (low risk) incident would be a spill of any hazardous 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. In general, A level 2 or 3 emergency spill response classification is a release of a hazardous product where there is potential for that product to enter a watercourse, wetland, or waterbody, and/or cause significant danger to life, health or environment. Consultation with the Environmental Department and SMRT may be needed to correctly classify emergency level.

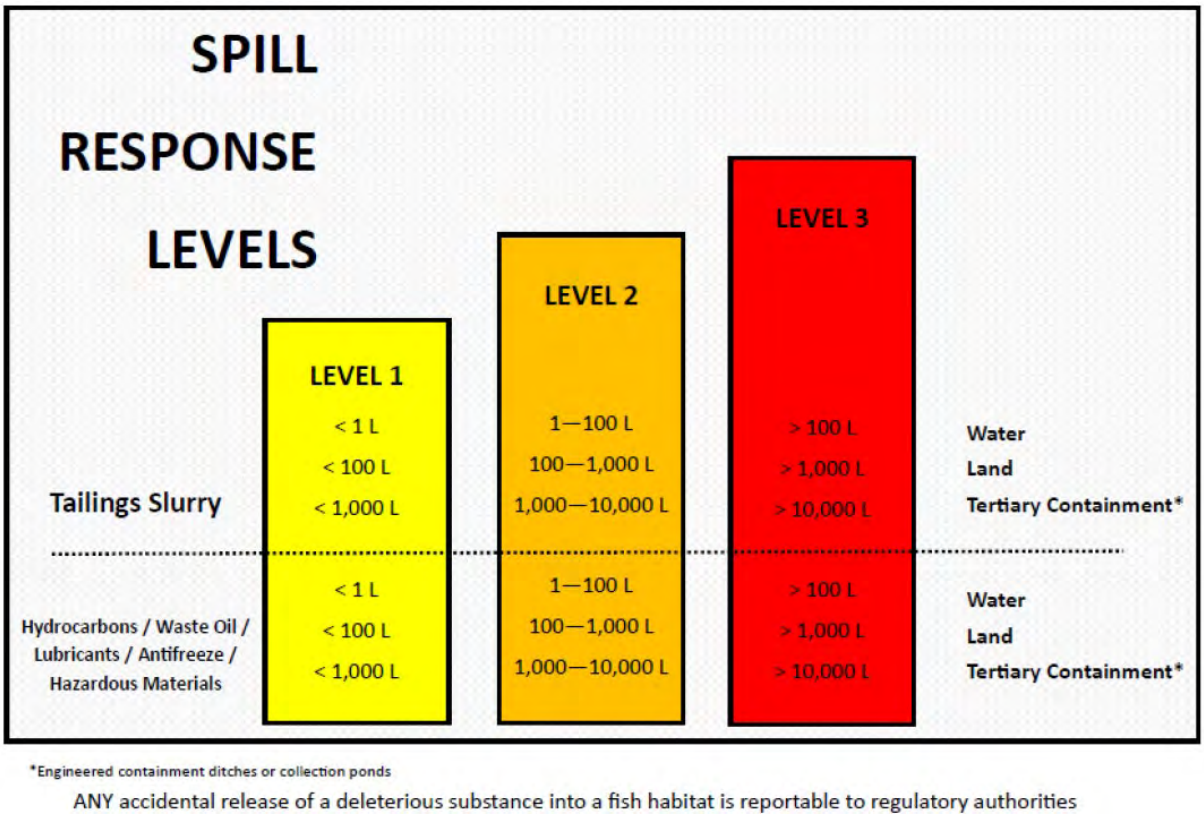


Figure 6.2.1: Spill Response Levels

6.3 Reporting

6.3.1 Internal Reporting Requirements

All spills (whether reportable externally or not) must be reported by the first responder to their immediate supervisor and then to the Environmental Department following assessment of the scene.

Responsible department supervisors are required to document the spill and provide notice to the Environmental Department within 4 hours of the spill occurrence. Documentation should be completed via the AMNS Spill Report Incident Heads Up Form (ENV FRM-001), provided in Appendix B. The Heads-Up form requires an initial assessment of the spill including spilled material, quantity, location, description of receiving environment, immediate actions taken, and immediate cause. The spill can be reported via the environmental.incident@atlanticgold.ca email address or via phone, depending on the severity. Moderate to high level spills (such as spills of hazardous material over 100L on land or over 10L to water) are to be reported as soon as reasonably practical and safe.

The level of investigation is based on the risk level as determined by consideration of the worst-case realistic scenario (actual and potential consequence). If further investigation is required, the Environmental Incident Report (ENV-FRM-002) provided in Appendix B must be initiated within a reasonable timeframe (72 hours). This report requires inclusion of photos, a description of clean-up activities, subsequent actions, identifies root cause and determines any required corrective actions. This form may not be required for some low-level incidents (i.e., small “routine” spills to land under 30 L).

All external reporting requirements for regulatory agencies shall be completed by the AMNS Environmental Department

6.3.2 Regulatory Reporting Requirements

Under federal and provincial regulations, the Environmental Superintendent or designate will call the 24-hour Nova Scotia Spill Report line should a spill of a reportable quantity occur as per the reportable quantities in Appendix C. Several government agencies at the federal and municipal levels may ultimately be informed through the 24-Hour Spill Report line. The Environmental Superintendent or designate will ensure that the appropriate information is collected before reporting to the Spill Report line. Any reportable spill that occurs on or affects a third party (including leased crow property) must also be reported to the property owner.

Any spill of an amount greater than those listed in Appendix C is a “reportable spill”.

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

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

Most reportable spills are formally reported to NSE by the Environmental Department using regulatory approved templates. Depending on the nature of the spill, NSE and/or Environment Canada may require the spill clean-up efforts and reporting be completed by an independent contaminated sites professional.

6.4 Public Relations

In the case of a large environmental release occurring, it should be expected that local, regional and national media may reach out to employees or stakeholders of the organization in an attempt to receive information or to attempt to confirm information that may have already been received. As employees of Atlantic Gold, it is vitally important to remember a few points when approached with these types of questions:

- The Chief Executive Officer is responsible for speaking externally on Atlantic Gold's behalf. Others can be designated to speak, however that designation is on a case-by-case basis and needs approval by the individual above.
- If you receive a media request, please ask the member of the media to identify themselves and the media outlet they represent. At that point, you are asked to direct them to make their inquiry to Atlantic Gold's Communications Manager.
- Employees who receive outreach from media sources are also asked to report those interactions to the Communications Manager themselves to ensure all information requests are followed up on.

The full copy of the Atlantic Gold Communication Policy can be found in Appendix E.

7.0. EMERGENCY SPILL RESPONSE PROCEDURES

7.1 General Spill Procedures

The following general emergency response procedures should be followed as soon as a spill occurs or is detected by site personnel. This procedure may differ on a case-by-case basis, specific spill scenarios and response are discussed further detail in Appendix H.

- Ensure your personal safety and the safety of personnel in the vicinity
- Contact your immediate Supervisor
- If required based on the nature of the event as specified by the site ERP, contact ERT. Remove personnel from spill site.
- Don additional protective clothing (respirator, Tyvek, etc.) if appropriate to deal with the spill as per SDS.
- Absorb any liquids with appropriate absorbents from a spill kit.
- Prevent liquids or spill material from entering watercourses, streams, etc. by diking or by digging ditches to contain the spill.
- Take other actions as directed by the Emergency Response Coordinator (ERC).
- Delineate the spill area.
- Remove contaminated clothing/PPE, place in plastic bag and seal for disposal at an approved location.

The general investigative actions for a spill should include the following:

- Estimate quantity spilled.
- Delineate the area of contamination through visual identification. Sampling and analytical testing of spilled material, soil and/or water may be required with support from the Environmental Department.
- Evaluate available clean-up technologies (excavation, skimmers, vacuum trucks, booms, absorbent pads, etc.).
- Assess impact of clean-up on environment.
- Continuously evaluate worker safety.
- Evaluate treatment and/or disposal options.
- Assess root cause and develop corrective actions to prevent future occurrences.

7.2 Spills on Land

For small spills, a spill kit should be deployed to control the migration of the spill and to facilitate the cleanup.

For larger spills, the main spill control techniques involve the use of two types of barriers: dykes and trenches. These barriers should only be constructed if it is deemed safe to do so. Barriers should be placed down gradient from the source of the spill. Barriers slow the progression of the spill and also serve as containment to allow recovery of the spill.

Depending on the volume spilled, the site of the spill, as well as available material, a dyke may be built with soil, booms, lumber, snow, etc. A plastic liner should be placed at the foot and over the dykes to protect the underlying soil or other material and to facilitate recovery of the spill. Construct dykes in such a way as to accumulate a thick layer of free material in a single arc (V shape or U shape).

Trenches are useful in the presence of permeable soil and when the spilled material is migrating below the ground surface. A plastic liner should be placed on the down-gradient edge of the trench to protect the underlying soil. Liners should not be placed at the bottom of the trench to allow water to continue flowing underneath the layer of floating contaminant if applicable.

The use of large quantities of absorbent materials to recover large volumes of spilled fluids should be avoided. Large volumes of free-material should be recovered and containerized, as much as possible, by using vacuums and pumps appropriate for the material. Mixtures of fuel and water may be processed through an oil-water separator in the event of a hydrocarbon spill. Absorbent sheets should be used to soak up residual fuel on water, on the ground, and on vegetation.

Hazardous material is collected using techniques mentioned above and stored within appropriate containers. The hazardous material is then transported off-site by an approved contractor for disposal at an appropriate facility.

7.3 Spills on Water

Responses to spills on water include the general procedures previously detailed. Various containment, diversion and recovery techniques are discussed in the following sections. The

following elements must be considered when conducting response operations:

- Type of water body or water course (lake, stream, river);
- Water depth and surface area;
- Wind speed and direction;
- Type of shoreline;
- Seasonal considerations (open-water, frozen); and
- Behavior of spilled product when mixed with water (i.e. hydrocarbons will float on water surface).

Containment of hydrocarbons (fuel, gas, oil) on water requires the deployment of mobile floating booms to intercept, control, contain and concentrate the floating oil. For a large lake (such as Scraggy Lake), typically, one end of the boom is anchored to shore for recovery using a skimmer. Reducing the surface area of the slick will consequently increase the oil thickness and increase recovery. Mechanical recovery equipment (i.e. skimmers and oil/water separators) will need to be mobilized to site if required.

If hydrocarbons are spilled in a water body such as Scraggy Lake, it may not be possible to deploy booms using a boat. In this case, measures are taken to protect sensitive (wetlands) and accessible shoreline. The fuel slick is monitored to determine the direction of migration. In the absence of strong winds the oil will likely flow south towards the discharge of the lake; however, given the narrowness of the north end of the lake, a spill could be captured within 500 m of the TMF with only 200-300 m of boom to prevent flow to the south and protect critical shoreline habitat in this area. In fact, several strings of boom of this length could be used across the north end of the Lake to reduce the movement of oils and to protect shorelines. Measures will be taken to block and concentrate the oil slick on the lake using booms where it will sequentially be recovered using a portable skimmer, a vacuum, or sorbent materials.

In small slowly-flowing streams, channels, inlets or ditches, inverted weirs (i.e. syphon dams) are used to stop and concentrate moving fuel spills for collection while allowing water to continue to flow unimpeded. In both cases fuel will then be recovered using a portable skimmer, vacuum, or sorbent material.

In the unlikely case of a spill in Moose River, diversion booming is used to direct the oil slick ashore for recovery. Single or multiple booms (i.e. cascading) may be used for diversion. Typically, the booms are anchored across the river at an angle. The angle will depend on the current velocity. Choosing a section of a river that is both wider and shallower makes boom deployment easier. Diversion booming may also be used to direct oil slick away from a sensitive area to be protected.

Hazardous material is collected using techniques mentioned above and stored within appropriate containers. The hazardous material is then transported off-site by an approved contractor for disposal.

In the event of a process water or tailings slurry spill near a watercourse, depending on the volume

spilled, the site of the spill, as well as available material, a dyke or trench may be built to divert and/or capture the spilled material prior to the watercourse. The material can then be disposed of within the TMF or processed through the Mill process dependent on cyanide concentrations. This can be done with the use of a hydrovac or by portable pumps.

7.4 Spills on Snow and Ice

In general, snow and ice will slow movement of spilled substances. The presence of snow may also hide the spill and make it more difficult to follow its progression. Snow is generally a good natural sorbent, most spills tend to be soaked up by snow through capillary action.

However, the use of snow as absorbent material is to be limited as reasonably practical. Snow and frozen ground also prevent spills from migrating down into soil or at least slow the process. Ice prevents seepage of spilled substance into the underlying water body.

Response to spills on snow and ice includes the general procedures previously detailed. Most response procedures for spills on land may be used for spills on snow and ice. The use of dykes (i.e. compacted snow berms lined with plastic sheeting) or trenches (dug in ice) slow the progression of the spill and serve as containment to allow recovery.

Free-material is recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice are scraped up manually or using heavy equipment depending on volumes. The contaminated snow and ice are placed in containers or within lined berms on land. The contaminated material may be managed in the TMF (in the case of a tailings slurry or process water spill) or shipped off-site for treatment/disposal.

Hazardous material is collected using techniques mentioned above and stored within appropriate containers. The hazardous material is then transported off-site by an approved contractor for disposal.

7.5 Wildlife Protection Procedures

When required, the following audible and visual techniques shall be used to prevent wildlife from interacting with spilled product or a contaminated area(s) following a spill;

- Visual scare tactics, i.e. emergency response vehicles or personnel;
- Broadcast sounds, i.e. horns, shouting, hazing equipment;
- Exclusion, i.e. netting or sheeting applied in smaller spill areas.

To minimize environmental impact, these devices are most effective when initiated immediately.

The size of the spill and location in relation to sensitive wildlife areas must be assessed at the time of the event as to correctly apply the appropriate level of deterrence. Only workers trained in the safe and proper use of certain hazing equipment will be permitted to haze wildlife. Personal protective equipment (PPE) will be worn by all personnel using deterrent equipment, as per manufacturer's instructions, with minimum PPE consisting of eye and ear protection.

Hazing should be administered in such a way as to prevent wildlife from entering an area where they

may become endangered. It is also important to ensure that hazing efforts do not cause already contaminated animals to scatter away before they are able to receive treatment. Techniques should be applied as soon as possible to prevent wildlife from interacting with spilled product or contaminated areas and becoming oiled or contaminated.

In the event of a spill occurring, the affected areas will be inspected for contaminated or dead wildlife. The collection of said wildlife will be done under the direction of applicable wildlife agencies, Table 7.5.1. Canadian Wildlife Services is required to be consulted and approval shall be obtained prior to disposing of any dead wildlife.

Table 7.5.1 Emergency Contacts in Case of Spills Affecting Wildlife

Name	Location	Phone Number	Purpose
Nova Scotia Department of Lands and Forestry – Wildlife Division	136 Exhibition St Kentville NS B4N 4E5	During work hours 902-679-6091	Wildlife interactions, effects on plants and other species.
Environment and Climate Change Canada - Canadian Wildlife Service - Atlantic Region	17 Waterfowl Lane, P.O. Box 6227 Sackville NB E4L 1G6	Direct: 506-364-5044 Toll Free: 1-800-668-6767	For information on incidental take of migratory birds, their nests and eggs.
Nova Scotia Environment (NSE)	30 Damascus Road, Suite 115 Bedford Commons, Bedford NS B4A 0C1	During work hours Phone: 902-424-7773 Fax: 902-424-0597 After hours 1-800-565-1633	NSE emergency phone line. Can be consulted in case of emergency. After hours is through the Canadian Coast Guard.
International Bird Rescue	International	707-207-0380	Wildlife rehabilitation specialists, that manage various aspects of wildlife response.

7.6 Disposal/Remediation of Contaminated Materials

Appropriate containers as approved by NSE can be used to contain and transport contaminated soil for treatment. In general, metal barrels should be used for any material containing hydrocarbons and plastic barrels for any corrosive agents. Depending on the nature of the spilled contaminant, the soil may be disposed of in the on-site TMF. Table 7.6.1 provides disposal/remediation methods for hazardous material found on-site.

Table 7.6.1 Disposal/Remediation Methods

Hazardous Substance	Disposal/Remediation Method
Hydrocarbons	Remediation to be completed off-site at an approved facility
Reagent Contaminated Soil (small quantity)	Remediation to be completed through the Mill process
Tailings Slurry or Process Water	Disposed of within the TMF or processed through the Mill process dependent on cyanide concentrations.
Other Hazardous Substances	Disposal/Remediation to be completed off-site at an approved facility

7.7 Facilities and Contractors

See Appendix D for key contractor response contacts.

7.8 Equipment and Supplies

Equipment and supplies are necessary for conducting countermeasure activities in the event of a spill. Sources for equipment and supplies is included in Appendix F. A spill kit supply list is included in Appendix G. The location of all spill kits is indicated on the site plan in Appendix A.

7.9 Rehabilitation Procedures

The goal of rehabilitation is to restore the site so that it can be safely used for the same purposes as it was prior to the occurrence. Rehabilitation may involve replacing contaminated soil with clean fill or routing watercourses away from the contaminated site until it can be cleaned up.

Rehabilitation procedures specific to spill type and location will be reviewed with NSE as required. Rehabilitation should commence immediately following spill clean-up as appropriate.

Monitoring should continue for a reasonable amount of time following rehabilitation to ensure that that clean-up and restoration activities were successful.

8. TRAINING REQUIREMENTS

Emergency spill response training subject to the requirements of this plan shall be completed in conjunction with AMNS's ERP, whereby the ERC, with support from the Manager, Environment and Community, will identify project training needs and the resources required to provide the necessary skills to personnel tasked with duties in emergency and spill response. Circumstantially, emergency spill response often occurs in parallel with other emergency responses (i.e. an overturned fuel tanker accident along the road not only causes imminent hazards to site personnel, but also to the surrounding environment). To facilitate efficient response to overall emergency response and preparedness, project personnel trained to respond to Health and Safety emergencies (ERT) shall also receive sufficient training to effectively respond to accidental releases of hazardous materials. Emergency and spill response training shall be developed and implemented throughout the lifecycle of the project to ensure the following requirements are fulfilled:

- Training meets or exceeds the requirements of Nova Scotia Health and Safety regulations
- Training enables responders to competently operate the equipment employed for emergencies and spill response purposes; and
- Training includes practices, drills and full-scale exercises for responding to the types of emergencies that are reasonably predictable for the operation

8.1 Training Objectives

The training objectives are to prepare site personnel in response procedures. The procedures that need to be reviewed include most topics described in this contingency plan:

- Notification Procedures
- Health and Safety Procedures
- Hazard Analysis
- Response Command System
- Reporting Requirements
- Equipment Inventories and Operation

8.2 Drills and Exercises

While drills and exercises can be used for training purposes, their primary function for this Plan is to provide the means of testing the adequacy of the plan's provisions and the level of readiness of response personnel. The ERC with support from the Environmental Department are responsible for coordinating the development of and assisting in conducting drills and exercises. The drills and exercises will include table top, functional drills and full-scale exercises. Refer to the ERP for further descriptions.

8.3 Training Preparation

Preparation for emergency and spill response exercises will vary depending on the type and scope involved; however, planning for these events shall include:

- Plan review and identification of possible problem areas;
- Establishing objectives;
- Identifying resources to be involved, including personnel;
- Develop exercise scenarios, a major sequence of events list, and expected action checklists; and
- Assigning and training controllers and evacuators.

AMNS will engage the appropriate regulators, contractors and consultants to conduct the training drills and exercises. All scenarios shall be realistic and based upon current operating conditions. The primary event (i.e. spill) shall be determined based on the objective of the exercise and completed in accordance with the prescribed regulatory requirements.

9. POTENTIAL SPILL ANALYSIS

To prepare for emergency spill response, potential spill analysis was conducted on various worst-case spill scenarios. The exercise serves to identify potential risk areas, as well as to determine the fate of spilled products and their environmental effects. This analysis examines spill scenarios as

they relate to the types of project activities.

Several types of materials have been identified as capable of causing environmental, health, and safety concerns should a spill occur while being transported, used, stored and/or handled. These include: fuel, explosives (emulsion), lubricants, oils, tailings slurry and process water. These materials are typically utilized daily during project operations, often in sufficiently large quantities, warranting the evaluation of potential spill scenarios. All other hazardous materials, chemicals or wastes are handled/used/stored in smaller quantities and packaged/transported in small containers that limit the magnitude of the spills that can occur.

Refer to Appendix H for spill analysis details for the following scenarios:

- Fuel spills on land
- Explosives transport and handling spills
- Tailings slurry transfer spills
- Process water transfer spills
- Lubricants and oils transfer and transport spills

10. REVIEW AND CONTINUOUS IMPROVEMENT

The plan will be reviewed annually but also following drills, exercises and spill responses. Updates will consider the accuracy and currency of the information included in the plan and changes to equipment, personnel and the site/risk. Records such as equipment inventory and maintenance, personnel training, drills and exercises, and updates of plans will be maintained.

The controlled copy of this document will be updated, and copies made as required. It is the responsibility of all employees to refer to the most current version of the plan. Copies or extracts of this document, which have been printed, are uncontrolled copies and cannot be guaranteed to be the latest version.

11. REFERENCES

Atlantic Gold Corporation. 2020. Emergency Response Plan AMNS-PLN-HS-001, Amended: August 1, 2020

Atlantic Gold Corporation. 2020. Touquoy Mine Tailings Management Facility Emergency Preparedness and Response Plan AMNS-PLN-ENV-001, Effective Date: August 21, 2020

Conestoga-Rovers and Associates (CRA). 2012. Spill Contingency Plan Reference Industrial Approval Application and Supporting Documentation, Touquoy Gold Project, Moose River Gold Mines, NS. Submitted November 2012.

Nova Scotia Environment (NSE). 2013. Notification of Contamination Protocol. Effective Date Jul 6, 2013

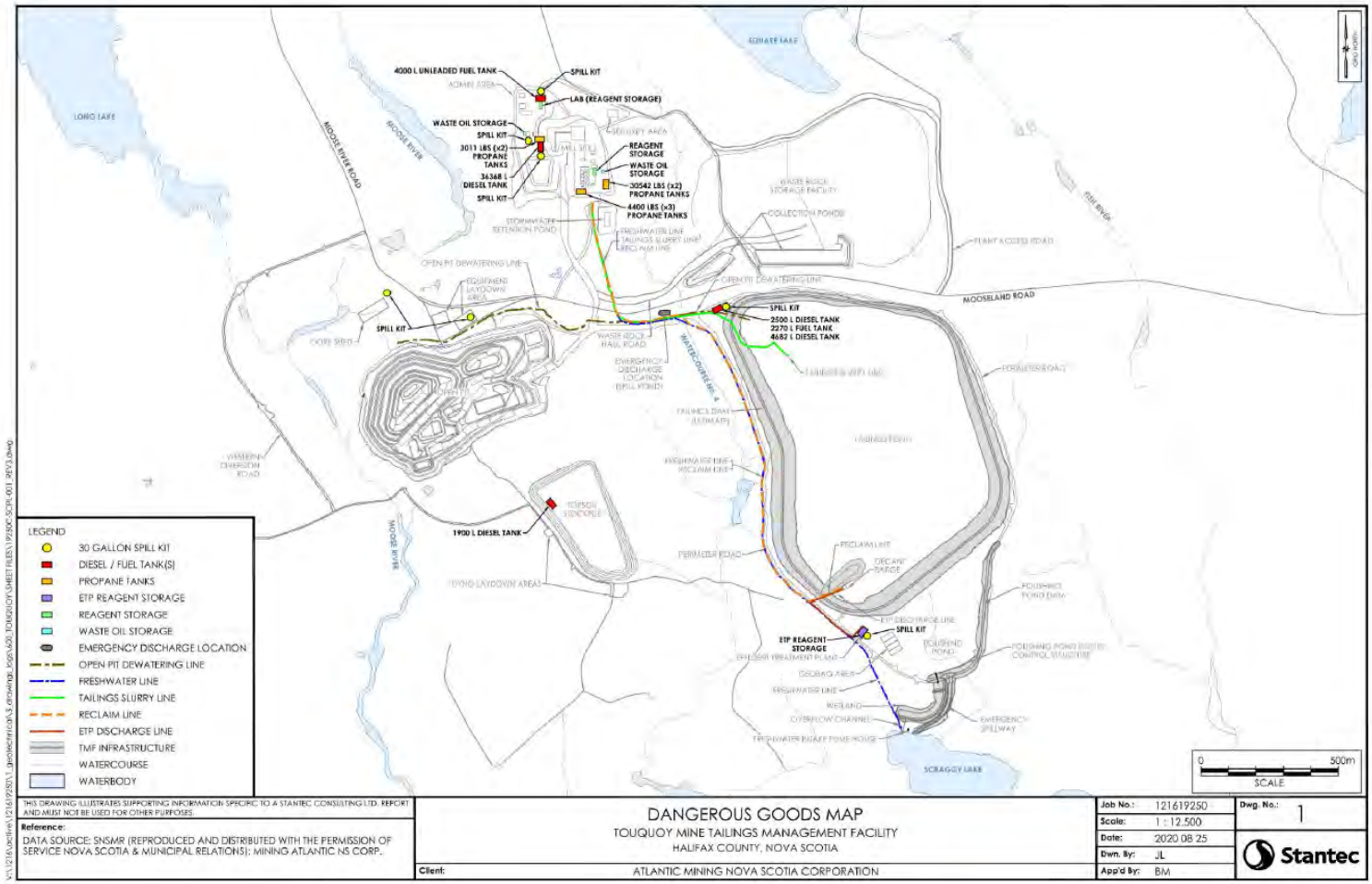
Nova Scotia Environment (NSE). 2016. Contingency Planning Guidelines. Effective Date: May 10, 2016

Nova Scotia Environment (NSE). 2020. Industrial Approval 2012-084244-06. Atlantic Mining NS Corp. Effective Date: April 9, 2020.

Nova Scotia Environment (NSE). 1994-95, c. 1, s. 1. Nova Scotia Environment Act.

Prospectors and Developers Association of Canada (201 e3 Plus: A Framework for Responsible Exploration, Excellence in Environmental Stewardship e-toolkit (EES) Version 01 Chapter 11 Spill Management ES-SM-v1.0

APPENDIX A FIGURES



APPENDIX B SPILL REPORTING FORMS

Atlantic Gold

SPILL REPORT
INCIDENT HEADS UP FORM
AGC ENV FRM 001 REV 1

NOTIFY: environmental.incident@atlanticgold.ca

INITIAL REPORT OF THE INCIDENT (Supervisor)

Date of Event	Time of Event	Date Reported	Time Reported	Main Person Involved	Reported By

Employer
❑ Atlantic Gold
❑ Contractor

Contractor (If Applicable)	Department	Location

UTM Coordinates	Northing		Easting	
Geographic Coordinates	Latitude		Longitude	

Spill / Release

Substance Spilled	Quantity (Estimate Acceptable)	Receiving Environment (i.e. Where did the spill go?)

Is the spill controlled/contained? Yes ❑ No ❑

Is the spill into a watercourse or wetland? Yes ❑ No ❑

Does the spill have potential to travel off-site? Yes ❑ No ❑

Initiating Event	Method of Cleanup

Spill Waste (i.e. contaminated soil, oil-soaked pads, etc.) Storage Location

Detailed Description

Immediate Actions Taken to Secure Scene, Protect Peoples or Environmental and Equipment

Immediate Cause of the Incident

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Atlantic Gold

SPILL REPORT
INCIDENT HEADS UP FORM

AGC ENV FRM 001 REV 2

FOR ENVIRONMENTAL DEPARTMENT TO COMPLETE

Further Investigation Required? ❑ Yes ❑ No

If Yes - Use Environmental Incident Report Form
AGC ENV FRM 002 Rev 3

Reportable? ❑ Yes ❑ No

Regulator Notified? ❑ Yes ❑ No

Regulator Name	Date Reported	Reference Number

Contact Name

Environment Department Comments

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Atlantic Gold

ENVIRONMENTAL INCIDENT REPORT FORM

AGC ENV FRM 002 REV 3

NOTIFY: environmental.incident@atlanticgold.ca

STEP 1. INITIAL REPORT OF THE INCIDENT (Supervisor)

Date of Event	Time of Event	Date Reported	Time Reported	Main Person Involved	Reported By

Employer
❑ Atlantic Gold
❑ Contractor

Contractor (If Applicable)	Department	Location

UTM Coordinates	Northing		Easting	
Geographic Coordinates	Latitude		Longitude	

Environment

❑ Spill/Release ❑ Wildlife Interaction ❑ Other: _____

Spill / Release

	Quantity (Estimate Acceptable)	Receiving Environment (i.e. Where did the spill go?)

Is the spill controlled/contained? Yes ❑ No ❑

Is the spill into a watercourse or wetland? Yes ❑ No ❑

Does the spill have potential to travel off-site? Yes ❑ No ❑

Initiating Event	Method of Cleanup

Spill Waste (i.e. contaminated soil, oil-soaked pads, etc.) Storage Location

Detailed Description

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Atlantic Gold

ENVIRONMENTAL INCIDENT REPORT FORM

AGC ENV FRM 002 REV 3

Immediate Actions Taken to Secure Scene, Protect Peoples or Environmental and Equipment

Immediate Cause of the Incident

Using the Incident Classification, the **Actual** Consequence of this incident was _____

Using the Incident Classification, the **Reasonable** Potential Consequence of this Incident was _____

Consequences	Insignificant	Minor	Moderate	Major	Catastrophic
Environment	Non-reportable event No impact	Reportable Event No Impact	Reportable Event Reversible Impact	Reportable Event Long-Term Impact	Reportable Event Irreversible Impact

STEP 2. INFORMATION GATHERING (Investigator)

Investigator (s)

Lead Investigator

Others

❑ Witnesses Present ❑ Photos available of the Incident?

Witness Statements (Attach as Appendix)
1
2
3

FOR ENVIRONMENTAL DEPARTMENT TO COMPLETE

Reportable? ❑ Yes ❑ No

Regulator Notified? ❑ Yes ❑ No

Regulator Name

Date Reported

Reference Number

Contact Name

STEP 3. CAUSAL ANALYSIS (Investigator)
At least one must be selected (two or three are typical).

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ENVIRONMENTAL INCIDENT REPORT FORM

Contact Environmental Department for guidance, if necessary.

Equipment Failure Issues	Procedural Issues	Communication Issues	Engineering Issues
☐ 1.1 Defective Parts/Tools/ Equipment	☐ 3.1 No Procedure	☐ 5.1 Shift Change Impact	☐ 7.1 Workplace/ Roadway Layout/ Design/ Conditions
☐ 1.2 Design Issue	☐ 3.2 Error in Procedure	☐ 5.2 Failure to Agree on how task to be Performed	☐ 7.2 Congested Work Area/ Restricted Action
☐ 1.3 Preventative Maintenance Issue	☐ 3.3 Procedure too Complex	☐ 5.3 Failure to Understand Communication	☐ 7.3 Inadequate display, signs, labels, alarms, warnings
☐ 1.4 Repeat Failure	☐ 3.4 Procedure not Followed	☐ 5.4 Inadequate Communication	☐ 7.4 Inadequate Guards of Barriers
☐ 1.5 Tolerable Failure		☐ 5.5 Cross-Department Communication Issue	☐ 7.5 Noise/ Vibration/ Light
			☐ 7.6 Poor Body Mechanics, Body Placement, Positioning, Repetitive
Natural Elements Issue	**Training Issue**	**Work Direction Issue**	**Quality Control Issue**
☐ 2.1 Temperature Extremes	☐ 4.1 No Training	☐ 6.1 No Direction Provided	☐ 8.1 No Quality Controls
☐ 2.2 Weather Conditions	☐ 4.2 Training not Followed, Unintentional	☐ 6.2 Inadequate Direction Provided	☐ 8.2 Inadequate Quality Controls
☐ 2.3 Ground Movement	☐ 4.3 Trained but Inexperienced	☐ 6.3 Failure to Follow Work Direction	**Other**
☐ 2.4 Flooding		☐ 6.5 Fatigue	☐ 9.1 Other (explain below)
		☐ 6.6 Impairment	

Cause Explanation (For Each Cause Identified in Casual Analysis - Provide a Brief Explanation of Why)

Code	Explanation

Corrective Actions:

No.	Description	Issued To (Name)	Due Date

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ENVIRONMENTAL
INCIDENT REPORT FORM

AGC ENV FRM 002 REV 3

Investigation Team and Factors Limiting		
Name	Position	Signature
		❑ Investigation Accepted
		❑ Investigation Accepted
		❑ Investigation Accepted

STEP 4. FINAL COMMENTS BY INVESTIGATORS OR MANAGEMENT		
Name	Comment	Date

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APPENDIX C REPORTABLE RELEASE AMOUNTS

	TDGA Class*	Description of Substance	Reportable Release Amount
1	All Class 1	explosive	any amount
2	2.1	compressed gas (flammable)	100 L or more
3	2.2	compressed gas (non-corrosive, non-flammable)	100L or more
4	2.3	compressed gas (toxic)	any amount
5	3	flammable liquid	100 L or more
6	4.1	flammable solid	25 kg or more
7	4.2	spontaneously combustible solid	25 kg or more
8	4.3	water reactant solid	25 kg or more
9	5.1	oxidizing substance	50 L or more –or– 50 kg or more
10	5.2	organic peroxide	1 L or more –or– 1 kg or more
11	6.1	poisonous substance	5 L or more –or– 5 kg or more
12	6.2	infectious substance	any amount
13	7	radioactive substance	any amount
14	8	corrosive substance	5 L or more –or– 5 kg or more
15	9 (in part)	miscellaneous product or substance, excluding PCB mixtures and environmentally hazardous substances	25 L or more –or– 25 kg or more
16	9 (in part)	PCB mixture of 50 or more parts per million	0.5 L or more –or– 0.5 kg or more
17	9 (in part)	environmentally hazardous substance	1 L or more –or– 1 kg or more
18	n/a	asbestos waste as defined in the *Asbestos Waste Management Regulations* made under the Act	50 kg or more

	TDGA Class*	Description of Substance	Reportable Release Amount
19	n/a	used oil as defined in the *Used Oil Regulations* made under the Act	100 L or more
20	n/a	contaminated used oil as defined in the *Used Oil Regulations* made under the Act	5 L or more
21	n/a	pesticide in concentrated form	5 L or more –or– 5 kg or more
22	n/a	pesticide in diluted form	70 L or more
23	n/a	unauthorized sewage discharge into fresh water or sensitive marine water	100 L or more
24	n/a	ozone-depleting substance as defined in the *Ozone Layer Protection Regulations* made under the Act	25 kg or more

(*"TDGA Class", in relation to a substance, refers to the class of that substance as listed in the Schedule to the *Transportation of Dangerous Goods Act* (Canada).)

Nova Scotia Environment (NSE). 1994-95, c. 1, s. 1. Nova Scotia Environment Act.

APPENDIX D KEY CONTRACTOR RESPONSE CONTACTS

Company	Contact	Phone	Email
Alva Construction	Colin Maas	(902) 870-2087	Colin@alva.ns.ca
Clean Earth Technologies	Russel Campbell	(902) 835-9095	rcampbell@cleanearthtechnologies.ca
GHD - FIRST	Murray Vidito	1-800-679-9082	Murray.Vidito@ghd.com
McCallum Environmental	Meghan Milloy	(902) 443-8252	Meghan@mccallumenvironmental.com
AECOM	Rory McNeil	(902) 428-2055	rory.mcneil@aecom.com
Stantec	Mark Flinn	1-866-569-6577	
Emergency Response Consultant	**Service**		**Telephone Number**
Stantec Consulting Ltd, Dartmouth.	24-hour Emergency Spill Response Services		(866) 569-6577 (902) 468-7777 (Daytime)
GHD – Emergency Response, Dartmouth	Emergency Spill Response Services		24-hour Hotline: 1-800-679-9082 Dartmouth Office:(902) 468-1248
Intrinsik Consulting, Halifax	Toxicology		(902) 429-0278
McCallum Environmental Ltd., Bedford	Biology/Wetlands		(902) 446-8252
Emergency Service Providers	**Service**		**Telephone Number**
Canadian Helicopters (Goffs, NS)	Emergency Helicopter Access		(902) 873-0015
Cougar Helicopters (Goffs, NS)	Emergency Helicopter Access		(902) 873-8346
Vision Air Helicopters (Goffs, NS)	Emergency Helicopter Access		(902) 873-3488
Battlefield – Cat Rentals - Ken Totten	Pump Supplier		(902) 292-1715
External Contractor - Colin Mass (Alva) or Allan MacDonald	Contractors/Heavy Equipment Fleet		Radio Channel 3 (902) 870-2087
United Rentals - Tyler Arnone	Pump Supplier		(905) 643-0999 or (289) 439-8318
Sansom Equipment Ltd. -Duane Webber	Pump Supplier		(902) 895-2885
Clean Earth Technologies	Hydro Vac / Soil Remediation		(902) 835-9095
Northeast Equipment Ltd. - Gord Skinner	Pipelines		(902) 468-7473, Gords.northeast.ns.ca
Engineered Pipe Group -Brian Parker	Pipelines/pumps/flanges		(902) 465-2200
Can-Am Instruments Ltd - Lou Dinato -	Metering Equipment		(905) 829-0030
MacGregors Industrial	Metering Equipment		(902) 759-7410

APPENDIX E COMMUNICATIONS POLICY

Atlantic Gold

TO: ALL EMPLOYEES OF ATLANTIC GOLD CORPORATION
FROM: ATLANTIC GOLD CORPORATION
SUBJECT: ATLANTIC GOLD CORPORATION COMMUNICATIONS POLICY

PLEASE READ THIS DOCUMENT IN ITS ENTIRETY AND SIGN AND DATE BELOW AS ACKNOWLEDGEMENT THAT YOU HAVE READ AND FULLY UNDERSTAND THIS COMMUNICATIONS POLICY.

ATLANTIC GOLD CORPORATION COMMUNICATIONS POLICY

DESIGNATED SPOKESPERSONS

The Company designates a limited number of Spokespersons responsible for communication with the investment community and media. The CEO and the COO will be the official spokespersons for the Company. Individuals holding these offices may, from time to time, designate others within the Company to speak on behalf of the Company as backups or to respond to specific inquiries.

CONTACTS WITH ANALYSTS, INVESTORS AND THE MEDIA

Employees who are not Authorized Spokespersons must not respond under any circumstances to inquiries from the investment community or the media, or from other parties, unless specifically asked to do so by an Authorized Spokesperson. Any such request for information about the Company should, in all cases, be directed promptly to the **CEO** or, in his absence, the **COO**.

The Company will provide only non-material information through individual and group meetings, in addition to publicly disclosed information, recognizing that an analyst or investor may construct this information into a mosaic that could result in material information. The Company cannot alter the materiality of information by breaking down the information into smaller, non-material components. In the event you have been asked to engage with analysts, investors or the media by an authorized Spokesperson, and are unsure as to whether your proposed response is appropriate for disclosure, please confirm with an Authorized Spokesperson before replying. Again, such responses should be limited to non-material information and publicly disclosed material information.

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Atlantic Gold

RUMOURS

The Company's policy is to not comment, affirmatively or negatively, on rumours. The Company's Spokespersons shall respond consistently to rumours by stating: "It is our policy not to comment on market rumours or speculation." Should any stock exchange on which the Company's securities are listed request that the Company make a definitive statement in response to a market rumour that may be causing significant volatility in the Company's listed securities, the Company's Disclosure Committee shall consider the matter and decide whether to make a statement regarding the rumour.

INCIDENTS

Any incidents involving the Company or you in your capacity as an employee of the Company must be reported to the COO immediately. In the event of an emergency situation, you are required to do all things possible to ensure that the relevant emergency response team has been contacted before contacting the COO. Incidents include, but are not limited to, serious injuries and fatalities, blasting related incidents, regulatory or environmental incidents, unauthorized activities, conflicts, fire and natural disasters at site, serious (major) equipment damage, etc.

We need to always be prepared to handle a crisis in a manner that is aligned to our principles of transparency and open communication. Our actions and reputation as a responsible mining company allow us to attract investors and gain support of the communities in which we operate. We are all responsible for Atlantic's reputation through our actions.

I ACKNOWLEDGE THAT I HAVE READ AND FULLY UNDERSTAND THIS COMMUNICATIONS POLICY IN ITS ENTIRETY.

Print _____ Signature _____

Date _____
YYYY - MM - DD

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APPENDIX F SPILL RESPONSE EQUIPMENT LOCATION

Atlantic Gold Emergency Supplies		
Equipment Description	**Quantity/Length**	**Location**
Pumping Equipment		
Generator (Mill Backup) - CAT	(1)	Mill
HDPE fusion welder	(1)	TMF – Sea-can adjacent to ETP
6 x 6 inch (152mm x 152 mm) diesel pumps	(2)	Stormwater Collection ponds
4x4 inch 100 mm x 100mm) diesel pump	(6)	TMF Seepage Ponds/Waste Rock Pond
8 x 6 inch (203 mm x 152 mm) high lift pump on skid - max capacity 760 m^3/hr	(1)	Open Pit
14 inch (356 mm) reclaim pump: Vertical turbine 450 m3/hr	(2)	Decant Barge
12 inch (305 mm) diameter HDPE Pipeline	1500 m	From Open Pit to TMF
14 inch (356 mm) diameter HDPE Pipeline	2000 m	From Decant Tower to Mill
4 inch (100 mm) diameter HDPE Pipeline	2500 m	From Scraggy Lake to Mill
6 inch (152 mm) diameter HDPE Pipeline	2500 m	From Scraggy Lake to Mill & seepage ponds to TMF
8 inch (203 mm) diameter HDPE Pipeline	250 m	From Decant to ETP
Extra 6 inch (152 mm) diameter lay flat Pipeline	200 m	Mine Ops Laydown
Extra 6 inch (152 mm) diameter HDPE Pipeline	800 m	TMF
Extra 12 inch diameter HDPE pipeline (For tailings line moves)	225 m	TMF
Extra 14 inch diameter HDPE pipeline (For decant to Pit Contingency)	225 m	TMF
Flanges/connections/gaskets/fittings	Assorted	Mill Maintenance & Mine Operations & TMF
8 inch (203 mm) suction hose	10 m	Open Pit
Metering equipment for water pumped from Polishing Pond to Scraggy Lake	(2)	Environmental Department
Spill Containment Equipment		
30 Gallon Spill Kit – Oil Only	(7)	Warehouse (S10FULLPAL)
30 Gallon Universal Spill Kit Refill	(5)	Warehouse (F7A)
30 Gallon Universal Spill Kit	(4)	Warehouse (S10FULLPAL)
Oil Dry Sorbent	12 bags	Warehouse (TS2D)
Spill Pads – Oil Only	5 bags	Warehouse (S1R2D)
Spill Pads - Universal	5 bags	Warehouse (D2C)
Silt Curtain	(2)	Scraggy Lake Pumphouse
Silt Fence 100’ Bundle	(20)	Warehouse (3LD1)
Hay Bales	(40)	Behind Environmental Sea-can

Spill Containment Equipment (continued)		
1000 L plastic holding tank	Variable	Geobag Laydown
170 L (45 gallon) Metal drums	(8)	Warehouse (Mill1A)
Assorted hand tools – long handed spade shovels, pick axe, etc.	Assorted	Site Services
Generator - CAT 6500 W	(1)	Site Services
Inverter Generator - CAT 1800 W	(1)	Site Services
3" Gas Pumps	3	Mine Ops
6" Diesel Pumps	2	Mine Ops
8" Diesel Pumps	2	Mine Ops
Heavy Equipment		
Lighting – Diesel Portable Light Stand	(12)	Mine Ops
Backhoe – CAT	(1)	Site Services
Crane - Terex	(1)	Mine Ops
Dump Truck – CAT	(1)	Site Services
Dozer – CAT	(3)	Mine Ops
Excavator – CAT	(4)	Mine Ops
Grader – CAT	(1)	Mine Ops
Haul Truck – CAT	(6)	Mine Ops
Articulated Truck – CAT	(2)	Mine Ops
Loader – CAT	(3)	Mine Ops
Roller – CAT	(1)	Mine Ops
Skid Steer - Bobcat	(1)	Mill Ops
Telehander – CAT	(1)	Mill Ops

APPENDIX G SPILL KIT SUPPLY LIST & LOCATION PLAN

There are several spill kits available on-site (see Appendix A). The kits are packed inside marked yellow drums. Each kit contains personal protective equipment and spill containment materials. All light vehicles contain a smaller, portable spill kit. Spill Kit contents are listed below. New spill kits can be found in the warehouse.

Every light vehicle on site contains a universal, portable spill kit, containing the following items:

Item	Quantity
Absorbent pads (15" x 19")	10
Absorbent socks (3" x 4')	2
Disposal Bag	1
Instruction Sheet	1
Pair Nitrile Gloves	1

The 30-gallon spill kits contain the following materials:

Item	Quantity
Spill pads (15" x 19")	25
Spill socks (3" x 4')	4
Spill pillows (18" x 24")	4
Disposable Bags w/ Ties	3
Emergency Response Guide Book	1
Pair Nitrile Gloves	1

APPENDIX H HAZARD ASSESSMENT AND POTENTIAL SPILL ANALYSIS

Appendix H.1 Fuel Spills on Land

Fuel represents a relatively small amount of hazardous material located on site. All tanks are double walled providing secondary containment sized to contain 110% of the volume. All tanks are labelled and have a spill kit readily available. For locations of the fuel tanks, temporary fuel areas and approximate spill kit locations, refer to the figures in Appendix A.

Table H.1 provides the maximum fuel storage capacities of permanent fuel storage infrastructure (i.e. tanks) at the Touquoy site.

Table H.1: Maximum Fuel Storage Capacities at Touquoy

Location	Fuel Type	Tank Capacity
Truck Shop	Diesel	36,368 L
Administration Area	Unleaded	4,000 L
North end of TMF (Temporary)	Diesel	2,500 L
North end of TMF (Temporary)	Unleaded	2,270 L
Brewster's Laydown (Temporary)	Diesel	1900 L

Appendix H.1.1 Potential Fuel Spill Scenarios and Response

All fuel tanks onsite are double walled. The tanks will be contained in a restricted area to avoid collision from mobile equipment and placed to avoid damage from impact. Detailed procedures (site-wide application) and work instructions (task-specific) are in place, along with the SOP for Refueling Mobile Equipment and Light Vehicles (AGC-PRO-ENV-013) that directs refueling operations.

SCENARIO 1: PERMANENT TANK AREA SPILL

Description of Incident	Rupture or spill from 36000 L tank
Potential Causes	Tank or associated equipment failure. This may include failure as a result of human error, mechanical failure, inadequate maintenance, geotechnical issues, sabotage, etc.
Product Spilled	Diesel
Maximum Volume Spilled	36,368 L
Estimated Time to Spill Entire Volume	Variable depending on leak or rupture size < 1 hour
Immediate Receiving Medium	Ground, streams, lakes, wetlands
Most Probable Direction of Spill Migration	The ground surface around the tank and site runoff ditches that ultimately report to the Mill storm water pond.
Distance and Direction to Closest Body of Water	Moose River – 300m West
Resources to Protect	Migration to groundwater table
Emergency Response Level	Level 2 (medium) or 3 (high) – Refer to ERP (depends on quantity)
Estimated Emergency Spill Response Time	20 minutes

Spill Response Procedures	If the spill is still occurring the hole/breach will be plugged or stopped if possible. The secondary containment will be inspected to ensure that it is safely containing the spill; if not the area will be reinforced with temporary berms. The spill will be collected via a vacuum truck and deposited in a suitable location – either an intact fuel tank or, if necessary, sent to an off-site oily water treatment facility. Any contaminated soil will be excavated and disposed of accordingly.

SCENARIO 2: MOBILE TANK/TEMPORARY STORAGE AREA SPILL

Description of Incident	**Puncture or rupture of tank**
Potential Causes	Equipment failure due to faulty manufacturing or collision with mobile equipment.
Product Spilled	Diesel fuel.
Maximum Volume Spilled	4, 000 L
Estimated Time to Spill Entire Volume	Variable depending on leak or rupture size approx. 10 min
Immediate Receiving Medium	Ground
Most Probable Direction of Spill Migration	Tanks are utilized around site; the direction of spill migration will depend on the specific location. Tanks will be placed on relatively flat laydown areas, where the potential flow of spills will be more readily managed.
Distance and Direction to Closest Body of Water	Varies – TMF laydown approx. 140 m from watercourse #4
Resources to Protect	Migration to groundwater table, Scraggy Lake, Square Lake, Site streams, Moose River, and wetlands
Emergency Response Level	Level 2 (medium) or 3 (high) – Refer to ERP (depends on quantity and whether there is a potential to impact nearby water bodies and/or public safety)
Estimated Emergency Spill Response Time	20 minutes
Spill Response Procedures	If the spill is still occurring the hole/breach will be plugged or stopped if possible. A temporary berm can be constructed to reduce the migration of the spill. The spill will be collected via a vacuum truck and deposited in a suitable location – either an intact fuel tank or, if necessary, sent to an off-site oily water treatment facility. Any contaminated soil will be excavated and disposed of accordingly.

SCENARIO 3: ROAD ACCIDENT TANKER TRUCK SPILL

Description of Incident	**Spill of the contents of a tanker truck or fuel re-supply truck to ground or stream. Spill occurs in an isolated area with drainage close to a waterbody such as Moose River, Watercourse 4, Scraggy Lake**
Potential Causes	Human error, vehicle mechanical failure, traffic accident, poor weather or visibility.
Product Spilled	Diesel fuel
Maximum Volume Spilled	20,000 to 50,000 L (contents of a tanker truck) This would require the rupture of the tanker.
Estimated Time to Spill Entire Volume	Spillage can be limited depending on severity of incident/accident 10 minutes to 48 hours – depending on severity of rupture or piping/valves associated with the tanker truck.
Immediate Receiving Medium	Ground, streams, lakes, wetlands
Most Probable Direction of Spill Migration	Varies with specific location of spill
Distance and Direction to Closest Body of Water	Varies – in close proximity

Resources to Protect	Scraggy Lake, Square Lake, Site streams, Moose River
Emergency Response Level	Level 2 (medium) or 3 (high) – Refer to ERP (depends on quantity and whether there is potential for impact to nearby water bodies and to public safety)
Estimated Emergency Spill Response Time	60 minutes after spill is reported to site personnel (assuming worst case scenario where the truck driver is injured and cannot commence spill response procedures).
Spill Response Procedures	1. Contain and recover diesel slick downriver and protect shorelines using sorbent booms. Collect free-product for temporary storage. Clean-up soiled shorelines. If the response crew arrives before the tanker/fuel truck has released all its contents, seal the leak where feasible, contain and recover oil spill on ground using dykes, trenches and spill berms. If the truck driver is not injured, he will act as a first responder and immediately initiate the Spill Contingency Plan. 2. Once the initial cleanup is completed, free product captured during response, as well as product still contained within the tanker/fuel truck bulk tank(s) is pumped using a vacuum truck to be discharged at an approved facility/containment berm. Oily water captured during the response would be pumped into a vacuum truck and transported to a containment facility for treatment using the oily-water separator unit. Impacted soils (if any) would be excavated and disposed of accordingly.

Appendix H.2 Explosives Transport

Emulsion is trucked to the site as needed by a licensed contractor. Explosives (emulsion) are only used in the open pit and trucks bearing emulsion follow a defined route to the site from the supplier. The AMNS Emergency Response Plan identifies threat and response for an explosion in Appendix A2.11.

Appendix H.2.1 Emulsion Handling

A Dyno Nobel storage tanker carries 40,000 kg of bulk explosives (emulsion). The emulsion truck which travels from the tanker to each blast to deposit explosives in the drill holes has a maximum capacity of 12,500 kg. Under normal operation, the total quantity of emulsion on site would not exceed 41,000 kg.

Emulsion materials are acutely toxic to aquatic life and therefore could have adverse impacts on fish and other aquatic life if released to surrounding water bodies and streams. Small spills shall be scooped up with non-sparking shovels, placed in bags and stored in a secure location until the spilled emulsion can be disposed of in blast holes. Large spills will be dealt with on an individual basis depending upon the size of the spill. Efforts shall be made to contain spills and secure the surrounding area before clean-up begins. The clean-up of large spills may involve pumping spilled emulsion into tanks or totes and/or scooping up product with shovels and storing it approved containers/bags.

Potential spills would be cleaned up by employees and contractors licensed to handle explosives. Clean-up materials will be segregated in an appropriate area; incompatible materials will not be stored together, pursuant to material Safety Data Sheets (SDS) and Worker's Compensation General Regulations.

In addition, smaller quantities of AN emulsion pre-packaged explosives will be used to begin development of the quarry sites. Pre-packaged Ammonia Nitrate (AN) emulsions pose minimal risk to the environment given the hydrophobic nature of the emulsion explosives.

SCENARIO 1: SPILL OF EMULSION

Description of Incident	**Emulsion spilled while loading emulsion in blast holes.**
Potential Causes	operator error, mechanical failure or malfunction
Product Spilled	Emulsion
Maximum Volume Spilled	12,500 kg
Estimated Time to Spill Entire Volume	Instantaneous
Immediate Receiving Medium	Ground
Most Probable Direction of Spill Migration	Not expected to migrate due to its high viscosity
Distance and Direction to Closest Body of Water	Varies
Resources to Protect	Nearby water bodies
Emergency Response Level	Level 3 (High) – Refer to ERP (depends on quantity)
Estimated Emergency Spill Response Time	5 minutes
Spill Response Procedures	In the event that a spill occurs, the blasting technician will respond. The spilled emulsion will immediately be cleaned up and stored in a dedicated contaminated explosives area until it can safely used or be shipped off site.

Appendix H.3 Tailings Slurry Transfer

The TMF EPRP should be used in conjunction with the Spill Contingency Plan if a rupture does occur in the tailing's slurry or process water lines. The TMF EPRP outlines the specific response for this type of release. A generalized spill response approach is provided below.

The tailings pipeline carries tailings slurry approximately 1 km from the Mill to the TMF. The pipeline is placed alongside roadways at the site, running from the Mill site to the northwest segment of the TMF. The Tailings Line has an average flowrate of 550 m^3/hr.

The double walled HDPE tailings pipeline consists of 355 mm carrier pipe inside a 450 mm outer containment pipe. The tailings lines are moved manually around the TMF dam to facilitate tailings deposition.

The tailings discharge system involves the following components:

- Tailings pipeline from the Mill to the TMF
- Pumping capacity at the Mill suitable for continuous delivery of tailings to the TMF;
- A flush system at the tailings box to clear the tailings line at times of shut down, power loss, leak detection or pipeline movement;
- An emergency discharge location of the pipeline in case of power loss, or leak detection, both along the line and in the tailings pond;
- Leak detection system (pressure gauges on outer HDPE pipe) on the tailings pipeline to be inspected every 4 hours;
- Sufficient pipe, spigots, valves and joint sections to change the flow direction and location as necessary to build tailings beach against the dams;
- Suitable equipment to move and fasten pipe sections when required.

The carrier pipe is supported in the containment pipe by centralizers spaced at approximately 50 m. The centralizers do not allow flow between sections of the pipe. Measuring pressure increases in each segment via pressure gauges facilitates leak detection. Rupture of both pipes would result in a tailings release to site ditches or ponds. A lined emergency containment pond (emergency discharge point) is located at the low point in the pipe which will also serve to drain the pipeline during controlled or uncontrolled shutdowns. If used, the emergency containment pond will be emptied using a vacuum truck or excavator in frozen conditions and disposed into the tailings pond. Operation of the tailings pipeline will only resume once the necessary repairs are completed. Pipelines in use at the site are shown on the drawing in Appendix A.

Appendix H.3.1 Potential Spill Scenarios related to Tailings Slurry Pipeline

SCENARIO 1: LEAK OR RUPTURE OF TAILINGS SLURRY PIPELINE

Description of Incident	Tailings Slurry Pipeline Leak or Rupture
Potential Causes	Mechanical failure or malfunction; Joint failure; Accident (vehicle strike)
Product Spilled	Tailings slurry
Maximum Volume Spilled	2,200 m^3 (assumes 4 hours at 550 m^3/hr)
Estimated Time to Spill Entire Volume	Depends on the size of the leak
Immediate Receiving Medium	Ground
Most Probable Direction of Spill Migration	Contained within ditching to TMF emergency dump pond
Distance and Direction to Closest Body of Water	Watercourse #4 – 200m East
Resources to Protect	Watercourse #4
Emergency Response Level	Level 3 (High) – Refer to ERP (depends on quantity)
Estimated Emergency Spill Response Time	20 min
Spill Response Procedures	In the event a tailings line spill occurs the following actions will be taken: • The tailings line will be shut down and drained into the emergency discharge location. • The entirety of the pipeline will be inspected, any damaged components will be replaced or repaired. • Report as required. • Excavate contained tailings slurry from site ditches or containment ponds and transfer to the TMF. • Pump contained process water from site ditches or containment ponds into the TMF. • Collect released tailings and deposit in tailings pond • Repair collateral damage caused by a leak or break; and, reclaim disturbed areas.

Appendix H.4 Process Water Transfer

The TMF EPRP should be used in conjunction with the Spill Contingency Plan if a rupture does occur in the tailing's slurry or process water lines. The TMF EPRP outlines the specific response for this type of release. A generalized spill response approach is provided below.

The TMF barge is located at the southeast end of the tailings pond. The TMF barge houses the pumps to convey process water to the Mill. The process water pipeline (decant line) runs approximately 2 km from the TMF to the Mill along roadsides at the site. This is a single wall, 14" HDPE pipe. This water is used as the primary water in the process plant, to minimize the use of fresh water make-up. The decant line has an average flowrate of 365 m^3/hr.

The decant line has an interlock shutdown of the pumps if a loss of flow is detected in the flow meter to minimize any possible release. Also, the elbow located on the pipeline near watercourse #4 (Culvert B) has a clay corridor which is sloped away from the watercourse to the existing emergency containment pond.

Appendix H.4.1 Potential Spill Scenarios related to Process Water Pipeline

SCENARIO 1: LEAK OR RUPTURE OF PROCESS WATER PIPELINE

Description of Incident	Process Water Pipeline Leak or Rupture
Potential Causes	Mechanical failure or malfunction; Joint failure; Accident (vehicle strike)
Product Spilled	Process Water
Maximum Volume Spilled	15,000 L
Estimated Time to Spill Entire Volume	The automatic shutoff for the decant is based on the receiving flowmeter at the plant. If the decant pump is operating and the plant flowmeter reads 0 m^3/hr, the pump shuts down. There is a delay of 120 seconds between no flow and shutting down the pump. Therefore, 120 s x 125L/s = 15,000L Max potential spill if there was a failure.
Immediate Receiving Medium	Varies
Most Probable Direction of Spill Migration	Emergency spill pond, haul roads, surrounding areas
Distance and Direction to Closest Body of Water	Varies
Resources to Protect	Watercourse #4 and Wetland #6
Emergency Response Level	Level 2 (moderate) or Level 3 (High)
Estimated Emergency Spill Response Time	20 min
Spill Response Procedures	In the event a process line release occurs the following actions will be taken: • The process line will be shut down and drained into the emergency discharge location if needed. • The entirety of the pipeline will be inspected, any damaged components will be replaced or repaired. • Ensure the pipeline is not syphoning water from the intake. • Report as required. • Pump contained process water from site ditches or containment ponds into the TMF. • Repair collateral damage caused by a leak or break; and, reclaim disturbed areas.

Appendix H.5 Lubricants and Oils Transport and Handling

Lubricants and machinery oils will be used on site throughout the life of operation. Lubricants and oils have the ability to contaminate waterways and soils if exposed to the environment. However, the risk of a lubricant or oil spill on site is expected to be minimal. Small amounts are stored on site and are present in Site vehicles (e.g. hydraulic fluid). Lubricants and oils shall be handled by trained staff following proper procedures and guidelines. Lubricants are stored and transported in small quantities. In the event of a spill, appropriate spill response equipment and procedures, as outlined in this plan, will be readily available and utilized to minimize the impact of the spill.

Appendix H.5.1 Potential Spill Scenarios related to Lubricant and Oils

SCENARIO 1: CONTAINMENT PUNCTURE DURING TRANSPORT

The most likely spill scenarios to occur with regards to lubricants and oils is a puncture of an individual storage units during transport. Lubricants and oils are typically stored in 208 L barrels within a sea can container. In the event that the container is punctured by the forklift a maximum spill volume of 208 L could potentially occur. All equipment operators will be trained in proper lubricant and oil transfer procedures (i.e. use of spotter). In the event that a barrel is punctured, the operator will identify the puncture and will immediately proceed to contain the spill and implement mitigation procedures.

Description of Incident	**Lubricant or oil container is punctured by a forklift during transport**
Potential Causes	Operator error. Equipment failure.
Product Spilled	Lubricant or oil.
Maximum Volume Spilled	208 L
Estimated Time to Spill Entire Volume	Varies
Immediate Receiving Medium	Ground
Most Probable Direction of Spill Migration	Towards Mill containment ditches
Distance and Direction to Closest Body of Water	Watercourse #4 – 300m East
Resources to Protect	Migration to water table, nearby water bodies.
Emergency Response Level	Level 1 (low)– Refer to ERP
Estimated Emergency Spill Response Time	Approx. 5 minutes
Spill Response Procedures	If the forklift driver is not injured, he will act as a first responder and immediately initiate the spill response utilizing the spill kit kept in the work area. The spill will be contained through the use of temporary berms and ditches until it can be vacuumed up and transported to an approved facility for remediation.

SCENARIO 2: SPILLS DURING TRANSFER/HANDLING

It is possible that a minor spill may occur during the transfer of lubricants or oil to equipment. This will most likely be the result of equipment failure, such as pumps or hoses, or operator error.

Proper maintenance procedures are in place to reduce the chance of equipment malfunctions, along with proper training procedures. The use of spill trays is mandatory during all oil and lubricant transfers.

Description of Incident	**Spill during transfer**
Potential Causes	Operator error. Pump failure. Hose failure.
Product Spilled	Lubricant or oil.
Maximum Volume Spilled	500 L
Estimated Time to Spill Entire Volume	Varies
Immediate Receiving Medium	Ground
Most Probable Direction of Spill Migration	Depends on location
Distance and Direction to Closest Body of Water	Depends on location
Resources to Protect	Nearby water bodies.
Emergency Response Level	Level 1 (low) or 2 (medium) – Refer to ERP (depends on quantity and whether there is potential for impact to water body)
Estimated Emergency Spill Response Time	Approx. 5 min
Spill Response Procedures	If the spill occurs in a building it will be contained as all buildings are fully lined or equipped with concrete floors, preventing any contaminants from reaching the natural environment. The spill will be cleaned up by qualified personnel and disposed of as a hazardous material. If a spill occurs during transfer all transfer activities will be halted immediately and clean-up of the spill with the available spill kit will commence. The spill will be contained using berms, ditches, sumps and booms where necessary. The downstream wall of trenches will be lined with plastic material to ensure unexposed soil does not come in contact with the lubricant or oils. Absorbent material will be utilized where required. Once the spill has been contained it will be removed by a vacuum truck and brought to an appropriate storage/treatment facility. If necessary contaminated soil will be removed and brought to an approved facility for disposal. New soil will be laid down in the exposed area.

APPENDIX I HAZARDOUS MATERIALS LIST & SAFETY DATA SHEETS

Table I.1 Potentially Hazardous Material - Mill

Material	Storage Location	State	Purpose
Activated Carbon (Coconut shells)	Reagents Building	Solids	Carbon Adsorption
Anti-Scalant	Mill Building	Liquid Solution	Anti-Scaling
Borax	Metallurgy Sea Container	Solids	Flux (Gold Room)
Copper Sulfate	Reagents Building	Solids	Cyanide Detox
DT9040	Crushing Area	Liquid Solution	Dust Suppression
Ferric Sulfate	Mill (Detox Area)	Liquid Solution	Effluent treatment
Flourspar	Metallurgy Sea Container	Solids	Flux (Gold Room)
Hydrated Lime	Lime Silo	Solids	pH Control
Hydrochloric Acid	Mill	Liquid Solution	Acid Wash
Hydrogen Peroxide	Mill	Liquid Solution	Oxygen Source for Intensive Leaching
Potassium Nitrate	Metallurgy Sea Container	Solids	Flux (Gold Room)
Silica Sand	Metallurgy Sea Container	Solids	Flux (Gold Room)
Sodium Carbonate	Metallurgy Sea Container	Solids	Flux (Gold Room)
Sodium Cyanide	Reagents Building	Solids	Leaching
Sodium Hydroxide	Reagents Building	Liquid Solution	Cyanide mixing, pH conditioning, strip solution
Sodium Metabisulfite	Reagents Building	Solids	Cyanide Detox

Note: SDS can be found at: *S:\PoliciesProcedures\Safety Data Sheets (SDS)*

Table I.2 Potentially Hazardous Material – Assay Lab

Material	Storage Location	Purpose
Assay Tabs (Sodium Cyanide)	PAL room & Seacan	Leaching of gold from ore
Hydrochloric Acid	MET Lab & Wet Lab	Digestion of Fire Assay Samples for gold
LeachWELL 60X	MET Lab	To speed up the leaching of samples
Nitric Acid	MET Lab & Wet Lab	Digestion of Fire Assay Samples for gold
Rhodanine	MET Lab	Cyanide Titrations
Silver nitrate	MET Lab	Fire Assaying & Cyanide Titrations
Sodium hydroxide	MET Lab	Neutralize acid solutions
Sodium hypochlorite (Bleach)	PAL Room & Seacan	Detoxify PAL waste residue
Tetraethylenepentamine (TEPA)	MET Lab	Cyanide determination
Phenolphthalein	MET Lab	Indicator for chemical determination
Bone Ash (Calcium phosphate)	Fire Assay	Fire Assaying of ore samples
Flux (Lead oxide, Sodium carbonate, sodium borate, Silica flour)	Fire Assay	Fire Assaying of ore samples
Litharge (Lead oxide)	Fire Assay	Fire Assaying of ore samples
Sodium carbonate	MET Lab	Fire Assaying of ore samples
Potassium nitrate	Fire Assay	Fire Assaying of ore samples
Borax	Fire Assay	Fire Assaying of ore samples
Silica Flour	Fire Assay	Fire Assaying of ore samples
Gold Standard Solution	AAS Room	Calibration standard for the AAS
2,6 -Dimethyl – 4-heptanone	MET Lab	Met tests
Aliquat 336	MET Lab	Met tests
Calcium peroxide	MET Lab	Met tests
Magnesium perchlorate	MET Lab	Met tests
Nitrogen	Storage Room	Calibration of fixed CN monitor
Lead nitrate	MET Lab	Met tests
Picric Acid	MET Lab	Met tests

Note: SDS can be found at: *S:\PoliciesProcedures\Safety Data Sheets (SDS)*