

APPENDIX E.5.5

Spill Contingency Plan


	Spill Contingency Plan	Issue Date: April 29, 2020	
	Site Wide	Revision: 5	
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Baffinland Iron Mines Corporation


SPILL CONTINGENCY PLAN (SCP)

BAF-PH1-830-P16-0036

Rev 5

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2	Updated list of associated emergency plans and added information about Environmental Emergency (E2) Plans	1.1
3	Added response procedures for spills to ocean	5.3
4	Updated wildlife protection measures	5.5
5	Added fuel storage system diesel capacity	8.1
6	Added details around reporting requirements	9
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8	Updated appendices for site layout diagrams, emergency spill kit locations and Emergency Response Truck inventory	Appendices



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This Plan is required for use in conjunction with Baffinland's Emergency Response Plan (BAF-PH1-830-P16-0007). Table A provides a list of relevant external contacts. Additional copies of this Plan may be obtained from:

Baffinland Iron Mines Corporation

2275 Upper Middle Road East, Suite 300

Oakville, ON L6H 0C3


Tel: (416) 364-8820

Fax: (416) 364-0193

Via email: contact@baffinland.com

Table A: External Distribution List for the Spill Contingency Plan

Department of Environment - Environmental Protection Division PO Box 1000 Station 200 Iqaluit, Nunavut X0A 0H0 Tel : (877) 212-6638, (867) 975-6000 Fax : (867) 975-6099	Department of Fisheries and Oceans Central and Arctic Region 520 Exmouth Street Sarnia, Ontario N7T 8B1 Tel : (519) 383-1813, 1-866-290-3731 Fax : (519) 464-5128
Qikiqtani Inuit Association Iglood Building, 2 nd Floor PO Box 1340 Iqaluit, Nunavut X0A 0H0 Tel : (867) 975-8400, 1-800-667-2742 Fax : (867) 979-3238	Crown-Indigenous Relations and Northern Affairs Canada – Field Operations Division Qimugjuk Building PO Box 2200 Iqaluit, NU X0A 0H0 Tel: (867) 975-4295 (Director, Lands and Field Operations) Fax: (867) 979-6445
Crown-Indigenous Relations and Northern Affairs Canada - Water Resources Division Building 918 PO Box 100 Iqaluit, NU X0A 0H0 Tel: (867) 222-9278 (Manager, Water Resources) Fax: (867) 975-4585	Mittimatalik Hunters and Trappers Organization PO Box 189 Pond Inlet, Nunavut X0A 0S0 Tel : (867) 899-8856 Fax : (867) 899-8095
Nunavut Impact Review Board 29 Mitik Street PO Box 1360 Cambridge Bay, Nunavut X0B 0C0 Tel : 1-866-233-3033 Fax : (867) 983-2594, (867) 983-2574	Nunavut Water Board PO Box 119 Gjoa Haven, Nunavut X0B 1J1 Tel : (867) 360-6338 Fax : (867) 360-6369
Hamlet of Pond Inlet PO Box 180 Pond Inlet, Nunavut X0A 0S0 Tel : (867) 899-8934, (867) 899-8935 Fax : (867) 899-8940	

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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

As required by Baffinland Iron Mines Corporation's (Baffinland) Type 'A' Water Licence No. 2AM-MRY1325 Amendment No. 1 (Type 'A' Water Licence) for the Mary River Project (Project), this Spill Contingency Plan (SCP) was updated to meet the requirements of the Type 'A' Water Licence.


Further and continual modifications and revisions to the SCP shall be completed based on future work scope modifications, emergency and spill response procedures, and associated approvals. Updates to this Plan shall be completed in accordance to the terms and conditions of Baffinland's Type 'A' Water Licence, Commercial Lease with the Qikiqtani Inuit Association (QIA) (Commercial Lease), Project Certificate No. 005 – Amendment No. 1 (Project Certificate), and any subsequent requirements which may be issued.

The purpose of this Plan is to identify the potential for an accidental release (spill) of a hazardous material to the environment (land, ice, freshwater, ocean) throughout the lifecycle of the Project. Spills and response measures for a release to the marine environment are addressed in detail in Baffinland's Oil Pollution Emergency Plan (OPEP; BAF-PH1-830-P16-0013) and Spill at Sea Response Plan (SSRP; BAF-PH1-830-P16-0042). This SCP provides spill scenarios and identifies protocols for their prevention, response to, recovery and reporting, and is required for use in conjunction with Baffinland's other emergency plans, including:

- Emergency Response Plan (ERP) - BAF-PH1-840-P16-0002, or as amended;
- Diesel Environmental Emergency (E2) Plan Mine Site - BAF-PH1-830-P16-0057, or as amended;
- Diesel Environmental Emergency (E2) Plan Milne Port - BAF-PH1-830-P16-0056, or as amended;
- Metal and Diamond Mining Effluent Regulations Emergency Response Plan (MDMER ERP) - BAF-PH1-830-P16-0047, or as amended;
- Km 60 Washcar Fuel System Operation and Emergency Response Plan (BAF-PH1-840-P16-0003), or as amended; and,
- Crisis Management Plan (CMP) Level II (Medium) and Level III (High) Emergency - BAF-PH1-840-P16-0001, or as amended.

Baffinland's ERP identifies potential environmental, health, and safety emergencies that could arise during the construction and operational phases of the Project. The ERP establishes the framework for responding to these situations and applies to all aspects of the Project. All Baffinland employees and contractors are required to comply with the requirements of the ERP. The ERP also defines Baffinland's organizational roles and responsibilities, internal and external contact information, training, resources, and reporting requirements, by which all site personnel are directed.

The E2 Plans are emergency plans specifically related to diesel fuel emergencies to fulfil the regulatory requirements of the Environment and Climate Change Canada (ECCC) Environmental Emergency (E2)

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Regulations, 2019 (SOR/2019-51). E2 Plan activation is required for diesel spills that are considered Level 3, as outlined in Section 4 of this Plan. Spill reporting associated with E2 Plan activation is conducted in accordance with this SCP.

1.2 APPROACH TO SPILL RESPONSE

A spill is defined as the release of a hazardous product out of its containment and into the environment. Such releases 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 material, quantity spilled, location and season. Diesel and Jet Fuel (Arctic Diesel/P50 and Jet A) are the primary products at risk for potential releases to the environment due to their abundance on site and frequency of use. As a result, additional levels of spill response have been developed for these products. Other products with the potential for release include sewage water, anti-freeze, methanol, lubricants, oils, and ammonium nitrate (AN).

Releases also result from exceedances of legislated discharge limits and from releases of Project contact and non-contact water containing sediment and other substances which exceed regulatory criterion. These include:


- Unauthorized discharges of waste and/or effluent under the Type 'A' Water Licence (including a permitted discharge which exceeds the stipulated discharge limits); and,
- A release of a deleterious substance (including Total Suspended Solids [TSS]) to a water body exceeding the Metal and Diamond Mining Effluent Regulations (MDMER) criterion.

Baffinland 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:

1. Immediately warn other personnel working near the spill area;
2. Evacuate the area if the health and safety of personnel is threatened;
3. In the absence of danger, and before the spill response team arrives at the scene, take any safe and reasonable measure to stop, contain and identify the nature of the spill; and
4. Notify the Environmental Supervisor, who will initiate spill response operations.

Upon initiation of a spill response, as determined by the Environment Department, the following procedure shall be completed by the spill response team:

Source Control – If safe to do so, reduce or stop the flow of product. This may include simple actions such as turning off a pump, closing a valve, or sealing a puncture with something nearby (e.g., a rag, piece of wood, tape), raising a leaking or discharging hose to a level higher than the product level inside the tank, or transferring the product from leaking containers.


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Contain and Control the Free Product – If safe to do so, prevent or minimize the spread of the spilled product. 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, dykes, berms, or trenches (dug in the ground or in snow/ice).

Protection – Evaluate the risk of the impacted area to the surrounding environment. Protect sensitive ecosystems and natural resources at risk by isolating the area and/or diverting the spilled material away from sensitive receptors. Protection may be achieved by the effective use of various types of barriers.

Report the Spill to the Environment Department – Provide important information such as date and time of the spill, type and amount of product discharged, photographic records, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment. Reports shall be completed as per Baffinland's Incident Investigation Form (BAF-PH1-810-FOR-0005).

Spill Clean-up – Recover and contain as much free product as possible. Remove all contaminated soil and dispose of in proper engineered lined containment facility.

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2 BAFFINLAND'S CORPORATE POLICIES

Baffinland's Sustainable Development Policy identifies Baffinland's commitment internally and to the public to operate in a manner that is environmentally responsible, safe, fiscally responsible and respectful of the cultural values and legal rights of Inuit. The Sustainable Development Policy is provided in Appendix A.

Baffinland's Health, Safety and Environment Policy is the company's commitment to achieve a safe, health and environmentally responsible workplace. The policy is provided in Appendix A.

All employees and contractors are expected to comply with the contents of both above mentioned policies.

3 ROLES AND RESPONSIBILITIES

Section 3 of the ERP provides the specific roles and responsibilities inherent to personnel involved in emergency response depending on the nature of the emergency and on the job classification or employee. Other associated emergency plans, such as the E2 Plans or MDMER ERP, describe the roles and responsibilities specific to those plans. In addition to the roles and responsibilities described in these plans, the roles and responsibilities specific to this SCP are described below.

3.1 CHIEF OPERATING OFFICER (COO) / GENERAL MANAGER


The COO and General Manager are responsible for the following:

- Responsible for the oversight of all Project operations and allocating the necessary resources for the operation, maintenance and management of Project infrastructure, including allocating the necessary resources for spill prevention and spill response.
- Ensure adherence to this SCP, and that all departmental Manager/ Superintendents understand the contents of this Plan.
- The General Manager, under the COO, is responsible for ensuring the preparation, submission and execution of this Plan and other associated emergency plans, and for ensuring that departments contact the appropriate external authorities as per this Plan, and other associated emergency plans, in the event of a spill.

3.2 MINE OPERATIONS DEPARTMENT

The Mine Operations Department is responsible for the following:

- Reports to the COO / General Manager, and is responsible for reviewing and understanding this SCP and associated emergency plans.
- Providing oversight for all Deposit 1 mining operations, including the operation and maintenance of surface water management infrastructure in the pit, Waste Rock Facility (WRF) and Mine Haul Road.

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- Regular inspections of the WRF for movement, settlement, or pond liner damage; for inspection of the drainage ditches to prevent spills from occurring, and for ensuring the WRF access road is kept clear of snow during winter months to ensure access for inspections, maintenance activities, etc.
- The collection, management and treatment of all contact water in the Deposit 1 mining operations, including the pit, WRF and Mine Haul Road to ensure compliance with applicable regulatory requirements.
- Applying corrective actions in the event of identified non-compliances, non-conformances, and/or issues of concern, and for communicating response plans to possible issues which may lead to a spill to the Environment Department.

3.3 CRUSHING DEPARTMENT


The Crushing Department is responsible for the following:

- Reports to the COO / General Manager, and is responsible for reviewing and understanding this SCP and associated emergency plans.
- Providing oversight for all ore crushing operations, including the operation and maintenance of surface water management infrastructure at the Crusher Facility (CF).
- Regular inspections of the CF for movement, settlement, or pond liner damage; for inspection of the drainage ditches to prevent spills from occurring, and for ensuring the CF access road is kept clear of snow during winter months to ensure access for inspections, maintenance activities, etc.
- The collection, management and treatment of all contact water in the CF to ensure compliance with applicable regulatory requirements.
- Applying corrective actions in the event of identified non-compliances, non-conformances, and/or issues of concern, and for communicating response plans to possible issues which may lead to a spill to the Environment Department.

3.4 SITE SERVICES DEPARTMENT

The Site Services Department is responsible for the following:

- Reports to the COO / General Manager, and is responsible for reviewing and understanding this SCP and associated emergency plans.
- Provides oversight for all Site Services operations, including the operation and maintenance of surface water management infrastructure associated with Project service roads, and the operation and maintenance of fuel systems at the Mine Site and Milne Port.
- Daily fuel tank inspections and routine maintenance, and coordinating third party tank integrity testing and cleaning, in addition to documenting and maintaining records of care and maintenance activities.

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- Managing water retained in containment areas associated with Project bulk fuel facilities, hazardous materials/waste storage areas, including landfarm and landfill facilities, and sewage treatment operations in a manner to prevent spills from occurring.
- Applying corrective actions in the event of identified non-compliances, non-conformances, and/or issues of concern, and for communicating response plans to possible issues which may lead to a spill to the Environment Department.

3.5 ENVIRONMENT DEPARTMENT


The Environment Department is responsible for the following:

- Conducting inspections of site infrastructure and surrounding areas to identify any signs of leaks from fuel systems or from other Project infrastructure such as sewage treatment operations and surface water management infrastructure.
- Implementing wildlife protection measures as necessary in response to spills, capturing and handling oiled wildlife, disposing of dead wildlife, consulting with Canadian Wildlife Services (CWS), and obtaining any permits needed to haze, salvage, hold and clean, or euthanize impacted wildlife.
- Providing direction during spill response and clean-up activities and installing containment and control measures, such as silt fences, as necessary.
- Analysis of spills which occur on site to determine reporting requirements based on factors such as the spill type, quantity and location.
- Conducting water quality sampling in accordance with the Type 'A' Water Licence, applicable legislation (i.e. MDMER), and Project management plans, and reviewing internal and external laboratory results to determine compliance with legislated discharge criterion.
- Participating in table-top exercises, functional drills and exercises under this Plan to evaluate the capacity of emergency response and preparedness.
- External reporting of spills or releases in exceedance of legislative thresholds on behalf of the COO, and participation in follow-up investigations as necessary.
- Reviewing and understanding this SCP and associated plans.

3.6 EMERGENCY RESPONSE TEAM (ERT)

The ERT is responsible for the following emergency response, as per the ERP, and for the following:

- Initiating emergency response to uncontrolled spills and/or releases at site.
- Implementing emergency response training.
- Facilitating table-top exercises, functional drills, and full-scale exercises to evaluate the capacity of emergency response and preparedness.
- Performance evaluation of the table-top tests, functional drills and exercises, and that of the general workforce, and documentation of lessons learned.

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- Reviewing and understanding this SCP and associated plans.

3.7 ALL DEPARTMENTAL MANAGERS, SUPERINTENDENTS, AND SUPERVISORS

All departmental managers, superintendents, and supervisors are responsible for reviewing and understanding this SCP and associated plans, and for directing departmental personnel on the appropriate mitigation measures and strategies for managing spills, surface water flows and effluents in their Project area. Department managers, superintendents, and supervisors are also responsible for ensuring spills are reported to the Environment Department and that internal spill reports are documented and submitted through Baffinland's Incident Reporting System.

3.8 ALL PROJECT PERSONNEL

All Project personnel are responsible for following spill and emergency response as per this SCP and associated emergency plans. All Project personnel are also responsible for immediately warning other personnel working near an area where a spill has occurred, evacuating an area if the health and safety of personnel is threatened, taking any safe and reasonable measures to stop and contain a spill, and for notifying the Environment Department of the spill. All project personnel are also responsible for reviewing and understanding this SCP and associated plans, including the ERP, and for complying with the procedures provided in this SCP upon initiation of a spill.

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4 LEVELS OF EMERGENCY SPILL RESPONSE

To effectively manage emergency response, Baffinland has adopted a tiered emergency classification system that includes three (3) levels of emergency. 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 depending on the level of the emergency, as will the requirements for investigation and reporting. The criteria used to determine what level of emergency is occurring is stipulated in Baffinland's ERP. The emergency spill response classifications are defined by the following three (3) levels:

Level 1 (Low) – Minor accidental release of a deleterious substance with:

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

Level 2 (Medium) – Major accidental release of a deleterious substance with:

- Some threat to public safety; and/or
- Moderate environmental impact to the receiving environment.

Level 3 (High) – Uncontrolled hazard which:

- Jeopardizes Project personnel safety; and/or
- Results in significant environmental impacts to the receiving environment.

The level of emergency response to an emergency event is determined through an assessment of the emergency situation including an evaluation of the specific substance released, quantity spilled, receiving environment impacted, and risk to human health. This assessment also includes specific consideration to whether a spill occurred within or outside of engineered secondary containment. The following matrix provides guidance for Project personnel with regard to the level of response that is assigned to each of the spill classifications.

<div> <div>SPILL RESPONSE LEVELS</div> <div> <div>Level 1 (Low)</div> <div>Level 2 (Medium)</div> <div>Level 3 (High)</div> </div> </div>				
Explosives	<100 kg	100 – 1,000 kg	>1,000 kg	in water
	<500 kg	500 – 5,000 kg	>5,000 kg	on land
Sewage	<1,000 L	1,000 – 10,000 L	>10,000 L	in water
	<10,000 L	10,000 – 100,000 L	>100,000 L	on land
Hazardous Materials*	<10 L	10 – 1,000 L	>1,000 L	in water
	<500 L	500 – 5,000 L	>5,000 L	on land
	<1,000 L	1,000 – 100,000 L	>100,000 L	in containment

*Include Fuels (Diesel/JetA), Lubricants, Antifreeze, Hydraulic Oil, Waste Oil, Antifreeze, etc.

FIGURE 4-1 – EMERGENCY SPILL RESPONSE LEVELS

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5 EMERGENCY SPILL RESPONSE PROCEDURES

5.1 SPILLS ON LAND

Most spills which occur on site occur on land, and are small and can be easily controlled, contained and cleaned up with materials available at the scene, including absorbent pads and/or other materials included in on site spill kits as per the spill response procedure described in Section 1.2

Larger spills on land will require additional resources and actions such as the general procedures detailed in the Project's ERP.

The main spill control techniques for uncontrolled releases involve the use of two (2) types of barriers: dykes and trenches. Barriers should be placed down gradient (down-slope) from the source of the spill, and as close as possible to the source of the spill. Barriers slow the progression of the spill and also serve as containment to allow for the recovery of the spill.

Depending on the volume spilled, the site of the spill and available material, a dyke may be built with soil, booms, lumber, snow, etc. A plastic liner should be placed at the foot of and over the dyke 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 product in a single area (V-shaped or U-shaped).


Trenches are useful in the presence of permeable soil and when the spilled product 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 oil (if applicable).

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

5.2 SPILLS TO FRESHWATER

Responses to spills in freshwater include the general procedures previously detailed. In addition, 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 watercourse (i.e. lake, stream, river);
- Water depth and surface area;
- Wind speed and direction;
- Type of shoreline; and

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- Seasonal considerations (open-water, freeze-up, break-up, frozen).

Containment of a hydrocarbon slick on water requires the deployment of mobile floating booms to intercept, control, contain and concentrate (i.e., increase thickness) the floating substance. For a large lake, typically, one end of the boom is anchored to shore while the other is towed by a boat and used to circle the slick and return it close to shore for recovery using a skimmer. Reducing the surface area of the slick increases its thickness and thereby improves recovery. Mechanical recovery equipment (i.e., skimmers and oil/water separators) are present on site and will be mobilized to the spill location if required.

If fuel is spilled in a smaller water body such as a small lake or pond, it may not be possible to deploy booms using a boat. In this case, measures are taken to protect sensitive and accessible shoreline (spills resulting from traffic incidents). The hydrocarbon slick is monitored to determine the direction of migration. In the absence of strong winds, the oil will likely flow towards the discharge of the lake. Measures are taken to block and concentrate the oil slick at the lake discharge, using booms, where it will limit spatial migration and subsequently allow for recovery using a portable skimmer, a vacuum, or sorbent materials.


In small slowly-flowing rivers, streams, channels, inlets or ditches, inverted weirs (i.e., siphon dams) are used to stop and concentrate moving diesel fuel for collection while allowing water to continue to flow unimpeded. In the case of floating fuel, in a stream, heading for a culvert (i.e., at a road crossing), a culvert block is used to stop and concentrate moving fuel for collection while allowing water to continue to flow unimpeded. In both cases fuel would then be recovered using a portable skimmer or sorbent materials.

In the case of spills in larger rivers, with fast moving currents, 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 an oil slick away from a sensitive area to be protected.

5.3 SPILLS TO THE OCEAN

The two products received at the Project's Milne Port site, Jet-A1 and Ultra Low Sulphur Diesel (ULSD), are classified as non-persistent combustible hydrocarbons and will behave in a similar fashion if spilled. In response to spills during ship to shore transfer, all transfer operations are to be shut down immediately upon detection of a spill and response actions carried out by the spill response team will follow the general procedures described below:

Cease Transfer Operations - In all cases and immediately upon detection of a spill, all transfer operations are to be shut down and not restarted in any manner that would interfere with the immediate, effective and sustained response to the oil pollution incident.

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Source Control - Reduce or stop the flow of product without endangering anyone. This may involve very simple actions such as closing shore valves, sealing a puncture hole with almost anything handy (e.g., a rag, a piece of wood, tape, etc.), raising a leaky or discharging hose at a level higher than the product level inside the tank.

Control of Free Product - Prevent or limit the spread of the 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, dykes, berms, or trenches (dug in the ground). Deployment of floating booms to contain a marine spill should be carried out by the spill response team as soon as safe and practical.

Protection - Evaluate the potential dangers of the spill in order to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive areas where possible.

Clean up the Spill – Recover and containerize as much free product as possible. Recover contaminated soil, and water. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.


Response to a spill of fuel in the marine environment from shipping accidents involves containing the fuel spill by implementing booming activities around the ship to contain/limit the spread of the fuel. When Tier 2 or Tier 3 responses are activated, deployment of additional response equipment and personnel from Milne Port to the accident site will occur.

The SSRP and OPEP provide more specific details for spills to the marine environment and include a comprehensive list of the resident spill response equipment available for marine spill response, which includes containment boom kits, fuel skimmers, transfer pumps, spill response vessels, waste storage bladders, and a wildlife protection kit.

5.4 SPILLS ON SNOW AND ICE

In general, snow and ice will slow the movement of hydrocarbons. The presence of snow may also hide the fuel slick and make it more difficult to follow its progression. Snow is generally a good natural sorbent, as hydrocarbons have a tendency 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 hydrocarbons from migrating down into soil, or at least slow the migration process. Ice prevents seepage of fuel 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 fuel and also serve as containment to allow for the recovery of the fuel.

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Free-product is recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice is scraped up manually or using heavy equipment depending on volumes. The contaminated snow and ice is placed in containers or within lined berms on land. The contaminated water and product will be treated on site utilizing available oily water treatment systems or backhauled for disposal and treatment off site. Free phase product that is recovered will be utilized as a source of fuel on site if possible or shipped offsite for processing.

5.5 WILDLIFE PROTECTION PROCEDURES

When required in the event of a major uncontrolled release of hazardous products, the following deterrents shall be used to prevent wildlife from interacting with spilled product or a contaminated area(s) following a spill:

- Audio deterrents, i.e. bear bangers;
- Visual scare tactics, i.e. flagging, helicopters, vessels;
- Physical barriers, i.e. berms or fences;
- Wildlife monitors; i.e. personnel guarding area; and,
- Exclusion.

To minimize environmental impact, these deterrents 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 instructions, and in accordance with the minimum PPE requirements outlined in Baffinland's Personal Protective Equipment Standard. Other workers in the vicinity of such devices must also adhere to the hearing protection requirements described in the Personal Protective Equipment Standard or remain a safe distance away.

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.

All emergency response vessels shall be equipped with deterrent devices to ensure timely response in case of a spill occurrence off-shore. To prevent habituation, variation of hazing techniques will be used such as changing the location, appearance and types of hazing or using a combination of hazing techniques.

Efforts shall be made to collect alive or dead oiled wildlife. In the event of a spill occurring in or around a water body, shorelines and beaches shall be inspected for contaminated wildlife to be collected.

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Emergency response vessels shall be equipped with dip-nets, large plastic collecting bags for dead wildlife, and cardboard boxes or cloth bags for live oiled wildlife. To ensure that live oiled wildlife is dealt with humanely, capture and handling of wildlife shall only be done by trained individuals. Gloves shall be worn when handling contaminated wildlife (leather gloves for raptors and mammals, latex/rubber gloves for ducks and small shorebirds). Wildlife will be kept individually within cloth bags or ventilated cardboard boxes, which will be labelled with the date and time the animal was found, name of finder, and location and name of species, if known. Wildlife treatment facilities will then be contacted for advisement on treatment. All contaminated wildlife will be held in a warm quiet place until treatment. CWS will be consulted to determine the most humane treatment method (i.e. rehabilitation or euthanasia) to be implemented for live oiled wildlife.

For wildlife mortalities resultant from a spill, all carcasses are required to be bagged and labelled individually. The date and time the animal was found, name of finder, location and name of species, if known, shall be documented. CWS is required to be consulted and approval shall be obtained prior to disposing of any dead migratory birds. Contact information for experts in bird hazing and bird exclusion, oiled bird rehabilitation, and permits needed to haze, salvage, hold and clean, or euthanize birds, are provided in Table 4-1.

TABLE 5-1: EMERGENCY CONTACTS IN CASE OF SPILLS AFFECTING WILDLIFE

Name	Location	Phone Number	Purpose
Canadian Wildlife Services (CWS) Prairie and Northern Region	Eastgate Offices 9250 - 49th Street Edmonton, Alberta T6B 1K5	1-780-951-8600	<ul style="list-style-type: none"> • Providing information on migratory bird resource and species at risk (under CWS jurisdiction) in the area of a spill (this includes damage assessment and restoration planning after the event); • Minimizing the damage to birds by deterring oiled birds from becoming oiled; and, • Ensuring the humane treatment of captured migratory birds and species at risk by determining appropriate response and treatment strategies (i.e. euthanasia or cleaning and rehabilitation).
Nunavut Emergency Management	P.O. Box 1000, Station 700 Iqaluit, NU X0A 0H0	1-800-693-1666	Responsible for developing territorial emergency response plans, coordinating general emergency operations at the territorial and regional levels, and supporting community emergency response operations.
International Bird Rescue	International	1-888-447-1743	Wildlife rehabilitation specialists, that manage various aspects of wildlife response.

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6 DISPOSAL OF CONTAMINATED MATERIAL


Quatrex bags, overpack drums, or other appropriate containers as approved by the Environmental Department will be used to contain and transport contaminated soil for treatment. Depending on the nature of the spilled contaminant (hydrocarbon based spills), the soil may be treated for remediation at Baffinland's Landfarm and Contaminated Snow Containment Facility (Landfarm Facility) at Milne Port (refer to Section 6.1 below). Soil contaminated from the spill of other hazardous chemicals will be treated as a hazardous waste and shipped offsite to a licensed facility for treatment and/or disposal. For additional information, refer to Baffinland's Hazardous Materials and Hazardous Waste Management Plan (BAF-PH1-830-P16-0011).

Used sorbent material is burned in Project incinerators as per incinerator standard operating procedures and contaminated snow from sewage releases are disposed in Polishing and Waste Stabilizations Ponds for treatment during the summer months.

6.1 MILNE PORT SOIL LANDFARM AND CONTAMINATED SNOW CONTAINMENT FACILITY

The Milne Port Landfarm Facility consists of two geomembrane lined containment cells. The larger (3,383 m³) west cell (Landfarm) was constructed for the containment and bio treatment of hydrocarbon contaminated soils. Treated soils that meet the appropriate criteria will be used as landfill cover material or other purposes following approval from the appropriate regulators and stakeholders.

The smaller (929 m³) east cell was constructed for the containment of hydrocarbon contaminated snow generated during the winter months. Contaminated snow collected will be treated during the summer months using an on-site mobile Oily Water Treatment Facility (OWTF). During treatment, monitoring will be completed to ensure compliance with prescribed water quality guideline criteria outlined in Baffinland's Type 'A' Water Licence.

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7 TRAINING REQUIREMENTS

All new employees receive general spill training as part of the Project's onboarding on site orientation. In addition, the Project's EPP is a reference document which provides concise guidance to Project personnel regarding the implementation of appropriate standards for protecting the environment and minimizing adverse environmental effects. EPP training for personnel occurs as part of Baffinland's continuous education and awareness training. Emergency spill response training subject to the requirements of this Plan shall be completed in conjunction with Baffinland's ERP, whereby Baffinland's Health, Safety and Security Superintendent, with support from the Environmental Superintendent, 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 responses often occur in parallel with emergency responses (i.e. an overturned fuel tanker accident along the Tote 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 Project to ensure the following requirements are fulfilled:

- Meets or exceeds the requirements of NWT/Nunavut Mines Health and Safety Regulations;
- Enables responders to competently operate the equipment employed for emergency and spill response purposes; and,
- Includes practices, drills and full scale exercises for responding to the types of emergencies that are reasonably predictable for the operation.


ERT member qualifications are outlined in Section 6 of the ERP.

7.1 TRAINING CONTENT

Emergency response personnel, as members of the ERT, have response requirements which may include administering first aid, firefighting, performing work at heights or in confined spaces, handling and transferring hazardous/controlled substances, and working in/around water. Each of these demands must be supported with adequate training that will allow members to safety and effectively conduct their tasks.

Additional training requirements may be provided for specific roles within the ERP and for specific functions to be performed during an emergency response including:

- Incident command training;
- Land Spill Response;
- Oil Pollution Emergency Plan – Sea Spill Response;
- Cold water rescue and boat operator's safety; and
- Boom deployment.

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7.2 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 ERT is responsible for coordinating the development of and assisting in conducting drills and exercises. The following types of drills and exercises shall be practiced:

7.2.1 TABLETOP EXERCISES

Tabletop exercises shall be completed and will involve presenting to key emergency personnel simulated emergency situations in informal settings to elicit constructive discussions as the participants examine and resolve problems based on this Plan. These exercises will be routinely performed during ERT training sessions conducted throughout the year.

7.2.2 FUNCTIONAL DRILLS

Functional drills are practical exercises designed to evaluate the capability of personnel to perform a specific function (i.e. communications, first aid, and spill response). Functional drills will be required to be performed at a minimum of twice annually. Deficiencies and competencies identified during functional drills are documented, and used as effective development tools in the preparation of response procedures required for full-scale exercises.

7.2.3 FULL-SCALE EXERCISES

Full-scale exercises are intended to evaluate the operational capability of Baffinland's emergency response and preparedness. Full-scale exercises will be required to be conducted annually with sufficient notice to allow for the preparation of effective emergency response procedures and to identify and correct deficiencies in advance.

Following the table-top exercises, functional drills, or full-scale exercises, the overall performance of the drill or exercise and that of the general workforce, and the various response teams will be evaluated and lessons learned will be documented. Lessons learned will be issued to and reviewed with site senior management and representatives of the various responding teams, and opportunities and mechanisms for improvement will be identified and implemented. Revisions to the SCP, ERP and other associated emergency plans will be made as warranted by the evaluation, and appropriate updates to training programs will be developed and implemented.

7.3 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;

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- Establishing objectives;
- Identifying resources to be involved, including personnel;
- Developing exercise scenarios, a major sequence of events list, and expected action checklists; and,
- Assigning and training controllers and evacuators.

Baffinland has committed to engaging local community representatives, the Government of Nunavut and the Canadian Coast Guard as applicable in training drills and exercises.

All scenarios shall be realistic and based upon current operating conditions. The primary event (i.e. fire, spill, etc.) shall be determined based on the objective of the exercise, and completed in accordance with the prescribed regulatory requirements.

Emergency Response Spill trailers are maintained at both the Milne Port and the Mine Site for immediate response to all emergencies. The Emergency Response Spill trailers are equipped with a comprehensive list of response equipment which include back-up power supply, hydraulic power tools, and spill response equipment. Fire fighting and medical response supplies are located in the Emergency Response Vehicles. In the event of an emergency, the Emergency Response Spill Trailers will be immediately deployed carrying the necessary equipment responders will require upon arriving at the scene of the incident. For the complete Emergency Response inventory, refer to Appendix C.

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8 POTENTIAL SPILL ANALYSIS

To prepare for emergency spill response, potential spill analysis was conducted on various worst-case scenarios. The exercise serves to identify potential risk areas, as well as to determine the fate of spilled products and their environmental effects. This section 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, untreated sewage and effluent, emulsion (ammonium nitrate-diesel), lubricants, and oils. These materials are planned to be 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 could occur at the Project.

8.1 FUEL SPILLS ON LAND

Fuel represents the greatest volume of hazardous material located on site. For locations of the tank farms, temporary fuel depots and approximate spill kit locations at each of the Project sites, refer to Appendix C. Table 7-1 provides the maximum fuel storage capacities of permanent fuel storage infrastructure (i.e. tanks, tank farms) at Project sites.


TABLE 8-1: Maximum Fuel Storage Capacities for Permanent Fuel Storage Infrastructure at Project Sites

Location	Fuel Type	Total Fuel Storage Capacity *
Milne Port	Jet- A	65.0 ML
	Diesel	
Mine Site	Jet- A	17.1 ML
	Diesel	

*Does not include day (iso) tanks servicing buildings and accommodation complexes

At Milne Port, the total system diesel capacity is approximately 50,480 tonnes (62,000,000 litres [L]), and the total system Jet-A capacity is approximately 2,496,000 tonnes (3,000,000 L), stored at the Milne Port Bulk Fuel Storage Facility as follows:

- Three (3) 12 ML Arctic Diesel field-fabricated single wall steel tanks;
- One (1) 13 ML Arctic Diesel field-fabricated single wall steel tank;
- Two (2) 5 ML Arctic Diesel field-fabricated single wall steel tanks;
- One (1) 3ML Arctic Diesel field-fabricated single wall steel tank; and
- Four (4) 0.75 ML Jet-A1 pre-fabricated tanks.

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In addition, there is also approximately fifteen (15) steel double-walled day tanks at Milne Port with capacities ranging from 5,000 to 20,000 L. The day tanks are contained in restricted areas so as to avoid collision from mobile equipment and placed such that they should not be damaged as a result of operations. These day tanks can be utilized as temporary or long-term storage facilities. No day tanks are located within 100 metres (m) of a water body.

The bulk fuel facilities are equipped with lined secondary containment berms, engineered to comply with the Canadian Council of Ministers of the Environment (CCME) *Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products* (2015).

The fuel dispensing systems at Milne Port consist of two prefabricated fuel dispensing modules: the Arctic Diesel Fuel Module, and the Jet-A1 Fuel Module, located on the east and west side of the tank farm, respectively. Both modules are insulated and heated 40 foot ISO shipping containers, complete with piping, fuel transfer equipment, temperature corrected delivery systems, electrical and control components, and code compliant fire suppression systems.

An additional, prefabricated diesel fuel dispensing module was also installed at Milne Port to facilitate the fueling of Ore Haul Trucks leaving Milne Port. The prefabricated diesel dispensing module is situated within lined engineered containment and is comprised of a heated 20 foot ISO shipping container, with a 27,000 L double-walled diesel storage supply tank and associated fuel transfer equipment.


At the Mine Site, the total system diesel capacity is approximately 14,960 tonnes (17,000,000 L), and the total system Jet-A1 capacity is approximately 83 tonnes (100,000 L) stored the Mine Site Bulk Fuel Storage Facility and Mine Site Aerodrome as follows:

- Four (4) 0.5 ML Arctic Diesel pre-fabricated single wall steel tanks; and
- One (1) 15 ML Arctic Diesel field-fabricated single wall steel tank;
- Two (2) 50,000 Jet-A1 steel tanks (located at the Aerodrome).

There is also approximately fifteen (15) double-walled day tanks at the Mine Site with capacities ranging from 5,000L to 20,000L. The day tanks are contained in restricted areas so as to avoid collision from mobile equipment and placed such that they should not be damaged as a result of operations. These day tanks can be utilized as temporary or long-term storage facilities. No day tanks are located within 100 metres (m) of a water body.

The bulk fuel facilities are equipped with lined secondary containment berms, engineered to comply with the CCME *Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products* (2015).

The fuel dispensing system at the Mine Site consists of one prefabricated Arctic diesel fuel dispensing module located on the west side of the tank farm. The module is an insulated and heated 40 foot ISO shipping container, complete with piping, fuel transfer equipment, temperature-corrected delivery system, electrical and control components, and code compliant fire suppression system.

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Baffinland has constructed and continues to operate its fuel storage/dispensing facilities in accordance with applicable guidelines and regulations such as the CCME *Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products* (2015), *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canadian Environmental Protection Act, 1999 SOR/2008-197 June 12, 2008) and National Fire Code of Canada as provided in Part D, Item 24 of Baffinland's Type 'A' Water Licence. At all Project sites, drummed fuel is placed within engineered lined containment areas.

All bulk fuel storage areas are equipped with spill kits for emergency response (see Appendix C for approximate locations). Each spill kit contains the appropriate type, size and quantity of equipment for the volume/type of product present in the storage location as well as the environment likely to be affected by a spill (i.e., ground, river, lake or ocean). Refer to Appendix C for a list of emergency and spill response supplies.


Standard Operating Procedures (SOPs) have been developed for each method of fuel storage and transfer. Proper containment and emergency response equipment shall be provided to meet or exceed regulatory requirements.

The SSRP provides additional guidance on the actions and reporting requirements during a fuel spill from shipping operations. The OPEP provides additional details for marine spill response associated with the Milne Port fuel storage facility and the bulk incoming transfer of fuel.

8.1.1 POTENTIAL FUEL SPILL SCENARIOS

The tank farms located at Milne Port and the Mine Site are constructed in an impermeable secondary containment structure (lined and bermed containment area). The construction is in compliance with building codes and best practices for tank farm facilities. The low points of the secondary containment areas are fitted with sumps for the collection and disposal of runoff. The secondary containment areas have been designed to a capacity to contain the complete volume of the largest tank, as well as 10% of the volume of all the remaining tanks.

Due to the capacities of the secondary containments, fuel spills outside these containment areas are unlikely to occur. Adequate procedures (site wide application) and work instructions (task specific) are in place as well as the Environmental Protection Plan (EPP) to deal with equipment and machinery entering and exiting the tank farms as well as with contamination resulting from traffic in and out of the secondary containment areas.

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SCENARIO 1: TANK FARM AREA SPILL

Description of Incident	Rupture or spill from 15 ML tank into containment area
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 fuel
Maximum Volume Spilled	15 ML
Estimated Time to Spill Entire Volume	1.5 hour
Immediate Receiving Medium	Lined containment area
Most Probable Direction of Spill Migration	The fuel will flow into the sump of the containment area.
Distance and Direction to Closest Body of Water	N/A
Resources to Protect	Must ensure fuel does not breach/overtop containment
Emergency Response Level	Level 3 (high) - Refer to ERP
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 lined containment will be inspected to ensure that it is safely containing the spill; if not it will be reinforced with temporary berms. Recoverable fuel will be collected via a vacuum truck and deposited in a suitable site (i.e. fuel storage tanks). Oily water generated by the spill will be processed on site using an oily-water treatment facility or shipped offsite for disposal/treatment at a licenced facility.


SCENARIO 2: DAY TANK/TEMPORARY STORAGE AREA SPILL

All stand-alone day storage facilities, whether temporary (construction period) or permanent (mine pit), will be double-walled iso-tanks. There are approximately 30 double-walled day tanks at Milne Port and Mine Site camps with a capacity ranging from 5,000L to 20,000L. The iso-tanks will be contained in restricted areas so as to avoid collision from mobile equipment and placed such that they should not be damaged as a result of works.

Detailed procedures (site-wide application) and work instructions (task-specific) are in place, along with the EPP to deal with refuelling operations. The most likely source of spills is during refuelling or refilling of the day tanks with fuel. Only personnel trained in proper refuelling will have access to these tanks. The fuel transfer operation will be halted whenever a leak is detected; all dispensing will be done with auto shut off fuel dispensers, and drip trays will be utilized during all fuel transfers. In light of the robust nature of the day tanks and their built in secondary containment, and the use of proper refuelling techniques and drip trays, fuel spills are unlikely to occur. In the event that a spill does occur, a spill kit, containing adequate supplies given the volume of the tank it accompanies, will be available in close proximity. Given the volume of these tanks, access to readily available spill clean-up materials and trained personnel, it is anticipated that staff will be able to identify, contain and mitigate any potential spills in an effective and time sensitive manner. The table below details the most severe incident that could occur.

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Description of Incident	Puncture or rupture of iso-tank
Potential Causes	Equipment failure due to faulty manufacturing or collision with mobile equipment.
Product Spilled	Diesel fuel
Maximum Volume Spilled	20,000 L
Estimated Time to Spill Entire Volume	10 minutes
Immediate Receiving Medium	Soil or surrounding environment. It is important to note that no iso-tank will be located within 100m of a water body.
Most Probable Direction of Spill Migration	As iso-tanks will be utilized around the Project, the direction of spill migration will depend on the specific location. Iso-tanks will be placed on relatively flat laydown areas, where the potential flow of spills will be readily managed.
Distance and Direction to Closest Body of Water	Varies
Resources to Protect	Varies
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	15 minutes
Spill Response Procedures	In the event that both walls of an iso-tank are ruptured and a spill occurs, the ERT will be immediately notified. Personnel in the immediate area will act as first responders making every effort to plug the puncture point. Temporary berms, ditches, trenches and sumps will be set up downstream of the spill. The downstream wall of trenches will be lined with plastic material to ensure that exposed soil does not come in contact with the fuel. 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 the Project's landfarm facilities for treatment. New, uncontaminated soil will be laid down in the exposed area.


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SCENARIO 3: TOTE 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 along the Tote Road between Milne Port and the Mine Site.
Potential Causes	Human error, vehicle mechanical failure, traffic accident, poor weather or visibility.
Product Spilled	1. Tote Road: Diesel fuel, Jet-A Fuel 2. Ice Road: Diesel fuel
Maximum Volume Spilled	20,000 to 50,000 L (content 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	Soil, streams, lakes
Most Probable Direction of Spill Migration	Varies with specific location of spill.
Distance and Direction to Closest Body of Water	1. Tote Road - Downstream and into Phillips Creek; the road between the Mine Site and Milne Port follows Phillips Creek, and crosses many streams (that discharge into Phillips Creek) over a distance of approximately 50 km. Phillips Creek eventually discharges into the ocean at Milne Port. 2. Ice Road – Dependent on location of accident.
Resources to Protect	1. Tote Road: Streams, Phillips Creek and the ocean via Milne Inlet. 2. Ice Road: Various water ways and lakes along the ice road.
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 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 SCP, as defined in Section 1 of this Plan, by using the spill kit kept in the fuel trucks. 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), will be 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 treatment facility. Impacted soils (if any) would be excavated and placed within the Project's landfarm facilities.

SCENARIO 4: MARINE RESUPPLY SPILL – MILNE PORT

Refer to Milne Port OPEP (BAF-PH1-830-P16-0013).

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8.2 EXPLOSIVES TRANSPORT AND STORAGE

For an overview of the maximum cumulative quantities of explosives and ammonium nitrate Baffinland is permitted to store at the Mary River Project, refer to Table 7-2. For the location of the explosives storage facilities at Milne Port, and the Mine Site, see the site layout drawings in Appendix B. For additional information on the storage locations, handling procedures and supportive emergency procedures for Ammonium Nitrate (AN), Dyno Nobel Baffin Island Inc. has prepared an Emergency Response Assistance Plan for the Project, provided as Appendix F.

8.2.1 AMMONIUM NITRATE STORAGE AND HANDLING

The AN used at the Project is stored in containers in three locations; KM 97 and 80 laydowns and smaller quantities at the Mine Site Dyno Nobel Emulsion Plant. The AN prill is stored in 1,000 kg tote bags, 20 of which are stored double-stacked in each of the TEU (twenty-foot equivalent unit) shipping containers. AN (in any amount) shall not be stored outside at any time and shall only be withdrawn from the containers when required by plant production. The AN is loaded directly into the AN Handling Module of the plant to minimize any exposure of the product to the environment.

8.2.2 EMULSION STORAGE AND HANDLING


Emulsion is stored in a single, 36,000 kg capacity tank within the emulsion loading garage at the Dyno Nobel Emulsion Plant. Smaller quantities may be stored in the four bulk emulsion trucks (10,000 kg or 15,000 kg capacity each) which are parked in the garage when not in use.

Small spills shall be scooped up with non-sparking shovels, placed in bags and stored at the magazine site at km 105.5 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 in approved containers/bags.

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

TABLE 8-2: Maximum Cumulative Quantities of Explosives and Ammonium Nitrate at Project Sites

Material	Purpose	Storage Type	Max. Quantity at Site at any time
Pre-Packaged Explosives	Explosive agent	Magazines and Shipping Containers	800,000 kg
Ammonium Nitrate	Polymer	20,000 kg per Shipping Container	2,000,000 kg

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8.2.3 POTENTIAL SPILL SCENARIOS RELATED TO EXPLOSIVES


SCENARIO 1: SPILL OF AMMONIUM NITRATE

AN dissociates readily in water to form ammonia, which in its un-ionized form, is toxic to aquatic organisms and fish. Storage on land, away from water sources largely eliminates the risk of ammonia losses to water bodies.

All partially full, contaminated or ripped bags of prill, spilled prill and used empty bags are collected and stored in a dedicated contained location for reuse on site or shipment offsite for disposal. Spills within the storage facility are completely contained and will be cleaned up by personnel trained in explosives management. All spills will be recorded on a spill report and all tote bags will be inspected regularly by the explosives contractor.

AN is used to produce explosives emulsion on site and will be transported to various areas at the Project. Therefore, the greatest potential for an AN spill to occur is during transport along the Tote Road due to mechanical failure, weather conditions or human error.

Description of Incident	Explosives transport truck rolls over or collides with another vehicle or object. Transport container(s) as well as individual tote bags rupture resulting in a spill.
Potential Causes	Collision, poor driving conditions or visibility, equipment error, operator error.
Product Spilled	AN
Maximum Volume Spilled	1 tonne
Estimated Time to Spill Entire Volume	Instantaneous
Immediate Receiving Medium	Dependent on the location either on land or in a water body.
Most Probable Direction of Spill Migration	Dependent on location
Distance and Direction to Closest Body of Water	Dependent on location
Resources to Protect	Nearby water bodies
Emergency Response Level	Level 1 (low) or Level 2 (medium) – Refer to ERP (depends on quantity and whether there is potential for impact to water bodies and/or to public safety)
Estimated Emergency Spill Response Time	15 – 60 minutes
Spill Response Procedures	<p>a) In the event that a spill occurs on land the ERT will be contacted immediately. If the driver is unharmed he will act as the spill response first responder. All spilled prill will be contained, with the use of berms if required. Once the spill has been contained the prill will be cleaned up by a trained crew and transported and stored in a dedicated contained location until they can be shipped offsite.</p> <p>b) In the event that a spill occurs in water the ERT will be contacted immediately. Spill containment devices (i.e. diking and/or pumping water into bladder(s)) will be constructed downstream and undissolved prill will be removed from the water body. Recovered material will be stored in a dedicated containment area until it can be shipped offsite.</p>

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For an AN spill to occur during transportation, the explosives transport truck would need to be in a significant collision/incident since both the AN prill tote bags and shipping container would need to rupture for AN prill to be released into the environment. If this did occur, the spill would pose minimal risk to the surrounding environment unless the AN prill was deposited directly into a stream/water body. Due to limited open-water season at the Project, the risk of spills that would involve the deposition of AN prill directly into a stream/water body are anticipated to be low.

Accidental spills of AN from an explosives truck shall be immediately cleaned-up, reported to the Environment Department, and logged as required by regulations. Clean-up shall be completed by personnel licensed to handle explosives and the contaminated material will be handled and stored in a designated area until the contaminated material can be shipped offsite.

SCENARIO 2: SPILL OF PRE-PACKAGED EMULSION DURING TRANSPORT

Given the precautions taken in the design of the explosives storage facilities and the suitability of containers used for storage and transport, major spills are most likely to be caused by traffic incidents during the transportation of the pre-packaged explosives by transport truck. If such an incident occurs, explosive materials will be recovered by employees or contractors licensed to handle explosives and the contaminated material will be handled and disposed of in a designated area until it can be shipped offsite.


Description of Incident	Emulsion transport truck rolls over or collides with another vehicle or object. Transport container as well as pre-packaged explosives.
Potential Causes	Collision, poor driving conditions or visibility, equipment error, operator error.
Product Spilled	AN emulsion
Maximum Volume Spilled	10,000 L
Estimated Time to Spill Entire Volume	Instantaneous
Immediate Receiving Medium	Dependent on the location either on land or in a water body.
Most Probable Direction of Spill Migration	Dependent on location
Distance and Direction to Closest Body of Water	Dependent on location
Resources to Protect	Nearby water bodies
Emergency Response Level	Level 2 (medium) or Level 3 (high) – Refer to ERP (depends on quantity and whether there is potential for impact to water bodies and/or to public safety)
Estimated Emergency Spill Response Time	15 – 60 minutes
Spill Response Procedures	<p>a) In the event that a spill occurs on land, the ERT will be contacted immediately. If the driver is unharmed he will act as the spill response first responder. All spilled material will be contained, with the use of berms if required. Once the spill has been contained the material will be cleaned up by a trained crew and stored in a dedicated contained location until the cleanup materials can be shipped offsite.</p> <p>b) In the event that a spill occurs in water, the ERT will be contacted immediately. Spilled materials will be contained and recovered using booms and other spill control devices. Recovered material will be stored in a dedicated containment area until it can be shipped offsite.</p>

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SCENARIO 3: SPILL OF EMULSION DURING BLAST HOLE LOADING

Emulsion spills are unlikely to occur during blast hole loading given the nature of emulsion explosives. Pre-packaged explosives are in self-contained tubes that are simply dropped into the hole. Emulsion from the emulsion plant is pumped into blast holes via hose lines on the emulsion pump truck.

Description of Incident	Emulsion spilled while loading emulsion in blast holes.
Potential Causes	Operator error, mechanical failure or malfunction.
Product Spilled	AN emulsion
Maximum Volume Spilled	<10 kg
Estimated Time to Spill Entire Volume	Instantaneous
Immediate Receiving Medium	Land
Most Probable Direction of Spill Migration	Not expected to migrate due to its high viscosity.
Distance and Direction to Closest Body of Water	Dependent on location
Resources to Protect	Nearby water bodies
Emergency Response Level	Level 1 (low) – Refer to ERP
Estimated Emergency Spill Response Time	5 minutes
Spill Response Procedures	In the event that a spill occurs on land, the blasting technician will respond. The spilled emulsion will immediately be cleaned up and stored in a dedicated contaminated explosives area until it can be shipped offsite.

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8.3 UNTREATED SEWAGE

The Mine Site and Milne Port are equipped with dedicated sewage treatment plants (STP; Refer to Baffinland's Fresh Water Supply, Sewage and Wastewater Management Plan; BAF-PH1-830-P16-0010) equipped with Membrane Bio Reactor (MBR) technology. Sewage produced at Steensby Port will be treated using a latrine system or transported to Milne Port or the Mine Site for treatment.


8.3.1 POTENTIAL SPILLS SCENARIOS RELATED TO SEWAGE

SCENARIO 1: SEWAGE SPILL AT MILNE PORT

Description of Incident	Spill from MBR holding tank.
Potential Causes	Pipe or mechanical failure, human error.
Product Spilled	Raw sewage
Maximum Volume Spilled	48,000 L
Estimated Time to Spill Entire Volume	60 minutes
Immediate Receiving Medium	Milne Port
Most Probable Direction of Spill Migration	Milne Port or nearby stream east of camp pad.
Distance and Direction to Closest Body of Water	150 m
Resources to Protect	Milne Port
Emergency Response Level	Level 1 (low) or 2 (medium) – Refer to ERP (depends on quantity and whether there is potential for impact to a nearby water body and to public safety)
Estimated Emergency Spill Response Time	15 minutes after spill is identified.
Spill Response Procedures	Contain with berms or sumps/ditches. Direct spill to the desired location and remove recoverable sewage with a vacuum truck. Transport recovered sewage to Polishing Waste Stabilization Pond (PWSP) or return to the STP for treatment. Resurface area with fresh soil.


SCENARIO 2: SEWAGE SPILL AT MINE SITE

Description of Incident	Spill from STP.
Potential Causes	Piping and/or tank failure.
Product Spilled	Raw sewage
Maximum Volume Spilled	48,000 L
Estimated Time to Spill Entire Volume	60 minutes
Immediate Receiving Medium	Soil
Most Probable Direction of Spill Migration	Downstream and into a local depression east of the Mine Site STP. This local depression dries up in the summer and intercepts the maximum spilled volume.
Distance and Direction to Closest Body of Water	200 m
Resources to Protect	One stream (West of STP) and Sheardown Lake.
Emergency Response Level	Level 1 (low) or 2 (medium) – Refer to ERP (depends on quantity and whether there is potential for impact to a water body and/or to public safety)
Emergency Spill Response Time	15 minutes after spill.
Spill Response Procedures	Contain with berms or sumps/ditches. Direct spill to the desired location and remove recoverable sewage with a vacuum truck. Transport recovered sewage to PWSP or return to the STP for treatment. Resurface area with fresh soil.

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SCENARIO 3: SEWAGE TRANSPORT TRUCK SPILL

Description of Incident	Spill from the tanker truck transporting raw sewage from temporary camp to Project STP.
Potential Causes	Road incident
Product Spilled	Raw sewage
Maximum Volume Spilled	10,000 L
Estimated Time to Spill Entire Volume	Dependent on severity of accident and damage sustained by the tanker truck.
Immediate Receiving Medium	Soil
Distance and Direction to Closest Body of Water	Depends on location of accident
Resources to Protect	Soil and nearby lakes, rivers and streams
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 and /or to public safety)
Estimated Emergency Spill Response Time	Immediate if driver is not injured; up to 60 minutes for ERT Team to arrive.
Spill Response Procedures	Report spill and contain with berms or sumps/ditches. Direct spill to the desired location and remove recoverable sewage with a vacuum truck. Transport recovered sewage to PWSP or return to the STP for treatment. Resurface area with fresh soil.

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8.4 LUBRICANTS AND OILS


Lubricants and machinery oils will be used on site throughout the life of the Project. 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. Lubricants and oils shall be handled by trained personnel following established 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.

8.4.1 POTENTIAL SPILL SCENARIOS RELATED TO LUBRICANTS AND OILS

SCENARIO 1: CONTAINMENT PUNCTURE DURING TRANSPORT

The most likely spill scenario to occur with regards to lubricants and oils is a puncture of an individual storage unit during transport. Lubricants and oils are typically stored in 1 cubic metre (m³) containers (1,000 L totes). When lubricants or oils are required, single totes are removed from their storage location with a forklift. In the event that the container/tote is punctured by the forklift, a maximum spill volume of 1,000 L could potentially occur. The likelihood of this occurring is minimal as all equipment operators are trained in proper lubricant and oil transfer procedures (i.e. use of spotter). In the unlikely event that a tote 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	1,000 L
Estimated Time to Spill Entire Volume	5 minutes
Immediate Receiving Medium	Land
Most Probable Direction of Spill Migration	Dependent on area
Distance and Direction to Closest Body of Water	Dependent on area
Resources to Protect	Any 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 a nearby water body)
Estimated Emergency Spill Response Time	> 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 removed and transported to an appropriate storage facility. Contaminated soil will be removed and transported to the Project's Landfarm facilities for remediation.

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SCENARIO 2: SPILL DURING EQUIPMENT ROLLOVER


It is possible that the mobile equipment carrying a container of lubricant or oil could rollover or have a collision causing a spill of the entire 1 m³ tote. In the event that this occurs, the spill will be managed the same way as detailed above. The event of a rollover is unlikely given the safe driving procedures, speed limits, road signage and training procedures established and enforced at the Project. In addition to this, all lubricant and oil containers will be securely fastened inside the vehicle in which they are being transferred, when applicable, making a spill unlikely.

Description of Incident	Spill during equipment rollover
Potential Causes	Operator error, equipment failure, poor visibility or adverse weather, collision.
Product Spilled	Lubricant or oil
Maximum Volume Spilled	1,000 L
Estimated Time to Spill Entire Volume	Instantaneous
Immediate Receiving Medium	Land
Most Probable Direction of Spill Migration	Dependent on area
Distance and Direction to Closest Body of Water	Dependent on area
Resources to Protect	Any 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 a nearby water body)
Estimated Emergency Spill Response Time	15 – 60 minutes
Spill Response Procedures	<p>If the driver is not injured, he will act as the first responder and immediately initiate the SCP as defined in Section 1, utilizing the spill kit kept in the work area or on the mobile equipment. The spill will be contained through the use of temporary berms and ditches until it can be removed and transported to an appropriate storage facility. Contaminated soil will be removed and transported to the Project's Landfarm facilities for treatment.</p> <p>In the event a spill occurs in a water body, the lubricants and oils will be contained and recovered downstream as described in Section 4, with shorelines protected using sorbent booms. All free-product will be collected for temporary storage and soiled shorelines cleaned-up. If the mobile equipment operator is not injured, he will act as a first responder and immediately initiate the SCP as defined in Section 1, utilizing the spill kit kept in the work area or on the mobile equipment. Once the spill is contained, contaminated water and recoverable free product will be removed by vacuum truck and transported to an appropriate storage facility for shipment offsite or treatment using the Project's on-site oily-water treatment facilities.</p>


SCENARIO 3: SPILLS DURING TRANSFER

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.

As proper maintenance procedures will be in place to reduce the chance of equipment malfunctions, along with proper training procedures, it is unlikely a spill will occur in this event. Additionally, the use of spill trays is mandatory during all oil and lubricant transfers.

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Description of Incident	Spill during transfer
Potential Causes	Operator error, pump failure, hose failure.
Product Spilled	Lubricant or oil
Maximum Volume Spilled	1,000 L
Estimated Time to Spill Entire Volume	5 – 15 minutes
Immediate Receiving Medium	Land
Most Probable Direction of Spill Migration	Dependent on location
Distance and Direction to Closest Body of Water	Dependent 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	5 -15 minutes
Spill Response Procedures	<p>If the spill occurs in a maintenance building it will be contained as maintenance buildings are 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.</p> <p>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, spilled materials will be removed by a vacuum truck and brought to an appropriate storage/treatment facility. Contaminated soil will be removed and brought to the Project's Landfarm facilities for treatment.</p>


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SCENARIO 4: SPILLS DURING CRUSHING OPERATIONS

It is possible that spills will occur during crushing operations at the Mine Site Crushing Facility. This will most likely be the result of equipment failure such as ruptured hoses or a rupture to the oil reservoir.

Preventative maintenance, in addition to proper equipment warm-up procedures will reduce the likelihood of spills. Several spill kits are located at the Crushing Facility and shall be maintained at all times. The spill kits are equipped with absorbent pads, booms, and PPE to effectively respond to a spill.

Description of Incident	Release of hydraulic fluid from cone-crusher
Potential Causes	Hose failure, rupture of oil reservoir.
Product Spilled	Lubricant Oil
Maximum Volume Spilled	600 L
Estimated Time to Spill Entire Volume	5 minutes
Immediate Receiving Medium	Land
Most Probable Direction of Spill Migration	Ore pad is a level surface of medium to fine grain gravel/crushed ore.
Distance and Direction to Closest Body of Water	Dependent on location
Resources to Protect	Nearby water bodies are > 31 m from the cone-crusher
Emergency Response Level	Level 1 (low) or 2 (medium) – Refer to ERP (depends on quantity and whether there is potential for impact to nearby water bodies)
Estimated Emergency Spill Response Time	5 – 15 minutes
Spill Response Procedures	<p>Hydraulic fluid/oil will spill to the medium – fine gravel/crushed iron ore ground surface below the ore crusher, at the ore pad.</p> <p>In the event of a release of lubricant fluid from the cone-crusher tank, (max volume of 600L) crushing activities will be halted immediately and clean-up of the spill with available spill kit(s) will commence. The spill will be contained using absorbent booms where necessary. The ore crushing pad is a level surface of medium – fine grain gravel/ore fines, therefore contaminant migration is not of great concern. Absorbent material (pads) will be also be used where required.</p> <p>When the spill is contained, the layer of contaminated gravel/crushed ore fines will be excavated and brought to an appropriate storage facility for eventual shipment offsite or treatment at the Project's Landfarm facilities. New gravel will then be placed over the exposed area.</p>

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9 REPORTING REQUIREMENTS

Spill reports are written by the department responsible for the spill and are provided to the Environment Department through Baffinland's Incident Reporting System. After the initial field emergency response to a spill event, an internal Incident Investigation Report is filled out. Should the quantity of the spill, or receiving environment for the spill meet the reporting requirements outlined in Table 8.1, the incident is reported to the 24-hour Northwest Territories-Nunavut (NT-NU) Spill Report Line, or other applicable reporting process. Spills of regulated substances in excess of reporting thresholds which occur outside of secondary or tertiary containment will be reported to the NT-NU Spill Line, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), and/or ECCC, as applicable, depending on the nature of the spill. Secondary and tertiary containment will be assessed for each spill occurrence and may include engineered facilities designed to provide containment, buildings with an impermeable floor, and lined areas. Any externally submitted spill report associated with a release on Inuit Owned Land shall also simultaneously be submitted to QIA in accordance with the Commercial Lease. The submission of the report externally to the NT-NU Spill Report Line is the responsibility of the Environmental Superintendent on behalf of the COO as per Baffinland's ERP. A copy of a standard NT-NU Spill Report Form is provided in Appendix E.


9.1 GOVERNMENT OF NUNAVUT'S ENVIRONMENTAL PROTECTION ACT

Under Section 9 of the Spill Contingency Planning and Reporting Regulations, under the Government of Nunavut's *Environmental Protection Act*, quantities of hazardous substances spilled which require reporting are set out in Schedule B of the Spill Contingency Planning and Reporting Regulations. A release of any substance in a quantity equal to or greater than the Schedule B criterion will be immediately reported via the NT-NU 24-Hour Spill Report Line.

Flammable liquids (such as diesel and jet fuel) and sewage are substances more commonly released on the Project. A spill of flammable liquids and sewage will be reported under the Spill Contingency Planning and Reporting Regulations (Schedule B, Item 20; "other contaminants") if the spill exceeds external reporting thresholds. Table 8-1 below provides guidance pertaining to spill reporting and associated clean-up procedures for these substances as a reference for site personnel.

In accordance with the Spill Contingency Planning and Reporting Regulations, a person reporting a spill shall give as much of the following information as possible:

- Date and time of spill;
- Location of spill;
- Direction spill is moving;
- Name and phone number of a contact person close to the location of the spill;
- Type of contaminant spilled and quantity spilled;
- Cause of spill;
- Whether spill is continuing or has stopped;

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- Description of existing contaminant;
- Action taken to contain, recover, clean-up and dispose of spilled contaminant;
- Name, address and phone number of person reporting spill; and,
- Name of owner or person in charge, management or control of contaminants at time of spill.

Departments responsible for a spill are required to complete clean-up activities using the resources required. In the event of a Level 2 or 3 spill response, initial assistance and resources shall be provided by the ERT.

TABLE 9-1: GENERAL SPILL REPORTING AND CLEAN-UP REQUIREMENTS FOR FUELS AND SEWAGE

Spill on Land		
Volume	Required Documentation	Spill Clean-up
Less than 1 L	- Verbal or email report	Environment Department will advise if needed.
Greater than 1 litre and less than 100 litres	- Photos of Spill and Clean-up - Baffinland Incident Investigation Report	Spills greater than 30 litres will have an Environmental Monitor present to advise clean-up efforts.
Greater than 100 L	- Photos of Spill and Clean-up - Baffinland Incident Investigation Report - NT-NU Spill Report - Notification to regulators and the NT-NU Spill Line	Environmental Superintendent or his/her designate will lead and advise clean-up efforts.
Spill on Water Body or Watercourse		
Volume	Required Documentation	Spill Clean-up
Any volume	- Photos of Spill and Clean-up - Baffinland Incident Investigation Report - NT-NU Spill Report - Notification to regulators and the NT-NU Spill Line	Environmental Superintendent or his/her designate will lead and advise clean-up efforts.


9.2 TYPE 'A' WATER LICENCE

Under the Type 'A' Water Licence, the release of an unauthorized discharge to the receiving environment of Waste and/or Effluent is required to be reported. Unauthorized discharges of waste and/or effluent under the Type 'A' Water Licence are reported to the Nunavut Water Board (NWB) in Baffinland's Monthly Water Licence Report; submitted in accordance with Part I, Item 21 of the Type 'A' Water Licence.

9.3 ECCC'S ENVIRONMENTAL EMERGENCY (E2) REGULATION

As per Section 18 of the Environmental Emergency (E2) Regulation, reporting (report to NT-NU 24-Hour Spill Report Line and written notification) under the E2 Regulations will be provided as described in Baffinland's E2 Plans when an environmental emergency meets at least one of the following three criteria for a release of diesel (CEPA, 1999):

- Has or may have an immediate or long-term harmful effect on the environment;*

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- b) Constitutes or may constitute a danger to the environment on which human life depends; or*
- c) Constitutes or may constitute a danger in Canada to human life or health.*

In accordance with the E2 Plans, this would occur when a diesel spill occurred that was classified as a Level 3 (High) emergency under Baffinland's emergency classification system (see Section 4). It will be reported to the NT-NU Spill Report Line and a written report will be provided. A written environmental emergency report (Schedule 8 Notice) will be submitted via the online E2 reporting system, accessed through the ECCC Single Window Information Management (SWIM) system and will include the information referred to in Schedule 8 of the E2 Regulations, which is outlined in Section 6.3 of the E2 Plans.

9.4 MDMER


A spill under the MDMER is defined as the uncontrolled release of a deleterious substance from its containment into a receiving environment. A deleterious substance is defined as any acutely lethal effluent or any substance that does not meet the criteria of Schedule 4 of the MDMER. Baffinland's MDMER Emergency Response Plan provides a guide for preventing and controlling the release of water outside of the normal course of events for the Waste Rock Facility (WRF) Pond and Crusher Facility (CF) Pond operations. Table 6.2 of the Metal and Diamond Mining Effluent Regulations Emergency Response Plan summarizes the MDMER Schedule 4 criterion (for effluent quality discharge from the WRF and CF ponds). MDMER discharge limits are used as the standards for risk analysis of Crusher Facility (CF) Pond and Waste Rock Facility (WRF) Pond releases to the environment

A spill under the MDMER includes the release of Total Suspended Solids (TSS) released in a concentration exceeding the Schedule 4 grab sample criterion of 30 mg/L or the monthly mean criterion of 15 mg/L from facilities regulated under MDMER. In accordance with the Fisheries Act (Section 38), in the event of a release or imminent unauthorized release of a deleterious substance, a written report must be submitted to ECCC. The information required to be included in the spill report submitted to ECCC is outlined in Section 31 of the MDMER and summarized in Section 6.2 of the MDMER ERP.

9.5 STORAGE TANK REGULATIONS ON CROWN LAND

The Km 60 Washcar Fuel System Operation and Emergency Response Plan outlines the protocols, roles and responsibilities, and measures to be taken to mitigate and respond to spills associated with the Km 60 Fuel System. The Km 60 Fuel System is located on Crown Land along the Milne Inlet Tote Road (Tote Road) between the Project's Mine Site and Milne Port. The fuel system provides power to a washcar used to support ore haul trucking operations at the Project. In the event of a spill of over 100 L from a storage tank system on Crown Land, the following information must be reported (CEPA, 1999; SOR/2008-197):

- a) the names of both the owner and the operator of the storage tank system;
- b) the identification number of the storage tank system;
- c) the date on which any release in liquid form in the environment occurred;

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- d) each allied petroleum product or type of petroleum product that is the subject of the report;
- e) the quantity of each petroleum product or allied petroleum product that is the subject of the report or, if the quantity cannot be determined, an estimate of that quantity;
- f) a description of the circumstances of any release in liquid form in the environment and any mitigating measures taken; and
- g) a description of the measures taken following any release in liquid form in the environment to prevent a subsequent occurrence.

9.6 TRANSPORT CANADA – MARINE

Reportable spills of a marine nature will be reported to the Canadian Coast Guard (Central and Arctic region) 1-800-265-0237 (24-hour). When calling in a spill report, you'll need to provide:

- your name
- your telephone number
- location of the spill
- quantity of the spill
- type of product spilled
- on-scene weather

Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E, "Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants". Detailed harmful substances report requirements are outlined in Appendix A-2 of the guideline, which is included in Appendix I of the OPEP. Spills into the marine environment will also be reported to the nearest office of Transport Canada in accordance with the Vessel Pollution and Dangerous Chemical Regulations (SOR 2012-69), and to the Government of Nunavut via the NT-NU 24-Hour Spill Reporting Line.

10 REFERENCES

BAF-PH1-800-POL-0001 - Health, Safety and Environment Policy

BAF-PH1-800-POL-0002 - Sustainable Development and Human Rights Policy

BAF-PH1-810-FOR-0005 - Baffinland Incident Investigation Form

BAF-PH1-810-STD-0008 - Personal Protective Equipment Standard

BAF-PH1-830-P16-0008 - Environmental Protection Plan


BAF-PH1-830-P16-0010 - Fresh Water Supply, Sewage and Wastewater Management Plan

BAF-PH1-830-P16-0011 - Hazardous Materials and Hazardous Waste Management Plan

BAF-PH1-830-P16-0013 - Oil Pollution Emergency Plan

BAF-PH1-830-P16-0042 - Spill at Sea Response Plan

BAF-PH1-830-P16-0047 - Metal and Diamond Mining Effluent Regulations Emergency Response Plan

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	Site Wide	Document #: BAF-PH1-830-P16-0036	

BAF-PH1-830-P16-0056 - Diesel Environmental Emergency (E2) Plan Milne Port

BAF-PH1-830-P16-0057 - Diesel Environmental Emergency (E2) Plan Mine Site

BAF-PH1-840-P16-0001 - Crisis Management Plan

BAF-PH1-840-P16-0002 - Emergency Response Plan

BAF-PH1-840-P16-0003 - Km 60 Washcar Fuel System Operation and Emergency Response Plan

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Canadian Environmental Protection Act (CEPA), 1999, (S.C. 1999, c. 33).

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Environment and Climate Change Canada, 2008, *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*, SOR/2008-197.

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	Spill Contingency Plan	Issue Date: April 29, 2020 Revision: 5	
	Site Wide	Document #: BAF-PH1-830-P16-0036	

Appendix A

Sustainable Development Policy, and Health, Safety and Environment Policy

	Health, Safety and Environment Policy	Issue Date: April 20, 2018 Revision: 2	Page 1 of 4
	Company Wide	Document #: BAF-PH1-800-POL-0001	

Baffinland Iron Mines Corporation

Health, Safety and Environment Policy

BAF-PH1-800-POL-0001

Rev 2

Approved By: Brian Penney

Title: Chief Executive Officer

Date: April 20th, 2018

Signature: 

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Note: This is an UNCONTROLLED COPY. All staff members are responsible to ensure the latest revision is used.

	Health, Safety and Environment Policy	Issue Date: April 20, 2018 Revision: 2	Page 2 of 4
	Company Wide	Document #: BAF-PH1-800-POL-0001	

DOCUMENT REVISION RECORD

Issue Date MM/DD/YY	Revision	Prepared By	Approved By	Issue Purpose
05/07/15	0	EM	TP	For Use
03/07/16	1	JS	BP	Minor edits
04/20/18	2	TS	SA/BP	Minor edits

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	Health, Safety and Environment Policy	Issue Date: April 20, 2018 Revision: 2	Page 3 of 4
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This Baffinland Iron Mines Corporation Policy on Health, Safety and Environment is a statement of our commitment to achieving a safe, healthy and environmentally responsible workplace. We will not compromise this policy for the achievement of any other organizational goals.

We implement this Policy through the following commitments:

- Continual improvement of safety, occupational health and environmental performance
- Meeting or exceeding the requirements of regulations and company policies
- Integrating sustainable development principles into our decision-making processes
- Maintaining an effective Health, Safety and Environmental Management System
- Sharing and adopting improved technologies and best practices to prevent injuries, occupational illnesses and environmental impacts
- Engaging stakeholders through open and transparent communication.
- Efficiently using resources, and practicing responsible minimization, reuse, recycling and disposal of waste.
- Reclamation of lands to a condition acceptable to stakeholders.

Our commitment to provide the leadership and action necessary to accomplish this policy is exemplified by the following principles:

- As evidenced by our motto “Safety First, Always” and our actions Health and Safety of personnel and protection of the environment are values not priorities.
- All injuries, occupational illnesses and environmental impacts can be prevented.
- Employee involvement and active contribution through courageous leadership is essential for preventing injuries, occupational illnesses and environmental impacts.
- Working in a manner that is healthy, safe and environmentally sound is a condition of employment.
- All operating exposures can be safeguarded.
- Training employees to work in a manner that is healthy, safe and environmentally sound is essential.
- Prevention of personal injuries, occupational illnesses and environmental impacts is good business.
- Respect for the communities in which we operate is the basis for productive relationships.

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	Health, Safety and Environment Policy	Issue Date: April 20, 2018 Revision: 2	Page 4 of 4
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We have a responsibility to provide a safe workplace and utilize systems of work to meet this goal. All employees must be clear in understanding the personal responsibilities and accountabilities in relation to the tasks we undertake.

The health and safety of all people working at our operation and responsible management of the environment are core values to Baffinland. In ensuring our overall profitability and business success every Baffinland and business partner employee working at our work sites is required to adhere to this Policy.



Brian Penney
Chief Executive Officer
April 2018

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Sustainable Development Policy



At Baffinland Iron Mines Corporation (Baffinland), we are committed to conducting all aspects of our business in accordance with the principles of sustainable development & corporate responsibility and always with the needs of future generations in mind. Baffinland conducts its business in accordance with the Universal Declaration of Human Rights.

Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and with utmost respect for the cultural values and legal rights of Inuit. We expect each and every employee, contractor, and visitor to demonstrate courageous leadership in personally committing to this policy through their actions. The four pillars of our corporate responsibility strategy are:

1. Health and Safety
2. Environment
3. Upholding Human Rights of Stakeholders
4. Transparent Governance

Health and Safety

- We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness, where everyone goes home safe everyday of their working life. Why? Because our people are our greatest asset. Nothing is as important as their health and safety. Our motto is "Safety First, Always"
- We report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents
- We foster and maintain a positive culture of shared responsibility based on participation, behaviour, awareness and promoting active courageous leadership. We allow our employees and contractors the right to stop any work if and when they see something that is not safe

Environment

- Baffinland employs a balance of the best scientific and traditional Inuit knowledge to safeguard the environment
- We apply the principles of pollution prevention, waste reduction and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation
- We continuously seek to use energy, raw materials and natural resources more efficiently and effectively. We strive to develop more sustainable practices. We strive to develop more sustainable practices
- Baffinland ensures that an effective closure strategy is in place at all stages of project development to ensure reclamation objectives are met

Upholding Human Rights of Stakeholders

- We respect human rights, the dignity of others and the diversity in our workforce. Baffinland honours and respects the unique cultural values and traditions of Inuit
- Baffinland does not tolerate discrimination against individuals on the basis of race, colour, gender, religion, political opinion, nationality or social origin, or harassment of individuals freely employed
- Baffinland contributes to the social, cultural and economic development of sustainable communities in the North Baffin Region

Sustainable Development Policy




- We honour our commitments by being sensitive to local needs and priorities through engagement with local communities, governments, employees and the public. We work in active partnership to create a shared understanding of relevant social, economic and environmental issues, and take their views into consideration when making decisions
- We expect our employees and contractors, as well as community members, to bring human rights concerns to our attention through our external grievance mechanism and internal human resources channels. Baffinland is committed to engaging with our communities of interest on our human rights impacts and to reporting on our performance

Transparent Governance

- Baffinland will take steps to understand, evaluate and manage risks on a continuing basis, including those that may impact the environment, employees, contractors, local communities, customers and shareholders.
- Baffinland endeavours to ensure that adequate resources are available and that systems are in place to implement risk-based management systems, including defined standards and objectives for continuous improvement.
- We measure and review performance with respect to our safety, health, environmental, socio-economic commitments and set annual targets and objectives.
- Baffinland conducts all activities in compliance with the highest applicable legal & regulatory requirements and internal standards.
- We strive to employ our shareholder's capital effectively and efficiently and demonstrate honesty and integrity by applying the highest standards of ethical conduct.

A handwritten signature in dark ink, appearing to read "Brian Penney".

Brian Penney
Chief Executive Officer
March 2016

	Spill Contingency Plan	Issue Date: April 29, 2020 Revision: 5	
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Appendix B

Site Layouts (Milne Port and Mine Site)

SAVED: C:\Users\kallan\Documents\4 - Maps\Reporting\1_AnnualType A2019\BINL_Fig 3 Milne Port SNP.mxd; 19-Mar-20



- LEGEND**
- Foreshore Lease Boundary
 - Borrow Area
 - Quarry Area
 - Project Development Area
 - Commercial Lease Boundary

- Current Infrastructure**
-
- SNP Monitoring Station**
- Active
 - Inactive

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MARY RIVER PROJECT

Milne Port Site Layout

Projection: NAD 1983 UTM ZONE 17N.
Base Map: © 2019 Digital Global, Inc.
Imagery and Infrastructure are representative
as of August 2019.

0 25 50 100 150 200 Meters
Scale 1:8,000

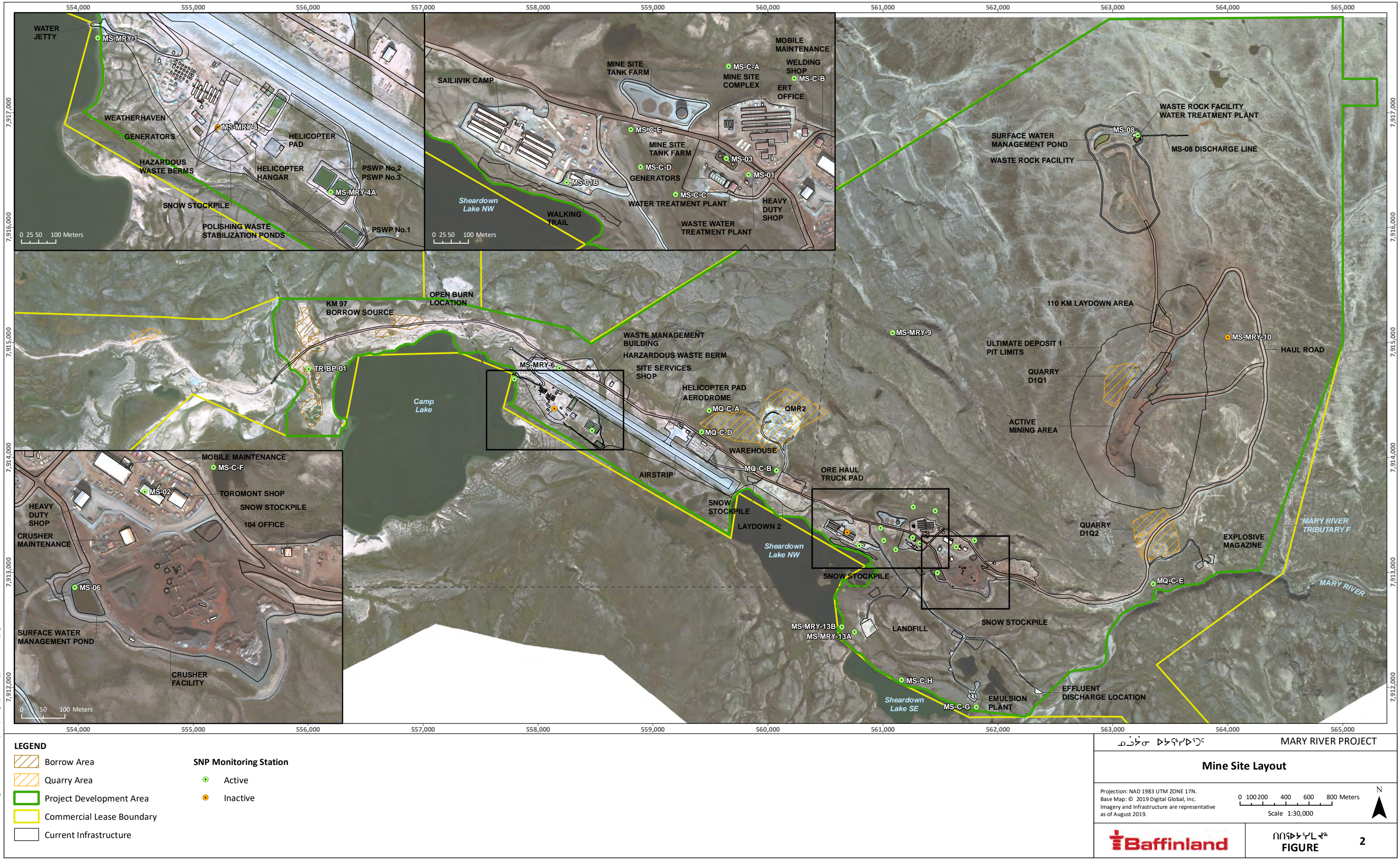
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FIGURE

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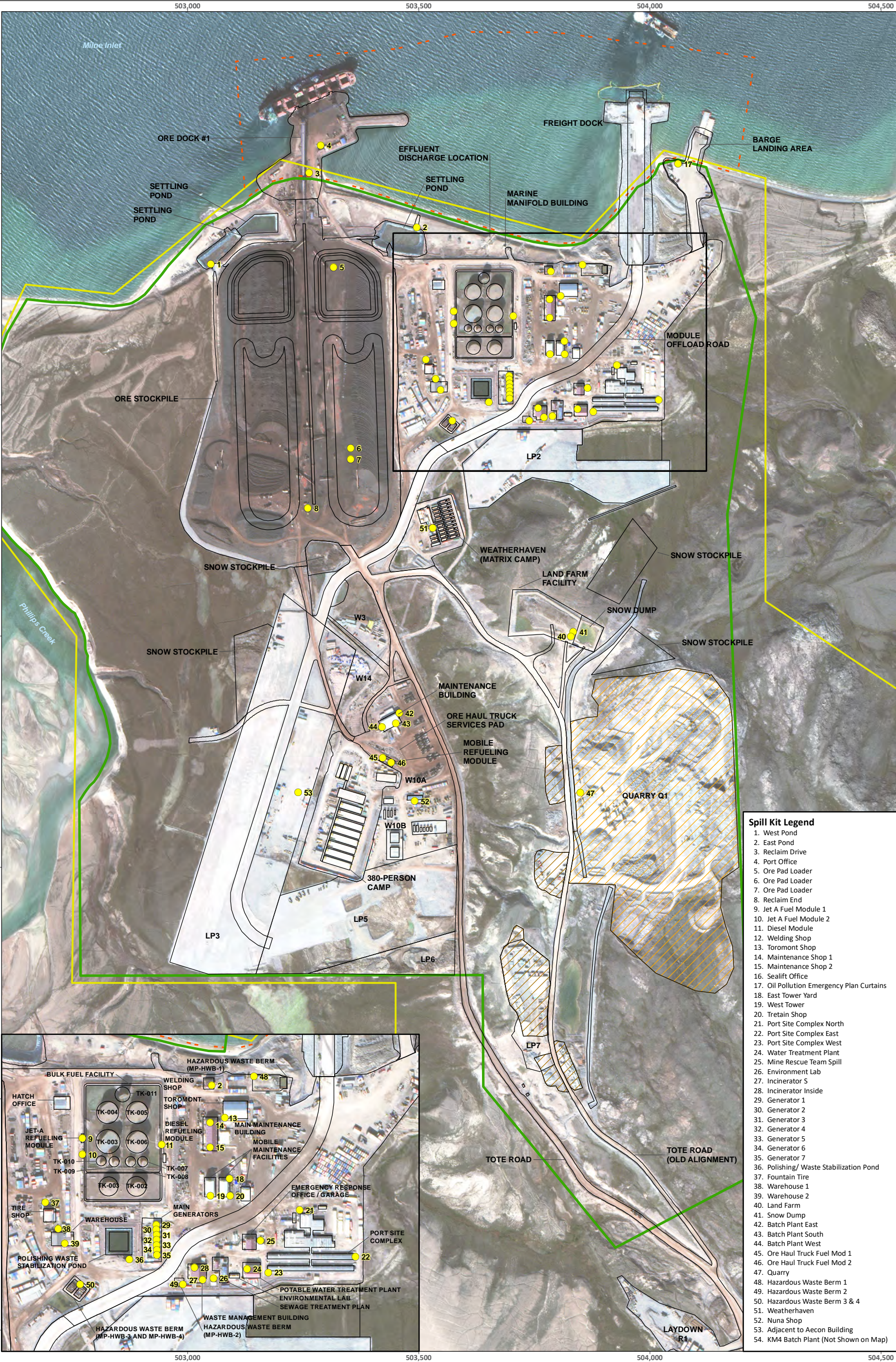


	Spill Contingency Plan	Issue Date: April 29, 2020 Revision: 5	
	Site Wide	Document #: BAF-PH1-830-P16-0036	

Appendix C

Emergency Spill Kit Supplies and Locations and Emergency Response Truck Inventory

SAVED: C:\Users\kellie\Documents\Map4 - Maps\Reporting\Management Plans\BILM_MilnePort_SpillKits.mxd; 21-Feb-20



LEGEND

- Spill Kit Location

Project Development Area

Foreshore Lease Boundary

Commercial Lease Boundary

Borrow Area

Quarry Area

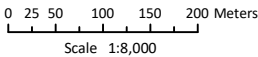
Infrastructure

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MARY RIVER PROJECT

Milne Port Spill Kit Locations

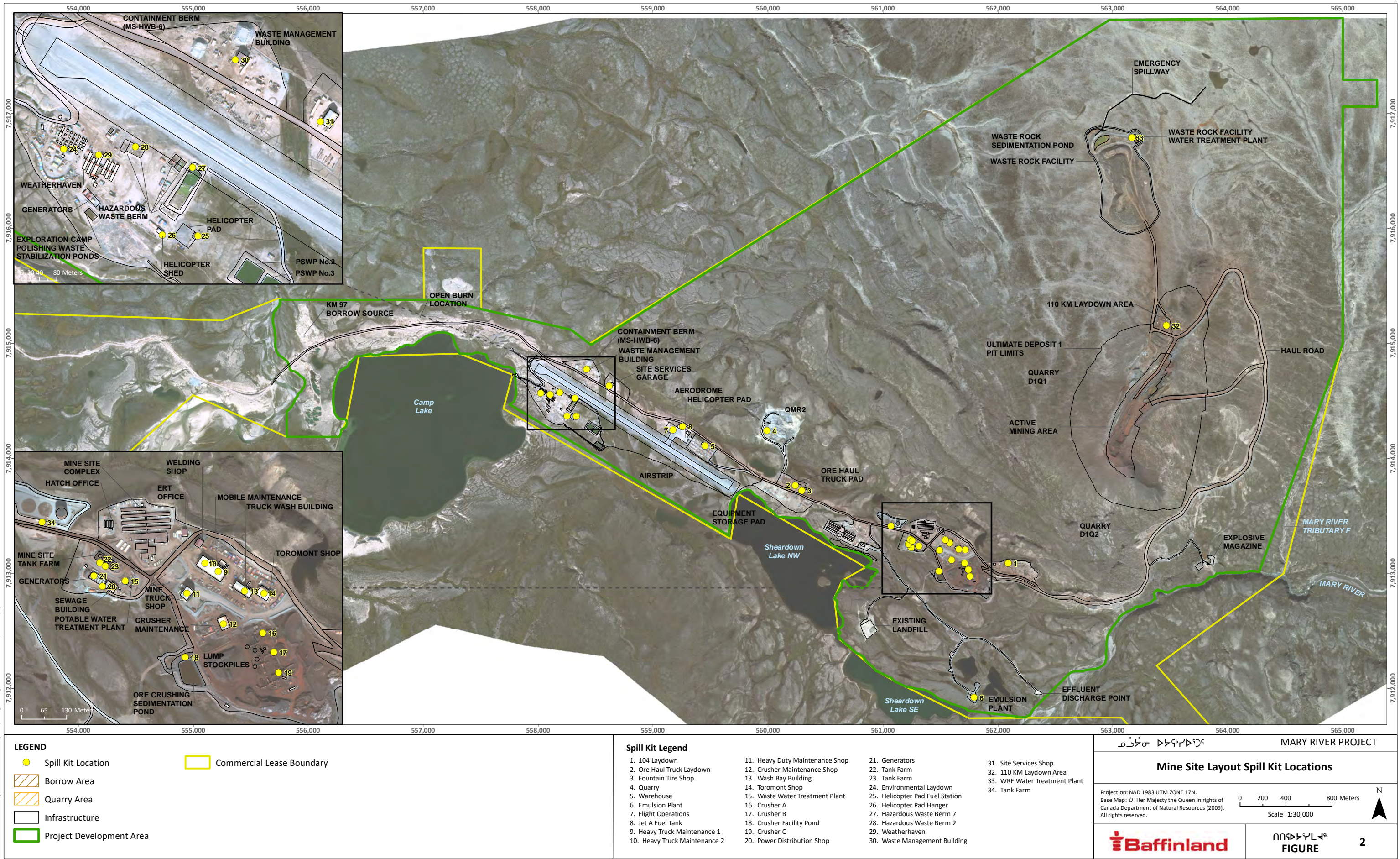
Projection: NAD 1983 UTM ZONE 17N.
Base Map: © Her Majesty the Queen in rights of
Canada Department of Natural Resources (2009).
All rights reserved.



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FIGURE

1

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APPENDIX C: MRT Emergency Response Truck

Right Side:



Left Side:



Table B-1 – Inventory of Emergency Response Trucks

Compartment	Amount	Items
Cabin	1	Safety Glasses clear box
	1	Safety glasses Darks box
	1	Binoculars
	1	Rolls of duck tape
	1	Emergency Road kit
	1	First Aid kit
	2	Care Flare
	1	Thermal Imaging Camera
	2	Caution Tape
	1	2.5 pound fire extinguisher
1 Left Compartment	7	SCBA
	18	SCBA Cylinder
	25	SCBA Face masks
	1	RIT pack
	2	Wheel Chock
2 Left Compartment	2	Shovel (Spade, Shovel)
	2	Rakes
	1	Cable power puller
	1	Saws all (reciprocating saw)
	2	Saws all blades (kits)
	3	Drill bit set
	2	Cordless drill
	1	Socket set
	1	Tool box
	2	bolt cutters (Large/Small)
	1	D size 12 pack batteries
	1	C Size 12 pack Batteries
	3	9 Volt Batteries
	1	4 AAA Batteries
	6	Led head liters with 4AAA Batt
	1	4 AA batteries
	1	sledge hammer
	1	Haligan bar
	3	Big axe
	4	Winter Gloves
	1	Steel jerry can (gas)
	1	Plastic jerry can (gas)
	1	Portable fan
	1	Power pack for jaws of life
	1	Miscellaneous oils
	1	Airstar Light
	2PG	Balaclava
	1	Standard set wrenches
		work gloves
3 Left Compartment	1	Portable fan (electric)
	4	Tarps
	3	Various Valves and adaptors
	1	hydraulic air hammer


	1	Spreader
	1	Cutter
	1	Pincher
	1	Brace bar (hydraulic brace)
	2	Air Bags Hoses
	1	Chainsaw
	1	Chop saw
	1	1/2 Impact gun
	1	Gloves
	1	Grizzly Strots
	3	Hydraulic Hoses
4 Left Compartment	2	1.5 inch hose (yellow)
	4	1.5 inch hose (red)
	2	2.5 inch hose (white)
	2	Pistol Grip 2.5 hose nozzle
	1	Rubber hose
	1	Splitter 2.5" to 1.5"
	1	Y valve with adaptor
	3	Pistol Grip 1.5 inch nozzle
	4	Mustang Suits
	4	Rollgliss R550 Kit
	4	1.5 inch portable spray nozzle
	1	Victaulic coupler
		Wood (cribbing)
5 Left Compartment	2	Black Mustang Survivor Vest
	1	Pulley's carabineers, bag
	1	Prusik
	2	Mini 4:1
	3	Bag Carbiner
	4	Climbing harness
	1	Bag webbing & slings
	4	Beam Clamps
	8	Helmets & Gloves
	2	400' Rope Bags
	5	HH Life Vests
	2	Mustang Survival Suits
	3	Mustang Self Inflatable
	6	Orange PFD Vest
	3	Petzl AVAO Harness
	4	Boots (pairs)
	2	Rescue rope (200 foot bags)
	1	Rescue Rope 4:1 (200')
	2	Rope abrasion protection
	3	Teraphrene Boots
	2	Rescue ring
	4	"Confined space" SCBA
	2	Telescopic reach pole
1 Right Compartment	2	Back Boards
	2	Ferno Head Immobilizers
	2	Ked Extrication Kits

	1	Trauma Kit
	3	Blankets
	6	Insulated Coveralls
	4	Raguler Coveralls
	6	Hih-viz Vests
	4	Granola bars Box
	5	ferno spider straps
	3	Ferno CPR masks
	1	IC Command Center Board
	2	Box Safety Glasses
	1	Misc. rigid splints
	1	RsQmax Kit
	2	Padded Split Kits
	7	Folding stretchers
	2	Basket Stretcher kits
2 Right Compartment	6	Pylons
	2	padded splint
	5	Pails
3 Right Compartment	3	Grey Spill Pads (Bag)
	3	White Spill Pads (Bag)
	3	Box Absorbent Socks
	1	Plug & dyke
	1	20L Pail Gap Seal
	2	Lithium fire extinguisher
	2	15000 liter Onion bladder
	1	Ferno Stair chair
	4	Magnesium fire extinguisher
4 Right Compartment	1	15000 VSG Bladder
	4	Quatrex bags (white)
	1	Stair Chair
	3	Bladder repair kits
	3	Bladder fitting kit
	1	Mazar Rescue Board
5 Right Compartment	5	Quatrex Bags(white)
	1	spill response generator
	2	Medical disaster kits
	2	Arctic soft extension cords
	2	Chicken wire (roll)
	3	Tarps
	2	2X2 Duck Pond
	5	EXO Fit Harness
	1	Helmet Face Sheild
	15	Long gloves (pair)
	1	Honda GX 270 trash pump
	4	hip wader steel toe
		Tyvek coveralls suits
	1	Funnel
	3	rubber suits
	2	mag Lite Flash lights

Table B-2 – Inventory of Typical Spill Kits

Amount	Description
1	30 Gallon Drum with Lid
50	Sorbent Pads
4	Sorbent Socks
2	Sorbent Booms
1	Shaker of Safety Sorb
1	Neoprene Drain Cover
1	Disposable Bag
2 Pair	Safety Goggles
2 Pair	Nitrile Gloves

* Best efforts are made to ensure spill kits remain fully stocked at their designated locations.

	Spill Contingency Plan	Issue Date: April 29, 2020 Revision: 5	
	Site Wide	Document #: BAF-PH1-830-P16-0036	

Appendix D

SDS Inventory

Name	Manufacturer	Synonyms	Revision Date
EYEWASH	Niagara Pharmaceuticals Inc		07/03/2015
MOLYKOTE 55 O-RING GREASE	The Dow Chemical Company		09/24/2015
AeroShell Grease 7	Shell Canada Products		06/22/2015
CLEANER BLEND 300	ITW Professional Brands		09/10/2015
Flake Calcium Chloride	Sel Warwick	Powdered Calcium Chloride; Calcium Chloride Dihydrate	06/01/2012
MOBIL JET OIL II	Exxon Mobil Corporation		07/09/2015
IFB 23 Tile, Insalcor, JM-20, JM-23, JM-26, JM-28, JM-30, JM-32, K-20, K-23, K-24, K-25, K-26 , K-28, K-30, SR-90, SR- 99, SR-99-LS, TC-23, TC-26, TJM-26, TJM-28	Morgan Advanced Materials	INSULATING REFRACTORY BRICK	06/01/2015
LIMESTONE	Teichert Aggregates	Aggregate, Aglime, Barn Lime, Coverstone, Flexible Base, Fluxing Agent, Manufactured Sand, Mineral Filler, Screenings, Calcium Carbonate, Calcium Carbonate, LimeRock, Limestone CaCO ₃	06/01/2015
Antiseptic Skin Cleanser	Canadian Custom Packaging Company		10/05/2012
Black Dashboard Cleaner	Kleen-Flo Tumbler Industries Ltd	Dashboard polish	01/02/2015
SILICA GEL, TLC	Selecto Scientific, Inc.	BIO-SIL* KIESELSAURE (GERMAN) * METASILICIC ACID *	01/22/2011
Uvex Clear Lens Cleaner	Sperian Eye & Face Protection, Inc.	Lens cleaner	10/21/2013
JET A/A-1 AVIATION TURBINE FUEL	Petro-Canada	Jet A-1; Jet A-1-DI; Aviation Turbine Kerosene (ATK); JP-8; NATO F-34; Jet F-34; Aviation Turbine Fuel, Kerosene Type (CAN/CGSB 3.23 & CAN/CGSB 3.24)	05/14/2015

Name	Manufacturer	Synonyms	Revision Date
LPS 2 (Aerosol)	LPS LABORATORIES	An industrial lubricant designed to displace moisture from equipment, provide heavy-duty lubrication and rust prevention	10/25/2014
LOCTITE 565 PST PIPE SEALANT THREAD SEALANT	Henkel Canada Corporation		10/20/2014
LePage Heavy Duty Contact Cement	Henkel Canada Corporation	Adhesive	11/19/2014
Shell Corena S4 R 46	Shell Canada Products	Compressor oil	12/18/2014
Bulab 5361P	Buckman Laboratories of Canada, Ltd.		12/01/2014
3M AUTO BEDDING AND GLAZING COMPOUND (BLACK) PN 08509	3M Corporation	Sealant	04/06/2015
LOCTITE 510 known as LOCTITE 510 GASKET ELIMINAT	Henkel Canada Corporation	Sealant	03/16/2015
50% Isopropyl Alcohol	Vi-Jon		05/05/2008
TRAXON E SYNTHETIC CD-50	Petro-Canada Lubricants Inc.		02/17/2015
TRAXON E SYNTHETIC 75W-90	Petro-Canada Lubricants Inc.		01/07/2015
HYDREX EXTREME	Petro-Canada Lubricants Inc.		02/12/2015
HEAVY DUTY SYNTHETIC BLEND ATF	Petro-Canada Lubricants Inc.		02/02/2015
Lock-De-Icer	Kleen-Flo Tumbler Industries Ltd	Spray de-icer	01/02/2015
Expo	Dustbane Products Limited		06/01/2015
Shell Gadus S2 V30KXD 1	Shell Canada Products	Automotive and industrial grease	12/18/2014
Shell Air Tool Oil S2 A 32	Shell Canada Products	Machine oil	12/18/2014
PRECISION XL RAIL CURVE GREASE	Petro-Canada Lubricants Inc.		02/27/2015
0.2 NTU RATIO TURBIDITY STANDARD	Reagecon Diagnostics Ltd		08/05/2015
LOCTITE SF 7063 known as Loctite 7063 - GERMAN	Henkel AG & Co. KGaA		06/15/2015
Isopropyl Alcohol 99%	Vi-Jon		03/04/2014

Name	Manufacturer	Synonyms	Revision Date
Alcohol 70% Isopropyl	Vi-Jon	First Aid	11/04/2014
Formaldehyde solution 37%	Thermo Fisher Scientific	Formalin; Methanal; Methylene oxide; Oxymethane; Formic aldehyde; Methyl aldehyde, Laboratory chemicals	10/29/2014
Formaldehyde solution 37%	Thermo Fisher Scientific	Formalin; Methanal; Methylene oxide; Oxymethane; Formic aldehyde; Methyl aldehyde, Laboratory chemicals	10/29/2014
Clorox Disinfecting Wipes - Fresh Scent	Clorox Company of Canada, Ltd.	Moistened disinfecting wipes	01/05/2015
LPS 3 (Aerosol)	LPS LABORATORIES		11/10/2014
Formaldehyde, 37 wt% solution	Thermo Fisher Scientific	Formalin; Formol; Methanal (Molecular Biology), Laboratory chemicals	03/06/2015
FLEETCOOL EG PREMIX (Ethylene glycol based coolant)	Cummins Filtration	Premixed antifreeze / coolant	02/27/2015
804AA 91% Isopropyl Alcohol	Vi-Jon	First-Aid	07/07/2015
SmokeCheck 25S (Smoke Alarm Tester)	HSI Fire & Safety Group		03/17/2015
S-316	HORIBA, Ltd.		12/25/2014
Stoko Gel Instant Hand Sanitizer	Deb-STOKO USA LLC		06/01/2015
Stoko Gel Free	Deb-STOKO USA LLC		06/01/2015
Iron Ore (Baffinland Iron Mines Corporation)	BAFFINLAND IRON MINES CORPORATION	BAFFINLAND MARY RIVER IRON ORE MARY RIVER LUMP ORE (LUMP: grain size - less than 31.5mm greater than 6.3mm) MARY RIVER FINE IRON ORE (FINES: grain size - less than 6.3mm) BAFFINLAND MARY RIVER IRON ORE, MARY RIVER LUMP ORE (LUMP: grain size - less than 31.5mm greater than 6.3mm), MARY RIVER FINE IRON ORE (FINES: grain size - less than 6.3mm)	07/13/2015
NO. 1 DIESEL FUEL	Exxon Mobil Corporation	Hydrocarbons and Additives, Fuel	06/08/2015
CONSAV 1GL 5600 Floor Paint Safety Yellow	Rust-Oleum Corporation		06/30/2015

Name	Manufacturer	Synonyms	Revision Date
# OMC99290 & OMC99291 OFFICE MAX DUSTER 10OZ	EXPONENT MICROPORT INC.	#OMC99290-OMC99291 OFFICE MAX 10OZ PRODUCT	01/01/2015
Sodium Hexametaphosphate (SHMP)	ICL PERFORMANCE PRODUCTS LP	Glass H, Hexaphos, Sodaphos, SHMP; glassy Sodium Phosphate; Sodium Polyphosphate, glassy; Metaphosphoric Acid, Sodium Salt; P60; Graham's Salt	05/18/2015
SODIUM SULFATE	Anachemia Canada	Disodium sulfate, Sodium sulfate anhydrous, Salt cake, Sulfuric acid disodium salt, Sodium sulphate, Thenardite, Mirabilite, AC-8515, AC-8515T, 85330, 85376	03/10/2015
LOCTITE 565 PST PIPE SEALANT h PTFE THREAD SEALANT	Henkel Corporation		09/08/2014
COD TNTPlus, LR (3-150 MG/L)	Hach Company		01/12/2015
Sodium Bicarbonate	Tronox Specialty Alkali Corporation	Baking Soda, Bicarbonate of Soda	04/07/2015
Shell Air Tool Oil S2 A 100	Shell Canada Products		01/12/2015
EL 2007 Non-Flammable Duster Aerosol	Sprayon Products		03/13/2015
Shell Omala S4 GX 150	Shell Canada Products		01/12/2015
3V PRIMER (PVC & CPVC Primer)	SLUYTER CO LTD		05/07/2015
Aarmor All Original Protectant	The Aarmor All/STP Products Company		01/31/2015
PURELL Alcohol Hand Sanitizing Wipes	GOJO Industries, Inc.		02/10/2015
Iodine Solution, 5%, Lugol	Thermo Fisher Scientific	Laboratory chemicals	08/18/2014
Fantastik All Purpose Cleaner	Sealed Air Corporation		06/11/2014
Wet Ones Citrus Scent Antibacterial Wipes	Playtex Manufacturing Inc		09/04/2012
Sunlight Liquid Dish - Lemon	Sealed Air Corporation	Dish soap	09/09/2014
BACTOL DISINFECTANT AND SANIT	AVMOR		07/10/2014

Name	Manufacturer	Synonyms	Revision Date
CALCIUM HYDROXIDE (LIME WATER)	Anachemia Canada	R-1430, 19195	11/06/2014
Digestion Solution for COD 20-1500 mg/l Range	Hach Company		01/12/2015
SULPHURIC ACID 50%	KENCRO CHEMICALS LIMITED		06/01/2014
HYDROCHLORIC, 0.50 NORMAL	REAGENTS, INC.	Muriatic acid solution, 0.5 Molar	04/23/2015
AmVer High Range Ammonia Test 'N Tube Reagent	Hach Company	Laboratory Use Determination of ammonium nitrogen	08/02/2014
NitraVer X Nitrogen, Nitrate Reagent B	Hach Company		02/02/2015
TOTAL PHOSPHATE TEST KIT	CHEMETRICS, INC.		01/31/2013
Hach One Reference Electrolyte Solution	Hach Company		08/07/2014
Rhodamine WT, 20% solution in water	Thermo Fisher Scientific	Laboratory chemicals	02/10/2015
Buffer Powder Pillows pH 10.01 ± 0.02 @ 25°C	Hach Company		05/29/2014
Buffer Powder Pillows pH 4.01 (+/-) 0.02 @ 25 Degree C	Hach Company	Buffer	07/29/2014
pH 7.00 Buffer Solution	Hach Company		10/23/2014
HI 6031 1413 (Micro)S/cm Standard Solution	HANNA INSTRUMENTS INC		06/13/2013
AMCO CLEAR TURBIDITY STANDARD, 0.0 NTU	GFS Chemicals, Inc.	Reagent for determination of turbidity of liquids	12/16/2014
AMCO CLEAR TURBIDITY STANDARD, 1.0 NTU	GFS Chemicals, Inc.	Reagent for determination of turbidity of liquids	12/17/2014
AMCO CLEAR TURBIDITY STANDARD, 10 NTU	GFS Chemicals, Inc.	Reagent for determination of turbidity of liquids	12/17/2014
AMCO CLEAR TURBIDITY STANDARD, 1000 NTU	GFS Chemicals, Inc.		01/20/2012
Shell Tellus S4 VX 32	Shell Canada Products		12/22/2014
WD-40 Specialist Penetrant	WD-40 Products (Canada) LTD.		01/23/2015

Name	Manufacturer	Synonyms	Revision Date
Shell Spirax S6 AXRME 75W-90	Shell Canada Products		01/29/2015
Aluminum potassium sulfate dodecahydrate	Sigma-Aldrich Corporation	Potassium aluminum sulfate dodecahydrate, Alum, Potassium alum	02/27/2015
ICWB LSPR 12PK CAUTION BLUE MARK	Rust-Oleum Corporation		08/26/2014
pr88 - The Wash-Off Hand Protection	URSULA RATH GMBH		04/01/2015
Anti-seize Sealing Compound	Kleen-Flo Tumbler Industries Ltd		01/02/2015
NEW RAPID TAP PASTE	Relton Corporation		03/30/2015
Calcium Chloride 2.5 M	Bio-Rad Laboratories		01/13/2015
Sodium Hypochlorite 12%	Univar Canada Ltd.	Sodium oxychloride; Soda bleach liquor; Javel water; Clorox; Javex	04/03/2014
Shell Donax TC Multiseason	Shell Canada Products		02/09/2015
Air1 Diesel Exhaust Fluid	Yara Belle Plaine, Inc		05/31/2013
HERTEL PLUS DISINFECTANT	Lavo Inc.		10/04/2013
Sulphuric Acid 93%	Benson Chemicals Ltd.	Sulfuric acid, Battery acid, Dihydrogen sulfate, Electrolyte acid, Hydrogen sulfate, Mattling acid, Oil of vitriol, Spirit of sulfur	11/15/2014
PROPANE	Exxon Mobil Corporation	Paraffinic Hydrocarbons, Gas or Liquefied Gas, Chemical feedstock	12/04/2014
Regular Gasoline	Irving Oil Refining G.P.	Natural gasoline, Automotive gasoline, Fuel	10/15/2014


Name	Manufacturer	Synonyms	Revision Date
Methanol	INTERSTATE CHEMICAL CO	4Z0A reagent#5/acetone alcohol/AI3-00409/alcohol C1 /alcohol, methyl /carbinol/caswell No 552 / coat-B1400 / colonial spirit / colonial spirits / Columbian spirit / Columbian spirits / EPA pesticide chemical code 053301 / eureka products criosine	11/24/2014
Ammonium Nitrate	CAROLINA BIOLOGICAL SUPPLY COMPANY	Nitric Acid, Ammonium Salt	09/03/2014
Shell Rotella T Triple Protection 15W-40	Shell Canada Products		12/18/2014
Safe -T-Brake	Kleen-Flo Tumbler Industries Ltd		01/02/2015
EP61 GLASS & SURFACE CLEANER	AVMOR		09/25/2014
FRIENDLY AIR	Dustbane Products Limited		09/01/2014
CITRANET LEMON LAUND.POWD.DET.	NORCHEM DIVISON DE AVMOR		07/16/2014
TIP TOP SOLUTION STL-RF	REMA TIP TOP AG		04/01/2014
TIP TOP SOLUTION HL-T	REMA TIP TOP AG		04/01/2014
International Thinner-Eqpt Cleaner	International Paint Limited		02/20/2013
International Thinner-Eqpt Cleaner	International Paint Limited	Thinner	05/15/2013
Interplus 356 Aluminium Part A	International Paint Limited		02/04/2014
Interplus 356 Part B	International Paint Limited		05/02/2014
Interthane 990 Base Light Part A	International Paint Limited		12/03/2014
INTERTHANE 990 PART B	International Paint Limited		06/18/2014
Loctite 7063	Henkel Limited	Solvent based cleaner	06/27/2014
Loctite 7063 - FRENCH	Henkel Technologies France SAS	Dégraissant à base de solvants	06/27/2014
Loctite 586 - GERMAN	Henkel AG & Co. KGaA		02/04/2014

Name	Manufacturer	Synonyms	Revision Date
404 Quick Set Instant Adhesive	Henkel Corporation		08/28/2014
LPS ChainMate	LPS LABORATORIES		06/29/2014
LePage PL9000 Heavy Duty Construction Adhesive	Henkel Canada Corporation		06/02/2014
LOCTITE 242 THREADLOCKER	Henkel Corporation		08/21/2014
Toner WorkCentre 7525, WorkCentre 7530, WorkCentre 7535, WorkCentre 7545, WorkCentre 7556	Xerox Corporation		08/20/2013
Drum Cartridge for WorkCentre 7525, WorkCentre 7530, WorkCentre 7535, WorkCentre 7545, WorkCentre 7556	Xerox Corporation		10/17/2013
Expo White Board (Care) Cleaner, Expo White Board (Care) Cleaning Wipes	Newell Rubbermaid		03/05/2013
EP70 WASHROOM CLEANER	AVMOR		01/10/2014
XIRTEC 11 GRY Low VOC PVC Plastic Pipe Cement	IPS Corporation		06/12/2013
MAGIC FOG-BE-GONE LENS CLEANING ANTI-STAT, ANTI-FOG FLUID	MAGIC SAFETY PRODUCTS		05/04/2013
Formazin Turbidity Standard, 4000 FNU	Hach Company		04/17/2014
SUPER DOUCET MOUSSE	Groupe Savon Olympique Inc.	White antibacterial foam hand and body soap	03/18/2013
SBS 40 Medicated Skin Cream	Deb USA, Inc.		12/31/2013
DOW CORNING 736 HEAT RESISTANT/SEALANT	The Dow Chemical Company		06/26/2013
DOW CORNING 732 MULTI -PURPOSE SEALANT CLEAR	The Dow Chemical Company		04/05/2013
DEVCON Flexane High Performance Putty - KIT	ITW Professional Brands		12/30/2012
262 Threadlocker Permanent Strength	Henkel Canada Corporation		01/09/2014
LOCTITE 262 THREADLOCKER HIGH STRENGTH	Henkel Canada Corporation		01/09/2014
LPS 1	LPS LABORATORIES	Petroleum Distillates	10/07/2013
LOCTITE SUPERFLEX RED HIGH TEMP RTV V Silicone Adhesive Sealant Silicone Adhesive Sealant	Henkel Canada Corporation		04/01/2014
Quickstix 268 Threadlocker High Strength	Henkel Canada Corporation		04/25/2014

Name	Manufacturer	Synonyms	Revision Date
660 Quick Metal Retaining Compound	Henkel Canada Corporation		02/14/2014
MASTERS PRO-DOPE	G.F. THOMPSON CO. LTD.		12/01/2012
Master Appliance Ultratane Butane Fuel (Petroleum Gases, Liquefied)	Master Appliance Corporation		03/14/2014
LPS QB Duster	LPS LABORATORIES		06/13/2013
Worthington Petroleum Based Soldering Flux	Worthington Industries Inc		06/18/2013
All Season Windshield Washer	Recochem Inc.		03/20/2014
BASICS Pressurized Duster	Falcon Safety Products, Inc		05/14/2012
3M Windo-Weld Super Fast Urethane PN 08608, 08609	3M Corporation		03/19/2014
Eberhard Faber Dry Erase Markers	Newell Rubbermaid		03/05/2013
Berol, Expo Low Odor , Expo Click, Expo Original, Eberhard Faber - Dry Erase Markers, Sharpie Whiteboard Markers	Newell Rubbermaid		04/01/2014
DOW CORNING 832 MULTI-SURFACE ADHESIVE SEALANT, OFF-WHITE	The Dow Chemical Company		01/27/2014
OFF! DeepWoods Spray Insect Repellent 5	S.C. Johnson and Son, Limited		01/10/2014
LYSOL Brand III All Purpose Cleaner 4 in 1 - Trigger - (All Scents, All Sizes)	Reckitt Benckiser (Canada) Inc.		04/25/2012
KRYLON Industrial TOUGH COAT Fluorescent Acrylic Enamel, Electric Green Fluorescent	THE SHERWIN-WILLIAMS COMPANY- KRYLON Products Group		05/24/2014
KRYLON Industrial QUIK-MARK Water-Based Inverted Marking Paint, Chalk-Line Clear	THE SHERWIN-WILLIAMS COMPANY- KRYLON Products Group		05/21/2014
WINDEX MULTI-SURFACE DISINFECTANT TOUCH-UP CLEANER - FRESH SCENT	S.C. Johnson and Son, Limited		07/19/2012
WINDEX MULTI-SURFACE CLEANER - VINEGAR	S.C. Johnson and Son, Limited		05/21/2014
PRECISION SYNTHETIC MOLY	Petro-Canada Lubricants Inc.		02/14/2013
DURON-E SYNTHETIC 5W-40	Petro-Canada Lubricants Inc.		10/28/2013

Name	Manufacturer	Synonyms	Revision Date
PC FAST ORANGE LOTION WITH PUMICE 3.78 L	ITW Permatex Canada		05/17/2013
prDry Hands - Skin Protection Gel	URSULA RATH GMBH		04/01/2014
PURELL Instant Hand Sanitizer	GOJO Industries, Inc.		04/29/2013
PURELL Advanced Moisturizing Foam Hand Rub	GOJO Industries, Inc.		06/04/2014
Sharpie Fine Point Marker, Sharpie Ultra Fine Point Marker, Sharpie Extra Fine Marker, Sharpie Chisel Tip Marker, Sharpie Twin Tip Marker, Super Sharpie Marker, Super Sharpie Twin Tip Marker, Sharpie Mini Fine Point Marker, Sharpie Micro Marker	Newell Rubbermaid	Sharpie Grip Marker, Sharpie Retractable Fine Point Marker, Sharpie Magnum Marker, Sharpie King Size Marker, Sharpie Liquid Tip Marker. Sharpie Premium, Sharpie CD Marker, Sharpie Pro, Sharpie Pro King Size, Sharpie Pro Magnum, Sharpie Aluminum Barrel	04/02/2014
Shell Gadus S2 V220 2	Shell Canada Products		12/09/2013
Shell Gadus S5 V100 2	Shell Canada Products		12/09/2011
Shell Gadus S5 U100KD 1	Shell Canada Products		12/09/2011
Spray Nine 4L	ITW Professional Brands		10/04/2012
Shell Spirax S3 TLV	Shell Canada Products		12/09/2011
CAT FINAL DRIVE AND AXLE OIL SYNTH (FDAO-SYN)	Exxon Mobil Corporation		04/08/2013
Monitor Cleaning Wipes, 100ct SKU 775488 (model 16982) [STP08002]	Kleinmann GmbH	Staples Monitor Cleaning Wipes Tub of 100	01/01/2014
CONSTANT CHLOR PLUS BRIQUETTES	Arch Chemicals, Inc.		04/16/2014
PGP Comet Deoderizing Cleanser with Chlorinol	Procter & Gamble		10/15/2013
Belkin Air Duster 10/12 oz r134a	Kleen Concepts		12/04/2012
Braze Core Silver, Copper, Tin, Zinc	Lucas Milhaupt, Inc.		05/09/2014

Name	Manufacturer	Synonyms	Revision Date
Shell Spirax S6 ATF A295	Shell Canada Products		06/10/2013
KEYSTONE ANTIBACTERIAL LIQUID HAND SOAP	Ecolab Inc.		04/07/2014

	Spill Contingency Plan	Issue Date: April 29, 2020 Revision: 5	
	Site Wide	Document #: BAF-PH1-830-P16-0036	

Appendix E

NT-NU Spill Report




OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

PAGE 1 OF

	Spill Contingency Plan	Issue Date: April 29, 2020 Revision: 5	
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Appendix F

Dyno Nobel Baffin Island Inc. – Emergency Response Assistance Plan

 **BAFFIN ISLAND**

DYNO

Dyno Nobel

Baffin Island

EMERGENCY RESPONSE ASSISTANCE PLAN

DYNO NOBEL Baffin Island INC.
EMERGENCY RESPONSE ASSISTANCE PLAN
Emergency Response Notification

1. In the event of an emergency Mary river Site Security/MRT will be notified first at:

Radio:

- Radio Channel: EMERGENCY and or SS TAC (Site Services/Security)
- Call “Code 1, Code 1, Code 1”
- State Name
- Emergency Details
- Location
- **Phone:**
- Security 647-253-0596 Ext 6047

2. Dyno Nobel Baffin island on site plant will be contacted at:
(647) 253 0596. Ext 6067

3. Off-Site notification:

	NAME	HOME	CELL
1.	NFLD Hardrok (24hr emergency)	(709) 754-4900	
2.	Jim Kasemets	(709) 632-4007	(709) 632-4007
3.	Roland Walsh	(709) 699-8987	(709) 765-6031
4.	Mark Gillis	(709) 634-2993	(709) 640-7969
5.	Kevin McDonald	(902) 341-2181	(902) 848-6849

Revision and Distribution

An updated copy of this ERAP must be kept in the following locations. Revisions to this ERAP must be reviewed and signed-off on by all who possess a copy:

Emulsion Plant Office	Mary River Site Security
DNBI Pick-ups – LTP040 & LTP043	Mary River MRT
DNBI Loader – LDR020	NHR Office – Corner Brook, NL
Emulsion Trucks – RC913 & RC914	NHR Office – St. John's, NL

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EMERGENCY ACTION

Fire

Fire not involving explosives or ammonium nitrate (AN)

In the event of a fire not involving explosives or ammonium nitrate, Mary River Site Security will be notified of a “CODE ONE” on either the “Emergency” or “SS TAC” channel, or by phone at (647) 253-0596 ext. 6047. Fires which do not involve explosives or ammonium nitrate will be extinguished using normal fire-fighting procedures.

Fire involving explosives or AN

No attempt will be made to fight fires involving explosives or equipment containing explosive residue (AN included). The plant will be shut down and evacuated to the muster station (shown in Appendix C). After a verified head count all individuals will evacuate and blockade the main gate as shown on map to ensure no one enters. When all employees are out of harm’s way, personnel will call a “CODE 1” on radio channel “Emergency” or “SS TAC” or call Security by phone at 647-253-0596 (extension number 6047).

The procedure for plant site evacuation is given in the Plant Evacuation Procedures section (page 6). In all cases, keep away from the gases and smoke released by the fire.

Detonation

In the event of a detonation at the plant, the emergency plan will go into effect immediately, starting with complete evacuation of the plant site. See page 6 of this ERAP.

Lightning

If lightning approaches the plant, remove all personnel to the main gate until all clear. See page 6 of this ERAP. If lightning approaches while the explosives truck is in pit, the truck should return to plant, time permitting, and follow the evacuation procedure. If there is no time to return to plant, leave the truck in the pit and notify the pit supervisor. Evacuate all pit personnel from the pit until the lightning passes.

Spills

Ammonium Nitrate

Ammonium nitrate for use at the Mary River Project is stored in containers in two locations; the KM 97 laydown and smaller quantities at the emulsion plant. The AN prill is stored in 1,000 kg tote bags, 20 of which are stored double-stacked in each of the 20' containers. No AN is stored outside at any time. AN is only withdrawn from the containers when required by plant production. It is loaded directly into the AN Handling Module of the plant to minimize any exposure of the product to the environment (See Appendix C)

Small spills will be swept up with plastic dust pan and broom and emptied in plastic cans marked AN only, to be either recycled in the plant or disposed of in blast holes. Large spills will be dealt with on an individual basis depending upon size of spill. Efforts will be made to contain spill and area will be secured before clean up begins.

Emulsion

Emulsion is stored in a single, 36,000 kg capacity tank within the emulsion loading garage (see the site plan in Appendix C). Smaller quantities may be stored in the two bulk emulsion trucks (10,000 kg capacity each) which are parked in the garages when not in use in the mine.

Small spills will be scooped up with non-sparking shovels and placed in bags, transported to magazine site at KM 105.5, to be stored until ready for disposal in blast holes. Large spills will be dealt with on an individual basis depending upon size of spill. Efforts will be made to contain spills and an area will be secured before clean-up begins. This may involve pumping of large spills into a tanker or scooping up product with shovels.

Oils, fuels, etc.

Methods of spill containment in all fuel/lubricant storage areas within the plant are in use to ensure spills are adequately contained before they occur. However, in the event of a spill outside of the designated storage areas, spills will be diked and absorbent pads used to collect the spill. Residual product not capable of being reused will be contained, collected with adequate amounts of soil absorbent to solidify the material and render it inert.

PLANT EVACUATION PROCEDURES

Evacuation

In the event that a fire involving explosives/AN, or a detonation occurring at the plant, the site must be immediately evacuated. Personnel must report to the muster point (noted on the site plan in Appendix C) where a head-count is to be conducted. When all personnel are accounted for, personnel must proceed to the main gate.

A “Code 1” alert must be broadcast on radio channel “Emergency” or “SS TAC” as soon as it is safe to do so. After repeating “code one, code one, code one”, state your name, location and nature of the emergency. Indicate that there is a fire/detonation at the emulsion plant and no firefighting measures are to be taken. Security will re-broadcast this message to ensure all personnel on site are aware. Inbound or outboard air traffic must be halted or redirected.

As the landfill area is within the danger radius of a fire/detonation at the plant, plant personnel should sweep the landfill on their way out the emulsion plant road to ensure all personnel are clear of this area.

Guarding

The road to the emulsion plant must be guarded at the location given on the overall site plan in Appendix C. **NO ONE IS PERMITTED TO RE-ENTER THE AREA UNTIL AN “ALL-CLEAR” IS GIVEN.** If BIM employees are required to stand guard, Dyno Nobel Baffin Island (DNBI) employees will provide direction.

Response

It is the responsibility of Dyno Nobel Baffin Island management to direct the emergency response to a fire involving explosives/detonation at the plant. If no management personnel are on site, this will be coordinated through by the most senior DNBI employee on site. As previously stated, **the only response to a fire involving explosives/detonation**

at the plant is evacuation of the plant and guarding of all access points until the danger has passed.

RESOURCES

Milne Inlet - Port Site Complex			
For Outside caller - Main line # 647-253-0598 then Dial the Extension			
Name	Position/Department	Phone Number	Internal Ext
MRT	MRT	647-253-0598	4219
Health and Safety Coordinator	Health and Safety	647-253-0598	4122

Mary River			
For Outside caller - Dial 647-253-0596 +ext.			
Name	Position/Department	Phone Number	Internal Ext
Security Lead	Scarlet Security	(647) 253-0596	6047
MRT	MRT	(647) 2	6020
Environment Manager	Environment	(647) 253-0596	6016
Health and Safety Superintendent	Health and Safety	(647) 253-0596	6006

Outside resources include:

Emergency Services Dispatch	(867) 979-5662
R.C.M.P	1 (800) 979-1111
CANUTEC	(613) 996-6666
NRCAN Explosives Regulatory Division	(613) 948-5200
Environment Canada	1 (866) 283-2333

APPENDIX A: FIRE FIGHTING INFORMATION

MATERIAL	RECOMMENDED FIRE-FIGHTING METHODS	SPECIAL CONSIDERATION
Ammonium Nitrate - 83% solution colourless	Use flooding amounts of water in early stages of fire. Keep upwind. This is an oxidizing agent which supports combustion and is an explosive hazard if heated under confinement that allows high pressure buildup. Evacuate to designated area if fire cannot be controlled.	Toxic oxides of nitrogen are given off during combustion. Fire-fighters require positive pressure self-contained breathing apparatus. Avoid contaminating with organic materials.
Ammonium Nitrate Prill - odourless white to light tan crystalline solid	Use flooding amounts of water in early stages of fire. Keep upwind. This is an oxidizing agent which supports combustion and is an explosive hazard if heated under confinement that allows high pressure buildup. Evacuate to designated area if fire cannot be controlled.	Toxic oxides of nitrogen are given off during combustion. Fire-fighters require positive pressure self-contained breathing apparatus. Avoid contaminating with organic materials. Many powdered metals such as Al, Sb, Si, Cd, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, Sn Zn and brass react violently and explosively with fused AN below 200 degrees C. Sensitivity to detonation increases when heated.
N-17	Flash Point: Not applicable Extinguishing Media: Not applicable	Wear self-contained breathing apparatus and protective clothing. No unusual fire explosion hazard.
L-2 Clear to pale yellow liquid. Very little if any odor.	Use water, CO ₂ , or Dry chemical	Fire fighters must be equipped to prevent breathing vapors or fumes of combustion. Highly toxic gases may result from exposure to fire or high temperatures.

APPENDIX A: FIRE FIGHTING INFORMATION

MATERIAL	RECOMMENDED FIRE-FIGHTING METHODS	SPECIAL CONSIDERATION
Citric Acid Odourless, white or opaque crystals	Use water, Dry chemical, Alcohol or carbon dioxide	When heated to decomposition, citric acid emits acrid smoke. Fire fighters must wear self-contained breathing apparatus with full piece operated in positive pressure mode.
Fuel Oil (No. 2 diesel) dyed or pale yellow liquid with petroleum odour	Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel from fire. Use foam, dry chemical or water spray to extinguish fire. Avoid spraying water directly into storage container due to danger of boilover.	Avoid strong oxidizing agents.
5168D Emulsifier dark viscous liquid with hydrocarbon odour Sodium Thiocyanate Colourless crystals with slight ammoniacal odour	Use carbon dioxide or dry chemicals on small fires. Use foam (alcohol, polymer or ordinary) and water spray for large fires. Use dry chemical, water spray, water fog, carbon dioxide, foam or sand/earth to extinguish fire.	May form oxides of nitrogen upon thermal decomposition. Positive pressure self-contained breathing apparatus is required for fire-fighters. Contact with strong acids or oxidizing agents or combustion may generate toxic concentrations of sulphur dioxide, oxides of nitrogen, cyanides or hydrogen sulphide.
Sodium Nitrite white or slightly yellow solid	Apply aqueous film forming foam (AFFF) according to manufactures instructions or water in the form of fog for large fires. Use carbon dioxide or dry chemical media for small fires.	Thermal decomposition products include toxic oxides of nitrogen. Sodium nitrite promotes combustion. May explode if heated above 537 degrees Celsius.
Acetic Acid clear colourless liquid with sharp vinegar odour	Use water spray, dry chemical, carbon dioxide or alcohol foam to extinguish fire. Eliminate all nearby sources of ignition since flammable hydrogen gas will be liberated upon contact with some active metals.	Avoid alkalis, oxidizing or reducing materials and nitric acid.

APPENDIX A: FIRE FIGHTING INFORMATION

MATERIAL	RECOMMENDED FIRE-FIGHTING METHODS	SPECIAL CONSIDERATION
Nitric Acid water white to slightly yellow liquid with nitrogen dioxide odour	Use an all purpose type AFFF foam according to manufacturers instructions. Carbon dioxide or dry chemical media for small fires. If only water is available, use it in the form of a fog.	Combustibles can have an increased flammability after contact with nitric acid. Nitric acid reacts with metals to liberate flammable hydrogen gas. Toxic oxides of nitrogen may also be liberated.
Caustic Soda, Anhydrous Odourless, white granular solid	Do not use water, foam, Carbon Dioxide, Dry Chemical. Use media appropriate for surrounding fire and or materials. Remove containers from fire zone wherever possible.	Avoid direct contact of this product with water as this can cause a violent exothermic reaction. Use self-contained breathing apparatus and protective clothing.
Ethylene Glycol Colourless liquid with mild odour	Extinguish fire with water fog, carbon dioxide or dry chemical. Direct application of water or foam into container may cause violent frothing and boilover.	Never use welding or cutting torch on or near drum (even empty or with small residue) because product can ignite spontaneously.

APPENDIX B: ENVIRONMENTAL RELEASE PROCEDURES

MATERIAL	SPILL AND LEAK PROCEDURES	WASTE DISPOSAL
Ammonium Nitrate - 83% solution colourless	<ul style="list-style-type: none"> - Prevent spills from entering water courses. Contain by dyking with earth or other inert material. Allow to freeze. Shovel into clean, non-combustible container. Wash remaining trace residues with water. Wear rubber gloves and chemical goggles to minimize contact with the skin and eyes. - Refer to Ekati Spill Contingency plan – section V page 55 for details on procedures for spills resulting from fuelling of equipment at fuel stations. 	- Dispose of recovered material in approved landfill or other waste disposal facility.
Ammonium Nitrate Prill - odourless white to light tan crystalline solid	- Remove source of heat and ignition. Sweep or shovel spill into a clean, non-combustible container. Wash remaining trace residues with water. Wear rubber gloves and safety glasses to minimize contact with skin and eyes.	- Re-use if possible or dispose of as is in approved facility. Otherwise, dissolve in large amount of water. Add soda ash and mix and neutralize with 6M HCl to produce neutralized sludge. Sludge can then be buried in approved landfill. Sludge incineration requires scrubbing capability for oxides of nitrogen.
N-17 Clear to light blue liquid, sharp vinegar odor	Wear appropriate protective clothing and respiratory protection. Contain spills and avoid discharging into sewer or streams. Neutralize small spills with soda ash or lime. Absorb with vermiculite or other inert material.	- Re-use if possible, otherwise dispose of in approved landfill or other waste disposal facility
Citric Acid Odourless, white or opaque crystals	Sweep up material and place in tightly closed container in a cool, dry and well ventilated area. Avoid discharge into sewer and surface water. Spills to waterways will cause PH depression.	In accordance with Provincial and Federal regulations

APPENDIX B: ENVIRONMENTAL RELEASE PROCEDURES

MATERIAL	SPILL AND LEAK PROCEDURES	WASTE DISPOSAL
L-2 Clear to pale yellow liquid. Very little if any odor	Wear appropriate chemical resistant clothing including rubber gloves, rubber boots. Contain spill and keep out of sewer, storm drains, surface water and soil. Keep away from incompatible materials.	- Dispose of recovered material in approved landfill or other waste disposal facility. Check with Provincial and Federal regulation.
Fuel Oil (No. 2 diesel dyed or pale yellow liquid with petroleum odour.	- Eliminate any source of ignition. Prevent spills from entering water courses. Contain with sand or earth. Recover with pump or inert adsorbent material into clean container. Wear safety glasses and rubber gloves to prevent contact with the eyes and skin.	- Dispose of recovered material in approved landfill or other waste disposal facility.
5168D Emulsifier dark viscous liquid with hydrocarbon odour	- Contain with sand or earth. Recover with inert adsorbent material and transfer into clean container. Wear chemical goggles and rubber gloves to prevent contact with the eyes and skin. Wash area with suitable detergent and rinse with water.	- Dispose of recovered material in approved landfill or other waste disposal facility.
Sodium Thiocyanate Colourless crystals with slight ammoniacal odour	- Sweep or shovel spill into a clean container. Prevent spills from entering any water courses. Wash remaining trace residues with water. Wear rubber gloves and chemical goggles to minimize contact with skin and eyes.	- Dispose of recovered material in approved landfill or other waste disposal facility.
Sodium Nitrite white or slightly yellow solid	- Sweep or shovel into clean, non-combustible drum. Remove any flammable materials and sources of ignition. Flush remaining trace residues with water. Wear chemical goggles and rubber gloves to minimize contact with the eyes and skin.	- Dispose of recovered material in approved landfill or other waste disposal facility.

APPENDIX B: ENVIRONMENTAL RELEASE PROCEDURES

MATERIAL	SPILL AND LEAK PROCEDURES	WASTE DISPOSAL
Acetic Acid clear colourless liquid with sharp vinegar odour	- Eliminate any source of ignition. Prevent spills from entering water courses. Contain with sand, earth or other inert adsorbent material. Transfer into clean, non-combustible container. Wash remaining trace residues with water. Wear chemical goggles and rubber gloves to prevent contact with the eyes and skin.	- Neutralize with soda ash or lime. Dispose of recovered material in approved landfill or other waste disposal facility.
Nitric Acid water white to slightly yellow liquid with nitrogen dioxide odour	- Eliminate any source of ignition. Prevent spills from entering water courses. Contain with sand, earth or other inert adsorbent material. Transfer into clean, non-combustible container. Wash remaining trace residues with water. Wear chemical goggles and rubber gloves to prevent contact with the eyes and skin.	- Neutralize with soda ash or lime. Dispose of recovered material in approved landfill or other waste disposal facility.
Caustic Soda, Anhydrous Odourless, white granular solid	- Sweep or shovel into clean, non-combustible drum. Neutralize the area carefully with weak acid to PH of 6 to 9. Neutralization is expected to be exothermic. Effervescence may result.	Neutralize the area carefully with weak acid to PH of 6 to 9. - Dispose of recovered material in approved landfill or other waste disposal facility
Ethylene Glycol Colourless liquid with mild odour	- Prevent spills from entering water courses. Contain with sand, earth or other inert adsorbent material. Transfer into clean, non-combustible container. Wash remaining trace residues with water. Wear chemical goggles and rubber gloves to prevent contact with the eyes and skin.	- Dispose of recovered material in approved landfill or other waste disposal facility.

APPENDIX C: EMULSION PLANT LAYOUT

