SNAP LAKE MINE

Spill Contingency Plan V.4

March 2019
## REVISIONS HISTORY

<table>
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<tr>
<th>Version</th>
<th>Date</th>
<th>Notes/Revisions</th>
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<tr>
<td>1</td>
<td>April 2016</td>
<td>Updated for Care and Maintenance</td>
</tr>
<tr>
<td>2</td>
<td>December 2017</td>
<td>The Extended Care and Maintenance Spill Contingency Plan has been updated to reflect the proposed extended care and maintenance conditions at Snap Lake Mine, including periods of occupancy and periods of camp vacancy and updated organizational structures. This is considered an addendum to the previously provided Spill Contingency Plan</td>
</tr>
<tr>
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</tr>
<tr>
<td>4</td>
<td>March 2019</td>
<td>The Spill Contingency Plan has been updated to align with the Final Closure Plan and water licence application package and converted to De Beers new template</td>
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</table>
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# ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AANDC</td>
<td>Aboriginal Affairs and Northern Development Canada, INAC (See DIAND)</td>
</tr>
<tr>
<td>AEMP</td>
<td>Aquatics Effects Monitoring Plan</td>
</tr>
<tr>
<td>ANFO</td>
<td>Ammonium Nitrate Fuel Oil</td>
</tr>
<tr>
<td>DIAND</td>
<td>Department of Indian and Northern Affairs Canada</td>
</tr>
<tr>
<td>GNWT</td>
<td>Government of the Northwest Territories</td>
</tr>
<tr>
<td>HDPE</td>
<td>High-density Polyethylene</td>
</tr>
<tr>
<td>MBR</td>
<td>Membrane Biological Reactor</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheets</td>
</tr>
<tr>
<td>NU</td>
<td>Government of Nunavut</td>
</tr>
<tr>
<td>PK</td>
<td>Processed Kimberlite</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>POL</td>
<td>Petroleum, Oils and Lubricants</td>
</tr>
<tr>
<td>SHE</td>
<td>De Beers Safety, Health and Environment</td>
</tr>
<tr>
<td>STP</td>
<td>Sewage Treatment Plant</td>
</tr>
<tr>
<td>TDG</td>
<td>Transportation of Dangerous Goods</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
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<td>WMP</td>
<td>Water Management Pond</td>
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<td>WTP</td>
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## SPILL CONTINGENCY PLAN DISTRIBUTION LIST

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<tr>
<td>De Beers Canada Inc. Calgary, AB</td>
<td>General Manager of Sustainability</td>
<td>Erik Madsen</td>
</tr>
<tr>
<td>De Beers Canada Inc. Snap Lake, NT</td>
<td>Asset and Environment Superintendent</td>
<td>Michelle Peters</td>
</tr>
<tr>
<td>De Beers Canada Inc. Calgary, AB</td>
<td>Safety, Health and Risk Manager</td>
<td>Karen Osadchuk</td>
</tr>
<tr>
<td>De Beers Canada Inc. Calgary, AB</td>
<td>Environment and Permitting Manager</td>
<td>Sarah McLean</td>
</tr>
<tr>
<td>De Beers Canada Inc. Calgary, AB</td>
<td>Regulatory Specialist</td>
<td>Colleen Prather</td>
</tr>
<tr>
<td>Department of Lands (North Slave Regional Office)</td>
<td>Resource Management Officer</td>
<td>Jamie Steele</td>
</tr>
<tr>
<td>Mackenzie Valley Land and Water Board</td>
<td>Regulatory Officer</td>
<td>Angela Love</td>
</tr>
<tr>
<td>Yellowknife, NT</td>
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1. INTRODUCTION

De Beers Canada Inc. (De Beers) owns and operates the Snap Lake Mine located approximately 220 kilometres (km) northeast of Yellowknife, Northwest Territories, 30 km south of MacKay Lake, and 100 km south of Lac de Gras where the Diavik Diamond Mine, and the Dominion Diamond Mine are located (Figure 1.1). An Environmental Assessment Report (EAR) for the Mine (De Beers 2002a) was submitted to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) in February 2002. The Mine received approval from the Minister of Indian and Northern Affairs in October 2003, based on MVEIRB (2003). Final regulatory approvals for construction and operation of the Mine were granted in May 2004 and construction began in April 2005. The Mine reached full production in 2008 and was expected to continue operations for approximately 20 years. However, on December 4, 2015, De Beers announced that it would be suspending operations at Snap Lake Mine, and that the Mine would be placed under “care and maintenance”. An Extended Care and Maintenance Plan was submitted to the Mackenzie Valley Land and Water Board (MVLWB) in April 2016 (De Beers 2016). In December 2017, following an on-going evaluation of the Mine, De Beers announced the Mine would enter into final closure.

This Snap Lake Mine Spill Contingency Plan (“the Plan”) is an update to previously prepared plans and has been modified for final closure.

The Plan describes how De Beers will manage spills throughout the closure and Post-Closure, consistent with the requirements of the existing Water Licence MV2011L2-0004 and Water Licence for closure and Post-Closure. The Plan is intended to complement other related documents (i.e., Emergency Response Plan) to provide a holistic approach to environmental management.

This Plan reflects the scope of work undertaken at the Snap Lake Mine, with supplemental information provided in alternate documents on the public record:

- *Tibbitt to Contwoyto Winter Road Joint Venture Spill Contingency Plan (2013)*, and
- *Emergency Response Plan* for the transportation of potentially hazardous materials along public roads.

This Plan is not intended to address fires, explosions, accidents, injuries or fatalities. These aspects are provided in the De Beers Emergency Response Plan.

The Plan is deemed to be iterative in nature and is subject to revision due to changes during closure and or continual improvement(s).

1.1 De Beers Environmental Policy

De Beers is committed to the concept of sustainable development, which requires balancing responsible stewardship in the protection of human health and the natural environment with the need for economic growth. Diligence in the application of technically proven and economically feasible environmental protection measures will be exercised throughout decommissioning activities, to meet the requirements of legislation and following De Beers’ best management practices. De Beers Safety and Sustainable Development policy is to:

---

De Beers Group
Figure 1-1  Location of Snap Lake Mine
• Ensure employees, contractors, and agents are aware of our sustainable development commitments and foster a culture of personal accountability based on mutual caring and respect for the environment, our employees and communities in which we operate;

• Provide a safe, secure and healthy work environment by fostering and maintaining a culture of shared responsibility based on mutual caring and respect;

• Be responsible and vigilant stewards of the lands and waters we occupy through the application of a precautionary approach and advanced principles in pollution prevention and adaptive management;

• Identify, assess and manage significant risks to the environment, workplace safety and health, community engagement, and operational integrity;

• We continuously seek to reduce the environmental footprint of our operations and related activities by continually improving our energy efficiency, reducing and recycling materials to minimise waste and by protecting and restoring natural biodiversity;

• Maintain compliance with all relevant legal requirements, formal commitments, and De Beers’ policies and standards, exceeding them where appropriate;

• Set objectives and targets for continuous improvement in areas that include occupational health and safety, prevention of pollution, waste generation, mineral waste management, progressive rehabilitation, biodiversity conservation, energy use, greenhouse gas emissions, and water use;

• Ensure each mine and facility has a closure and rehabilitation plan that addresses reducing long-term local environmental and community impacts, and that these plans are periodically updated together with provisions for implementation of the final costs of closure;

• Ensure respectful, timely and inclusive engagement with Aboriginal peoples and respect for their knowledge, values, and customs and culture wherever we work, in accordance with our “Working with Aboriginal Communities Policy” and “Community Policy and Procedure”.

• Demonstrate honesty and integrity by applying the highest standards of moral and ethical conduct, in accordance with De Beers’ Code of Business Conduct and Ethics; and

• Regularly measure and review our progress towards meeting this policy and reporting publicly regarding our performance.

1.2 Purpose and Scope

The purpose of this Spill Contingency Plan is to:

• Facilitate the prompt, efficient and safe clean-up of materials used during closure and Post-Closure of the Snap Lake Mine;

• Identify the members, responsibilities and reporting procedures of trained site personnel in the event of an emergency or spill; and

• Provide support and information on available resources, facilities and trained personnel in the event that a spill or an emergency occurs.
This Spill Contingency Plan has been prepared in accordance with the Indian and Northern Affairs Canada (INAC) Spill Reporting Protocol for Mining Operations in the NWT and NU (2004) and with the AANDC’s “Guidelines for Spill Contingency Planning” (2007), is an update to the plan used during operations and extended care and maintenance, and is aligned with the activities for closure and Post-Closure.

This Plan has also been updated to align with the demolition execution plan (i.e., a plan related to the execution of scope for the demolition and removal of all buildings and infrastructure at the entire mine site).

The Plan has been organized as follows:

- **Section 2** outlines the contact information, the response organization and reporting responsibilities.
- **Section 3** summarizes the training courses taken by spill response teams and an overview of spill response exercises for the response team is also included.
- **Section 4** provides information on De Beers’ cleanup strategies to be followed for initial response actions and clean-up. A brief description of the major facilities found at the site that have the greatest potential to have a large or environmentally significant spill.
- **Section 5** details hazardous materials handling and storage with preventative measures to be taken to avoid environmental incidents at the mine site. Basic emergency response actions and procedures are also presented.
- **Section 6** provides an introduction to water and waste water management plans with preventative measures to be taken to avoid environmental incidents at the mine site. Basic emergency response actions and procedures are also presented.
- **Section 7** details sewage water management with preventative measures and response actions.
- **Section 8** details pipeline systems management with preventative measures and response actions.
- **Section 9** provides a list of spill response equipment and action plans.
- **Section 10** provides a list of support documents used in preparation of this Plan.
- **Appendix A** provides a copy of the Government of NWT Spill Report Form.
- **Appendix B** provides a copy of the Reportable Spill Volumes by type.
- **Appendix C** provides a list of volumes of Hazardous Materials.

Of all the facilities at the site (Figure 1-2), those having the greatest potential for spills are the following:

- fuel storage and transfer systems;
- chemical storage and transfer systems;
- hazardous materials handling and storage facility;
- water treatment and management systems;
- sewage treatment system; and
- auxiliary systems (pipelines).
Figure 1-2  Snap Lake Mine Site Plan

Snap Lake Mine

1. Air Strip
2. Crusher/Waste Management
3. AS Storage
4. Emission Plant
5. Starter Cell (North Pile)
6. East Cell (North Pile)
7. Fuel Storage
8. Tiny Shop
9. Fresh/Fire Water Pump
10. Cement Storage
11. Mechanical Shop #2
12. Fresh Air Blower (FAB)
13. Welding Shop #2
14. Mechanical Shop #3
15. Mine Portal
16. Incline Conveyor
17. Diffuser
18. Utilities Building (WTP/Powerhouse)
19. Camp Warehouse
20. Main Shops/Warehouse
21. Mine Dry/Admin
22. Accommodations Camp
23. Water Management Pond
24. Laydown 1/Cold Storage
25. Organics Waste Collection
26. Process Plant

De Beers Group of Companies

De Beers Group
The mine site is located on a peninsula in Snap Lake with a channel of water to the north, referred to as the Northwest Arm and the main body of the lake to the east and south. The storage locations have been placed to optimize space and reduce travel where possible. Bedrock is close to the surface in most locations. Characteristics specifically considered in developing this plan were:

- the proximity to fresh water;
- land is naturally sloped down towards the lake on both sides of the developed site; and
- bedrock is close to surface.

This Plan deals with the following types of materials that are handled on the Mine site:

I. Fuels, Oils, Lubricants and Coolants:
   - gasoline, diesel (P-50) and Jet B;
   - hydraulic, lube and waste oils;
   - propylene and ethylene glycol; and
   - antifreeze and ultra/compressant coolant.

II. Compressed Gases:
   - acetylene;
   - oxygen;
   - argon;
   - nitrogen;
   - propane; and
   - Blue shield (Gas for welding).

III. Process and Water Treatment Chemicals:
   - sulfuric acid;
   - ferric sulfate;
   - ferrosilicon;
   - aluminum sulfate; and
   - chlorine (sodium hypo-chlorite).

IV. Effluents and Slurries:
   - raw and treated sewage;
   - process kimberlite (PK); and
   - mill process wastes and slurries.
Spill volumes beyond set limits require reporting to regulatory agencies in the NWT. A copy of the Government of NWT Spill Report Form is provided in Appendix A. Reportable volumes are found in Appendix B. Details on hazardous materials stored onsite can be found in Appendix C.

Demolition of existing infrastructures is a major activity that will occur during closure that could lead to spills. The contractor selected to manage the demolition works will be required to adhere to a spill management plan and to report any spills using the reporting procedure identified in this Plan.
2. RESPONSE ORGANIZATION AND REPORTING PROCEDURES

2.1 Emergency/Spill Response Contact Information

Table 2-1 presents the names, positions and contact information for the Emergency Spill Response Team. Administrative contact information is included in Table 2-2. Detailed responsibilities for each of the team members are provided in Sections 2.2 and 2.3. Figure 2-1 presents a high level overview of the process.

Table 2-1 De Beers Snap Lake Emergency Spill Response Team – Contact Information

<table>
<thead>
<tr>
<th>Spill Response Team Member Position</th>
<th>Name</th>
<th>Phone</th>
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<tbody>
<tr>
<td>On-Scene Coordinator</td>
<td>On-Duty Site Supervisor</td>
<td>(867) 767-8763</td>
</tr>
<tr>
<td>Asset and Environment Superintendent</td>
<td>Michelle Peters</td>
<td>(867) 767-8567 (office)</td>
</tr>
<tr>
<td>Environmental Coordinator</td>
<td>Felix Mensah-Yeboah</td>
<td>(867) 767-8763</td>
</tr>
<tr>
<td>Environmental Officer</td>
<td>Shawn Taylor</td>
<td>(867) 766-7300 ext.7359</td>
</tr>
</tbody>
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Table 2-2 De Beers Snap Lake Administrative Team – Contact Information

<table>
<thead>
<tr>
<th>Administrative Team Member Position</th>
<th>Name</th>
<th>Contact</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Office</td>
</tr>
<tr>
<td>Asset and Environment Superintendent</td>
<td>Michelle Peters</td>
<td>(867) 767-8567</td>
</tr>
<tr>
<td>Environment and Permitting Manager</td>
<td>Sarah McLean</td>
<td>(403) 930-0991 ext. 2784</td>
</tr>
<tr>
<td>Regulatory Specialist</td>
<td>Colleen Prather</td>
<td>(403) 930-0991 ext. 2770</td>
</tr>
<tr>
<td>Manager, Safety, Health &amp; Risk</td>
<td>Karen Osadchuk</td>
<td>(403)930-0991 ext. 2766</td>
</tr>
<tr>
<td>General Manager Sustainability</td>
<td>Erik Madsen</td>
<td>(403) 930-0991 ext. 2744</td>
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A list of external contacts is provided in Table 2-3, and supplemental external contacts are listed in Table 2-4.

Table 2-3 External Contact List

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<thead>
<tr>
<th>Regulatory Agency</th>
<th>Title</th>
<th>Contact</th>
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<tbody>
<tr>
<td>Government 24-Hour Spill Report Line</td>
<td>N/A</td>
<td>(867) 920-8130</td>
</tr>
<tr>
<td>Government of NWT Environmental Protection Division, ENR</td>
<td>Hazardous Substance Specialist</td>
<td>(867) 873-7562</td>
</tr>
<tr>
<td>Government of NWT Department of Lands (North Slave Regional Office)</td>
<td>Resource Management Officer</td>
<td>(867) 765-6655</td>
</tr>
<tr>
<td>Mackenzie Valley Land and Water Board</td>
<td>Regulatory Officer</td>
<td>(867) 766-7467</td>
</tr>
<tr>
<td>Environment Canada (24-hour pager)</td>
<td>Enforcement Officer</td>
<td>(867) 669-4730</td>
</tr>
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Figure 2-1  Spill Response Team Basic Responsibilities

Support Personnel, Mine Management, Superintendents of Monitoring and Permitting

First Person Response
- Assess personal safety
- Secure the site from safety standpoint
- Stop the spill if possible

Environmental Coordinator/Permitting Coordinator
- Liaise with De Beers Mining Management and Permitting staff
- Ensure on-site resources are available
- Liaise with Government
- Report the spill to the NWT Spill Response line within 24 hours of the spill

On-Scene Responder(s)
- Direct all clean up and containment activities
- Assign company resources and direct spill response team
- Report to NWT 24 hr spill line if necessary
- Report the spill to Environment personnel if not already notified

Environmental Consultant
- Provide advice on anticipated environmental impacts
- Advise on containment, recovery, disposal and clean up
- Monitoring and follow up analysis

Environmental Technician
- Document spill details
- Create photographic record
- Record GPS coordinates

Spill Response Team
- Clean up
- Containment
- Remediate
Table 2-4  Supplemental External Contact List

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
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<tr>
<td><strong>Government of the NWT</strong></td>
<td></td>
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<tr>
<td>Environmental Protection Services, ENR</td>
<td>(867) 873-7562</td>
</tr>
<tr>
<td>Chief Inspector of Mines, Prevention Services, WCB</td>
<td>(867) 669-4412</td>
</tr>
<tr>
<td><strong>Federal Government</strong></td>
<td></td>
</tr>
<tr>
<td>RCMP, Yellowknife</td>
<td>(867) 669-1111</td>
</tr>
<tr>
<td>Resource Management Inspector</td>
<td>(867) 765-6655</td>
</tr>
</tbody>
</table>
| Environmental Canada (24 hr duty officer)    | (867) 669-4730,
|                                              | (867) 669-4729   |
| Department of Fisheries and Oceans           | (867) 669-4923   |
| **Adjacent Mine Sites**                      |                  |
| Dominion Diamond Mine Yellowknife            | (867) 880-2279   |
| Diavik Diamond Mine Yellowknife              | (867) 669-6500   |
| De Beers Gahcho Kué Diamond Mine             | (416) 645-1695 ext. 6699 |

2.2  Spill Emergency Response Team Member Responsibilities

Detailed roles, responsibilities and reporting activities are provided below.

**First Responders**
- Approach with caution.
- Ensure the safety of all personnel.
- Secure the area, evacuate if necessary.
- Contact the On-Scene Coordinator.
- If safe to do so, remove all sources of ignition.
- Provide basic spill response actions (stop or contain the leak, only if safe to do so).
- Initiate spill containment by first determining what will be affected by the spill.
- Assess speed and direction of spill and cause of movement (water, wind and slope).
- Determine the best location for containing the spill, avoiding any water bodies.

**On-Scene Coordinator**
- Controls the spill scene and directs personnel to spill clean-up.
- Evaluates the situation and assesses the magnitude of the problem.
• Activates the response plan and calls out the key personnel in the response team, as deemed appropriate (Environmental and/or Emergency Response Coordinator).

• Develops the overall plan of action for containment and clean-up of the specific incident as well as directs and implements the plan.

• Determines the support needed for people, equipment, materials, and tools to control and/or contain the spill. The urgency will depend on the nature of the spill.

• Ensures assigned responsibilities are carried out and coordination exists between supervisory team members.

• Reviews the Incident Report with Team Members and Management.

• Ensures that all spill response personnel receive adequate training upon arrival to site to fulfill their responsibilities as part of the spill response team.

**Environmental Representative**

• Supports the On-Scene Coordinator.

• Advises on the availability of various containment, recovery, and disposal equipment.

• Coordinates the sampling and monitoring program for the collection and analysis of samples to identify and monitor possible contaminant levels.

• Reviews the draft Incident Report and provides comments, as necessary.

• Reports the spill to the NWT 24-hour spill report line at (867) 920-8130. Completes the NWT Spill Report Form (in Appendix A). The spill must be reported within 24 hours and the AANDC Inspector must be contacted immediately.

• Follows up with regulatory/licensing reporting requirements, as necessary.

**Environmental Technician**

• Supports the Environmental Coordinator.

• Collects details of the spill – coordinates, volume, and substance spilled.

• Takes samples, as directed.

• Takes photos of situation, as directed.

• Participates in Incident Review.
Environmental Consultants

(Depending on the nature and scale of spill)

- Support the Environmental Coordinator on an as-needed basis.
- Advise on the effectiveness of various containment, recovery, and disposal options, suggesting the most appropriate approach.
- Develop and/or recommend the sampling program to identify and monitor possible contaminant levels; suggest potential sample collection points and analytical requirements.
- Review the effectiveness of the clean-up operation and recommend further remedial work, if necessary.
- Provide technical advice on what the anticipated environmental impacts of the spill will likely be.
- Review the Incident Report and recommend suggestions to improve the response actions taken.

Support Personnel

Snap Lake Mine will have limited personnel onsite during periods of closure and post closure and there will be zero occupancy during certain periods of time as per variation in seasonal work plans. If required, De Beers Gahcho Kué Mine and partners may be used to aid in spill clean-up.

2.3 Management, Administrative and Technical Support

Regulatory Specialists

- Is advised of the spill situation, determines if additional support is needed.
- In the event of a major spill, may assist with on-site coordination of technical and administrative activities.
- Reviews the Incident Report.
- Provides follow-up with regulatory/licensing reporting requirements.

Asset and Environment Superintendent

- Ensures adequate resources are made available to support the needs of the spill team.
- Determines if scheduled site activities can continue in a safe manner.
- Coordinates support activities with the Designated Snap Lake Operations Team, including but not limited to:
  - Obtaining any additional resources not available on-site for spill response and clean-up. Advises senior management at Calgary Support Center of the spill and provides updates, as necessary.
  - If required, will act as the spokesperson for the media/stakeholders.
  - Reviews the Incident Report.
General Manager, Sustainability

- Is advised of the spill situation, determines if additional corporate support is needed.
- In the event of a major spill will advise other Corporate Officers of the clean-up activities.
- Reviews the Incident Report.
- If required, will act as the spokesperson for the media/stakeholders.
3. TRAINING

The employee and contractor training program was developed by the De Beers Training Department with input from the De Beers Safety Department, and is disseminated by the Training Department through e-learning modules as part of Site Orientation. The following are key steps in the program:

- All individuals entering the site are required to participate in an online site orientation session.
- During this session, all locations of the spill plan and spill kits are identified on a map.
- An overview of the spill plan is provided through a SHE-Ops training module both online and at site.
- A database of training is kept by the Gahcho Kué (GK) Training Department indicating specific training undertaken and their expiry dates. Training requirement is regularly updated.

3.1 Spill Response Training

Site personnel designated to assist with spill response will be briefed on the spill response plan and trained in the use of relevant spill containment equipment.

The designated personnel within the Snap Lake site team will be trained to respond to spills, be aware of the dangers the spill presents and how to respond in a safe manner. The use and availability of Personal Protective Equipment (PPE) by all site personnel is mandatory. Typical PPE includes work boots, hardhat, coveralls, neoprene gloves, goggles, face shield and chemical/dust respirators, as appropriate.

By taking the time to create spill response scenarios and doing desk top scenarios of spills, spill responders can be kept safe during response and minimize harm to the environment.

All personnel and contractors at the Mine site are familiar with spill reporting requirements and are encouraged to constantly check for leaks and spills.

Contractors are trained for Workplace Hazardous Materials Information System (WHMIS), Transportation of Dangerous Goods (TDG), Hazardous Atmospheres and Confined Space Entry, as required. Contractors will also provide support to De Beers for major spill response activities, upon request. They are responsible for cleanup of their own spills at their specific job-sites.

Fuel handling crews are fully trained in the safe operation of the facilities, spill prevention techniques and initial spill response. Similarly, the staff involved with the process, tailings and wastewater systems are trained in the safe operation of these systems.

Training programs include regular WHMIS and TDG training for all employees who use or are responsible for chemicals or hazardous materials on-site. Additional safe chemical handling training will be conducted for employees handling or working in the vicinity of dangerous chemicals.

Completion dates of all training taken are recorded and tracked, and re-training occurs as required by the specific course. Any other training such as First Aid, Rescue, Fire Fighting, etc., is also tracked.
The designated personnel and supervisors within the Snap Lake team must be familiar with:

- a review of the most current spill response plan;
- emergency contact lists;
- responsibilities of the team members;
- the nature, status, and location of fuel and chemical storage facilities (Figure 9-1);
- the on-site and off-site spill response equipment;
- response procedures for specific types of spills;
- the spill response procedures for ‘on land’, ‘oil on water’, ‘boat handling’ and ‘winter spills’;
- desktop exercises of “worst case” scenarios;
- the likely causes and possible effects of spills; and
- other De Beers emergency response plans, as required (e.g., fires, explosions, injuries, non-mine rescue, etc.).

3.2 Emergency/Spill Exercise

De Beers will conduct regular emergency/spill exercises to test the response capabilities of the Emergency/Spill Response Team. The exercises are geared to spills, system failures and other emergencies. Actual spill responses are counted towards the exercise requirements for that material.

An internal report is made by the On-Scene Coordinator noting the response time, personnel involved and any problems or deficiencies encountered. This report is used to evaluate the ability of personnel to respond to spills and to identify areas of improvement.
4. CLEAN UP STRATEGIES

The Snap Lake Mine is located in the Slave Geological Province of the Canadian Shield. The site is characterized by numerous lakes and rocky hills of limited relief (up to 50 metres) situated on the Northwest Peninsula of Snap Lake. The land is covered with extensive bedrock outcrops and muskeg in low-lying areas. The site is located in a zone of continuous permafrost.

De Beers has taken extra precautions to include in their design of the site:

- double walled piping;
- lined berms in fuel transfer areas;
- liquid storage with secondary containment or berms where spills are trapped for easy clean-up;
- drip mats or absorbent pads under fittings, valves, hose connections, drum spigots where spills and leaks occur;
- use of funnels and a drip mat or pan when transferring liquids from one container to another;
- use of tarps or ground cloths;
- spill kits are located wherever fuel is used or stored;
- product substitution is employed to the maximum extent possible so that products contain the least toxic materials possible; and
- regular maintenance and oil checks of all motorized vehicles are undertaken to avoid preventable leaks.

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

Spill kits, emergency response signs, field radios, first aid kits and fire alarms are strategically located throughout the entire mine site complex to allow staff to quickly and safely respond to any type of emergency, spills included.

As hydrocarbons will be the most likely of all products to spill at the site, natural processes such as evaporation, oxidation, and biodegradation can start the clean-up process. However, they are generally too slow to provide adequate environmental recovery. Physical methods such as the use of a vacuum truck and or absorption with sorbent materials will be used. Pressure washing, and raking and bulldozing may be used to assist these natural processes depending on the sensitivity of the impacted area.

The smaller volumes of contaminated soils encountered in the initial stages of the Mine have been managed in accordance with the mining industries best practices and regulatory requirements. If contaminated soil is identified, the nature of the contamination will be established and the disposal options confirmed prior to removal of the soil from the site. As described in the Waste Management Plan, all wastes will be promptly cleaned up, stored in marked containers, and moved to containment within the Waste Management Area before final disposal at an approved off-site treatment and disposal facility. Soil
sampling will be conducted in larger impacted areas such that clean-up activities are satisfactory. Petroleum-contaminated snow will be recovered and stored for later disposal.

A land farm was constructed to handle bio-degradable contaminated soils and may be used during the Closure phase as described in the Waste Management Plan.

### 4.1 Fuel System

Diesel, gasoline, Jet B and hydraulic fluid may be harmful to water and aquatic life. They have the potential for bioaccumulation in the environment and volatize relatively quickly; dermal and inhalation exposure should be avoided.

Refer to spill response actions (i.e. Accidental Release Measures) in Safety Data Sheets (SDSs) for diesel (P-50), gasoline, Jet B, hydraulic oil, lube oil, and waste oil.

In the event of a large or environmentally significant spill, a sampling program for the collection and analysis of soil and/or water samples is administered to identify and monitor possible contaminant levels. A ‘spill specific’ sampling program will be implemented along with recommendations from Environmental Consultants where required.

The main fuel storage facility is made up of twelve (12) steel single-wall tanks each containing up to approximately 330,000 litres of diesel fuel (P-50); the permanent fuel tank farm consists of three (3) 12.78 million litre steel single-wall tanks. These tanks are filled during the winter ice haul road programmes. The tank areas are lined and bermed. Additionally, there is a backup double-wall fuel storage tank located at Laydown 1. Fuel transfer to this tank is primarily by means of a fuel truck. One 10 million litre tank was constructed and commissioned during 2014.

As of September 2018, approximately 5 million litres of fuel is stored on site. The bulk of the fuel is stored in the 12-million litre tank TK003, and smaller volumes in other tanks. Fuel volumes will be adjusted according to demolition and other reclamation activities but are not expected to exceed 30 million litres at any point.

Functional fuel transfer lines run between the main fuel storage facility and the Powerhouse.

Vehicles and equipment will obtain fuel either at pump stations or fuel service trucks. Fuelling is conducted in controlled areas. Fuel containers (including drums) are marked with the product type and organized according to a ‘first in-first out’ strategy.

Fuel, specialty chemicals and most lube oils normally arrive by tanker truck via the winter road; however, on occasion it may also arrive by air. Federal TDG aviation regulations apply during air shipments. Upon arrival, these materials are moved by forklift to a designated storage area.

Quantities of other glycols for use in heating/cooling systems are also kept in inventory and stored in 205-litre drums and/or 1,000-litre totes within a designated storage area.
Spill kits are located at all areas where fuel, glycol, and chemicals are stored and/or dispensed. As Snap Lake progresses into final closure, the requirement of fuel will be assessed. The need going into post-closure is expected to be minimal or non-existing.

4.2 Fuel Storage and Transfer System - Spill Preventative Measures

Fuel spills could occur from:

- leaks in storage;
- transfer between fuel storage and vehicles;
- transfer between tanks;
- broken pipes, leaking hoses or nozzles used at transfer facilities and pumping stations;
- fuel transfer vehicle or equipment accidents and roll-overs;
- helicopter fuel slinging; and/or
- operator error.

The following procedures are designed to reduce the risks of spills and equipment failure:

- scheduled inspection and maintenance of all fuel related systems;
- double locking mechanisms on valves and transfer hoses and spring-loaded valves on loading nozzles;
- careful measurement of fuel levels in tanks (particularly when transferring fuel);
- scheduled testing of fuel level devices and alarms in tanks;
- hydrostatic or equivalent testing of bulk fuel storage tanks conducted as per planned maintenance and regulatory requirement;
- if required, fuel is distributed by service vehicles with small capacity tanks;
- service vehicles are equipped with spill kits;
- training in fuel handling operations (manned at all times);
- spill response training;
- restricted access to the fuel storage and handling areas;
- strategic placement of spill kits;
- use of absorbent pads during all vehicle and all operating machinery maintenance activities;
- maintaining a supply of ‘over-pack’ drums for any leaking drums;
- maintaining a supply of empty drums for storage of spilled materials;
- immediate cleanup of all spills; and
- the decanting of snow or water from the tank bermed areas will proceed only when chemical analysis has determined the contents meet the requirements of Section 36.3 of the Fisheries Act.
4.3 Chemical and Explosives Storage and Transfer Systems

Corrosives (sulphuric acid) are contained in three carbon steel tanks with a capacity of 90,000 litters each, and are housed inside the Water Treatment Plant.

Explosives, including ANFO in bulk and packaged emulsions will be stored in the magazines and other secured storage areas.

Various compressed gases (e.g., acetylene) are not expected in large quantities.

A cold storage facility with a cement floor was constructed in 2009 to house bulk ammonium and sodium nitrate material, when in use. The construction of bunker walls, containment wall, curbs, floor slab and door threshold surround the entire internal perimeter of the building address any risks to the environment. Ammonium and sodium nitrate material, if required for closure, may be stored within this building.

4.3.1 Chemical and Explosives Storage and Transfer System – Spill Preventative Measures

Chemical spills and explosives incidents could occur from:

- leaks in storage;
- transfer between chemical storage and work areas;
- transfer between tanks;
- broken pipes, hoses or nozzles in transfer facilities and at pumping stations;
- vehicle or equipment accidents or roll-overs; and/or
- operator error.

The following mechanisms will reduce the risks of spills and equipment failure:

- secondary containment around all tanks, totes and barrels;
- double-locking mechanisms on valves and transfer hoses and spring-loaded valves on loading nozzles;
- restricted and locked access to the chemical or explosives areas; and
- smaller pressurized bottles/bullets will be stored in appropriate containers in the vertical and upright position and chained to prevent unexpected falling over. Protective caps will be used when not in service.

The following procedures will reduce the risks of spills and equipment failure:

- scheduled inspection and maintenance of all chemical related systems;
- careful measurement of levels in tanks (particularly when transferring chemicals);
- training in chemical handling operations (attended at all times); and
- the decanting of snow or water from the tank bermed areas will proceed only when chemical analysis has determined the contents meet the requirements of Section 36.3 of the Fisheries Act.
The following procedures will reduce the effects of spills:

- strategic placement of spill kits, absorbent pads and neutralizing agents;
- maintaining a supply of empty drums for storage of spilled materials;
- spill response training; and
- immediate clean-up of all spills.

### 4.3.2 Chemical and Explosives System – Spill Response Actions

- Refer to spill response actions (i.e. Accidental Release Measures) in SDSs for sulphuric acid, ferric sulphate, sodium hydroxide, ammonium nitrate, sodium nitrate, and ANFO.

- In the event of a spill, safety measures will be implemented whereby personnel will be removed from the area of the spill until the spill is contained. Suitable personal protective equipment (PPE) must be used by the first and all subsequent spill responders.

- Vapours cannot be contained when released. If pressurized tanks are damaged, the gas shall be allowed to disperse and no attempt at recovery will be made. Evacuation of the area will be mandatory.

- Corrosive materials will be neutralized with lime and/or soda ash prior to containment.

- In the event of a large or environmentally significant spill, a sampling program for the collection and analysis of soil and/ or water samples will be developed and implemented to identify and monitor possible contaminant levels.
5. **HAZARDOUS MATERIALS HANDLING AND STORAGE FACILITY**

De Beers has developed and implemented a Hazardous Materials Management Plan (De Beers 2005). Information on classification, transportation, handling, disposal, inspections, record keeping and training are found within this referenced document. Information on how to deal with spills of these hazardous materials is found within the Spill Contingency Plan (this document).

Potential soil and groundwater impacts may result from spills, leaks, and runoff from hazardous materials storage areas. Spills may occur during material handling and storage.

Hazardous materials include both flammable and non-flammable petroleum products (e.g., gasoline, aviation fuel, diesel, solvents, paints, oils and greases), ethylene glycol, process chemicals (e.g., acids and flocculants) and water treatment chemicals (e.g., sulphuric acid and sodium hypo-chlorite), explosives and compressed gases (e.g., propane, acetylene and oxygen).

All containers will be labelled according to the requirements of the WHMIS System.

Trained site personnel at Snap Lake will be informed of the types of hazardous materials located in the facility. Inventories are conducted on a regular basis or as materials are added or removed.

### 5.1 Hazardous Materials Storage Facility – Spill Preventative Measures

Hazardous materials spills and related incidents could occur from:

- leaks in storage;
- transfer between storage and work areas;
- transfer between tanks;
- mixing of incompatible materials (e.g., acids with bases);
- broken pipes, hoses or nozzles in transfer facilities and at pumping stations;
- vehicle or equipment accidents or roll-overs; and/or
- operator error.

The following mechanisms will reduce the risks of spills and equipment failure:

- secondary containment around all tanks, totes and barrels;
- double-locking mechanisms on valves and transfer hoses and spring-loaded valves on loading nozzles;
- restricted and locked access to the hazardous materials areas; and
- smaller pressurized bottles/bullets will be stored in appropriate containers in the vertical and upright position and chained to prevent unexpected falling over. Protective caps will be used when not in service.
The following procedures will reduce the risks of spills and equipment failure:

- scheduled inspection and maintenance of all hazardous materials related systems;
- careful measurement of levels in tanks (particularly when transferring hazardous materials);
- training in hazardous materials handling operations (attended at all times); and
- the decanting of snow or water from the tank bermed areas will proceed only when chemical analysis has determined the contents meet the requirements of Section 36.3 of the Fishries Act.

The following procedures will reduce the effects of spills:

- strategic placement of spill kits, absorbent pads and neutralizing agents;
- maintaining a supply of empty drums for storage of spilled materials;
- spill response training; and
- immediate cleanup of all spills.

5.1.1 Hazardous Materials Storage – Spill Response Actions

- Refer to spill response actions (i.e. Accidental Release Measures) in SDSs for the hazardous material that has spilled (they are all located within this document).
- In the event of a spill, safety measures will be implemented whereby personnel will be removed from the area of the spill until the spill is contained. Suitable personal protective equipment (PPE) must be used by the first and all subsequent spill responders.
- Vapours cannot be contained when released. If pressurized tanks are damaged, the gas shall be allowed to disperse and no attempt at recovery will be made. Evacuation of the area will be mandatory.
- When a spill of an oxidizing substance such as ammonium nitrate occurs, spills on land shall be contained by dyking or some other barrier, as required. As ammonium nitrate is water soluble, spills in water may be dammed or diverted, as appropriate.
- Corrosive materials will be neutralized with lime and/or soda ash prior to containment.
- Only those personnel specifically trained to handle hazardous materials will be allowed to deal with those types of spills, all unauthorized personnel will be evacuated from the spill area.
- In the event of a large or environmentally significant spill, a sampling program for the collection and analysis of soil and/or water samples to identify and monitor possible contaminant levels would be developed. The sampling program will be “spill-specific”.
6. WATER AND WASTE WATER TREATMENT AND ASSOCIATED MANAGEMENT SYSTEMS

Components of the water and waste water treatment are discussed in detail in the Waste Management Plan and Water Management Plan. As Snap Lake progresses through closure, the treatment systems will be decommissioned and a passive water management system will be implemented.

6.1 Water Treatment Plant – Spill Preventative Measures

System failures may occur due to pipe blockage, electrical power outage, equipment malfunctions, or foreign objects or material in the influent. Spills may occur due to pipe rupture or control system failure and overflow. Degradation of effluent quality may also result from equipment malfunction or operational error.

During periods of use, the Water Treatment Plant will be monitored to deal with any system failure that may arise. The camp emergency electrical power generator will be used in the case of failure of the main site generators.

Chemicals used in the water treatment process are contained within tanks positioned inside concrete dykes designed for that purpose. Trained WTP operators conduct visual inspections on a regular basis.

During periods of site vacancy the modular WTP would be shut-down and winterized if appropriate. The WTP will be restarted prior to freshet as necessary.

6.2 Water Treatment Plant – Response Actions for Non-Compliant Effluent

During periods of use:

- Effluent is sampled and analyzed continuously by in-line monitoring for flow, temperature, pH, nitrates, dissolved oxygen, conductivity and turbidity.

- On-site measurements for total suspended solids, nitrates, ammonia, temperature and turbidity are conducted. Additional samples for laboratory analysis will be collected until effluent quality is satisfactory (usually following major adjustments to the WTP). The sampling frequency will be dependent upon the nature and severity of the problem.

- If water quality does not meet effluent quality discharge criteria, the water will be recirculated or diverted to underground.

- An alarm will automatically sound in the Water Treatment Plant Control Room which will, in turn, alert the appropriate personnel to check the plant in the event of a malfunction.

6.3 Water Management and Influent Storage Ponds

The WMP was created by two dams that were constructed in 2000. The WMP receives water from the catchment area, North Pile sumps, and water from the WTP that does not meet the discharge criteria. Small seepage losses from the WMP dams are expected to occur but are not expected to be of significant environmental concern.
As part of Closure, two influent storage ponds (ISP) (east and west) will be constructed, water from the WMP will be pumped to these ponds, and then the WMP will be repurposed and integrated into the east constructed wetland. The system failure preventative measures (Section 6.3.1) and system failure response actions (Section 6.3.2) that were developed in the extended care and maintenance phase will continue to be followed in closure as long as the water management pond is used.

6.3.1 Water Management Pond – System Failure Preventative Measures

Routine visual inspections and elevation surveys of the dams are conducted annually. In addition, monitoring of the inflow from the underground workings, site weather conditions and WMP water levels are recorded.

Monthly inspections during the ice-free season of the upstream face, crest and downstream face of the dams are carried out to identify water levels relative to the crest, erosional features, and displaced or eroded rip rap, sinkholes, or visible seepage, tears in the liner or cracks in the dam structure.

The following measures will limit seepage at the Water Management Pond:

- Maintaining the WMP at lower levels to prevent above ground seepage.
- Standpipe piezometers and thermistors installed adjacent to and within both dams are collecting data continuously and will be downloaded a minimum of monthly.
- The WMP is surveyed for vertical settlement using a builder’s level and augmented with periodic surveys of ice elevation during the winter months.

Water quality sampling of inflows and water stored in the WMP is ongoing as per the Surveillance Network Program as defined in the water licence.

Appropriate remedial measures will be developed in consultation with the geotechnical engineers if:

- unusual changes or damage are seen in the WMP dams during routine or annual inspections; and/or
- significant water balance discrepancies are noted during data reviews.

Remedial measures could include repair of erosion areas, re-levelling subsidence of the dam crest, placement of seepage barriers, or stabilization of the toe berms.

6.3.2 Water Management Pond – System Failure Response Actions

WMP maintenance preparations may include:

- stockpile dam construction materials for repairs;
- have adequate supplies of geo-composite liners for emergency repairs (e.g., bentomat) and bagged bentonite to seal minor leaks; and
- maintain a list of earth-moving equipment on-site to move fill materials to where they may be needed.

Following consultation with geotechnical engineers, the following actions may be taken immediately prior to a major system failure (i.e., instability or water holding capacity concerns):
• test water quality and initiate treatment of WMP seepage water to ensure its acceptability for release;
• pump and glaciate water, during freezing conditions, within the WMP basin; or
• draw down the WMP by diverting to the underground.

In the event that capacity problems in the WMP are encountered, the dam crests could be raised to a safe level/elevation.

To control seepage from the WMP, the dams were constructed with impermeable HDPE liners that are tied to intact bedrock. The liners minimize seepage by preventing seepage through the dams. Hydrostatic pressure from water in the WMP results in a small amount of seepage through the bedrock in the pre-existing talik (unfrozen ground) underneath Dam 1; however, this small amount of seepage is not expected to pose any environmental concerns. Dam 2 is constructed completely in permafrost and no seepage is expected to occur underneath this dam. In the “Reasons for Decision” for the Water Licence for the Snap Lake Mine, the MVLWB made the following statement (Part D, Item 3):

“The Board recognizes that a relatively small amount of seepage (from the WMP) may occur via bedrock fractures. While not approving of it, the Board understands that the volumes and concentrations of such waste will be minor and there should be no impact to the receiving environment. Any seepage exiting the WMP via bedrock fractures is likely to be free of processed kimberlite solids and of quality comparable to that of the effluent from the Water Treatment Plant (WTP), one of whose primary functions is the removal of processed kimberlite solids. The Board also recognizes that DBCMI is responsible to manage and control these seepages.”

The quality and quantity of seepage from the WMP through dams 1 and 2 are monitored. The current estimate of seepage under Dam 1 is 17 m$^3$/day (at full supply level) based on piezometer monitoring results and two-dimensional groundwater flow modeling. The Environmental Assessment (De Beers 2002) assessed the effects of 33 m$^3$/day of seepage from Dam 1 entering Snap Lake and determined that the effect on water quality and aquatic life would be negligible.

If signs of an impending failure are detected, the dam and downstream areas will be evacuated. An urgent request for advice from the geotechnical engineers would also be undertaken. In the event that rockfill or other granular materials are needed in an urgent manner, permission from the regulatory agencies will be sought.

Under serious yet manageable operating conditions, steps would be undertaken to conduct an emergency discharge. Time permitting, regulatory approvals will be obtained. However, if a catastrophic failure or release is imminent, the water will be discharged and the regulators will be notified.

Rehabilitation of any failure area would include steps to contain and/or recover released processed kimberlite (PK). All remedial activities would be specified by the geotechnical engineer and/or an Environmental Consultant, as needed.

In the event of a PK spill or release to Snap Lake, attempts will be made to contain and recover as much of the spilled material as possible. A ‘spill-specific’ sampling and monitoring program will be established and implemented. Certain components of the Aquatic Effects Monitoring Plan (AEMP) may be implemented to measure potential impacts to Snap Lake.
7. **SEWAGE TREATMENT SYSTEM**

During closure a sewage treatment system will be operated appropriate to the scale of operations and in line with regulatory requirements.

The sewage treatment plants included phosphorus removal as part of an overall water management strategy to meet the total phosphorus loading limit set out in the Water Licence. Alum and caustic soda will be added to control total phosphorus (TP) level and pH adjustment in the effluent. Existing chemical storage and metering pump system will be used. Alum dosage will be manually set to minimum chemical usage while keeping TP under 1 ppm. Caustic soda dosage will be manually set to minimum chemical usage while keeping pH above 6.5. Management of sewage treatment is linked with the Aquatic Effects Monitoring Plan, as one component of the monitoring is to evaluate the effects of nutrients from the mine on productivity within Snap Lake.

System failures and/or spills may occur due to pipe blockage, electrical power outage, equipment malfunctions, operator error or foreign objects or material in the influent, which cannot be processed by the MBRs. As Snap Lake progresses through closure, the sewage treatment system will be decommissioned appropriately.

### 7.1 Sewage Treatment System – Spill Preventative Measures

Visual inspections of the STPs are carried out during periods of operation. An alarm system is installed in the camp complex to provide immediate notice of system failure. If the main mine site electrical generators fail, the camp emergency power generator will be used.

Trained personnel, whose responsibilities are dedicated to operating the STPs, will ensure that the facilities are monitored on a consistent basis and will respond to non-compliances in a timely manner. Response measures may include:

- Adjustment to the system would be made in consultation with the manufacturer’s technical expert.
- Unfavourable sampling trends will be evaluated on a case-by-case basis. The sampling frequency will be based upon the nature and severity of the problem.
- If the non-compliance trend continues whereby the operators are unable to bring the plant back on line within a timely manner, action will be implemented to have the technical representative brought to site on a priority basis to assist the operators.
- Technical assistance from the manufacturer is available, by agreement, on a 24-hour, 7-day a week basis.
- Technical assistance and equipment from the manufacturer can be mobilized to site on 24-hour notice should repair, replacement or adjustments be necessary.
- Spare parts for certain system components are available on site in case of equipment failure.
7.2 Sewage Treatment Plant – Spill Response Actions

Refer to spill response actions (i.e. Accidental Release Measures) in SDS for Raw Sewage should a spill occur. Spills of partially treated or untreated sewage that occur inside the plants would involve:

- the removal of spilled materials (spills of untreated waste will be contained using a vacuum truck and necessary spill cleanup materials and re-routed to the front end of the system);
- site sanitation (by spreading hydrated lime over the area);
- treatment of recovered sewage and any materials contaminated with sewage by incineration; and
- decontamination of workers.
8. **AUXILIARY SYSTEMS (PIPELINES)**

A line break or malfunction along any of the pipeline systems could be caused from:

- being struck by equipment;
- internal corrosion;
- uneven settlement along the line (frost or permafrost heave); and
- poor materials or workmanship during installation.

**8.1 System Components (Pipelines) – Spill Prevention**

Spills can be prevented by implementing the following precautions:

- marking the locations of all overhead or buried lines;
- locating lines in non-permafrost areas;
- making all departments and/or contractors aware of all buried and overhead lines in their work areas;
- monitoring the flows and pressures in the lines;
- inspecting, maintaining and repairing the lines and related pumps, etc.;
- using cathodic protection systems for metal lines; and
- installing lines in non-permafrost areas.

The following water pipeline inspection checks are carried out during periods of operation, by on-site competent persons:

- the STP inflow line;
- the STP outfall pipe;
- WMP to the WTP;
- WTP to Snap Lake; and
- the WTP to the mine portal.

**8.2 System Components (Pipelines) – Spill Response**

Refer to the spill response actions (i.e. Accidental Release Measures) in the SDS for the specific chemical spill. The mine operational plan for a pipeline failure would be to:

- shutdown the line;
- contain and cleanup the spill;
- repair or replace the line;
- reconnect and test the line; and
- resume operations.
In the event of a spill, the On-Scene Coordinator will initiate the process of shutdown and the trained site personnel will be deployed. Immediate action to reduce and minimize impacts to the tundra and adjacent water bodies is required. Spill containment and recovery of the spilled material will be a priority. Personnel safety is considered first priority.

Any material that has escaped from the pipelines and deposited on the surrounding ground would be recovered and managed in accordance with the Waste Management Plan. Crushed gravel and/or stockpiled esker material would be used to re-contour the area to original ground elevation.

Any PK tailings or sediment slurry that has escaped from the system to a water body would be left in place until further advice has been received on the cleanup from a qualified Consultant.

In the event of a PK spill or release to Snap Lake, attempts will be made to contain and recover as much of the spilled material as possible. A ‘spill-specific’ sampling and monitoring program will be established and implemented. Certain components of the Aquatic Effects Monitoring Plan (AEMP) may be implemented to measure potential impacts to Snap Lake.

Any spilled material would be cleaned up and managed in accordance with the Waste Management Plan.
9. **SPILL RESPONSE ACTION PLANS**

9.1 Spill Response Theory

Knowing what to do when spills happen is essential to employee safety as well as minimizing harm to the environment. Planning, training and drills are vital to ensuring everyone knows what to do and when to do it when an emergency arises.

9.1.1 Basic Procedures

The following steps are taken during any spill response:

- **Assess Spill Hazards and Risks**: the response team are trained to not endanger themselves in order to identify a spilled material.

- **Notify Site Management**: this is required any time a spill is observed or when a spill cannot be identified (no matter the volume), or when the spill response team will be needed. By notifying the proper people, efforts can be coordinated and initiated.

- **Protect responders**: when a spill has been properly identified, appropriate personal protective equipment is available to handle the hazardous materials on site and is stored in the ERT building. Ensuring the safety of the response team is critical.

- **Review Safety Data Sheets (SDSs)**: SDS are used to determine the necessary PPE required for a response to spill situations (e.g., protective suits, boots, gloves, respiratory protection, detection equipment and monitors, etc.).

- **Refer to spill response actions (i.e. Accidental Release Measures) in Safety Data Sheets (SDSs)**.

- **Check operating systems, spill response equipment and PPE**, on a regular basis.

- **Tend to injured personnel**: personnel safety is the highest priority. Attending to injured personnel in the spill area is the first goal. Weekly drills are conducted to ensure responders are trained to perform these functions quickly and efficiently.

- **Stop the source**: this could mean rolling or up-righting a drum so that the hole is on top, patching a leaking hole, or locating and turning off emergency valves. This step can occur at the same time as the spill is being contained.

- **Contain the spill**: the most common method is to place either absorbent or non-absorbent dikes around the perimeter of the spill.

- **File a spill report**: a copy of the Government of NWT Spill Report Form can be found in Appendix A.

- **Clean up the spill**: after injured personnel are removed from the spill zone, the perimeter of the spill is clearly marked and the source of the spill is stopped, responders will begin to clean up the spill. They will work from the outside edge of the spill toward the centre. Various tools such as absorbent mats, socks and pillows are used to soak up small liquid spills, while vacuums and portable pumps can be utilized for larger spills. Heavy equipment can also be used for very large spills (e.g., bulldozers, gravel trucks, and forklifts). Neutralization of acidic spills using lime or soda ash is an option.
- **Contain or bag spent response materials**: to facilitate recycling or disposal.

The following decontamination steps may be taken during a spill response:

- **Set up decontamination facilities**: responders are trained to do this before entering a spill response area. This is especially important if there are victims, as these persons will need to be decontaminated prior to triage and treatment.

- **Decontaminate the area where the spill occurred**: may include cleaning tools, spill response equipment, PPE and the responders themselves.

- **Monitor the condition of responders**: on-site safety officers are trained to monitor the condition of personnel working on the decontamination lines, particularly if these people wear confined and bulky PPE (e.g., Level I suits). Decontaminating responders and tools can be labour intensive and workers can easily become fatigued from heat stress.

### 9.2 Spill Response Action Plans - General

For large volume hazardous materials on site, spill response actions and supplemental information on the chemical and physical properties are found in the SDSs.

**Respond Quickly**

- Identify spilled material.
- Protect yourself and others (e.g., be alert and take all necessary precautions).
- Assess the hazards in the immediate vicinity of the spill or leak.
- Shut off ignition sources in the vicinity of the spill for flammable liquids – NO SMOKING.
- Call for assistance IMMEDIATELY, if anyone is injured.
- Attend to injured, if possible.
- Assess the severity of the spill. Assess if the spill, leak or system failure can be readily stopped or brought under control.
- Call for assistance: Site wide Supervisor Radio channel.
- Mobilize the response team (the On-scene Coordinator does this).
- Keep people away from the spill site.
- Wear impervious clothing, goggles and gloves (appropriate for the material being dealt with).
- Approach spill from up-wind – ONLY IF IT IS SAFE TO DO SO.
- Stop product flow if possible.
- Contain and recover spill as soon as possible.
Respond Safely

- Do not contain gasoline/aviation fuel as vapours might ignite.
- Allow gasoline or aviation fuel spills to evaporate.
- Follow specific spill response actions (refer to SDSs).
- Report spill to the 24-hour spill report line: 867-920-8130.

Generic actions to be taken on land, water, snow and ice are as follows.

9.2.1 Action Plan for Liquid Spills on Land

Liquid spills on gravel, rock, soil and vegetation can be contained or cleaned up by:

- Placing soil berms in front of the leading edge of the spill, down slope of the spilled liquid. Plastic tarps can then be placed over the berm and at the foot of it to permit the liquid to pool on the plastic for easy recovery. Absorbents can also be used for this purpose. These pads can possibly be squeezed into empty drums and re-used. Larger pools can be pumped back into drums or empty storage tanks or a ‘TIDY’ tank, if readily available. It is very important to prevent the liquid from entering a body of water where it will likely have a greater environmental impact.

- Soaking up stained rock with absorbent materials or absorbent sheeting. Depending upon the volumes generated, the spent absorbent should be placed in drums for later disposal.

- Removing the contaminated soil and/or vegetation. This can be followed by contacting the government authority identified by the 24-Hour Spill Report Line (867-920-8130) to discuss the approach and to obtain approval to proceed with the approach.

- Storing the contaminated soil or gravel in drums at the Hazardous Waste Storage Facility until they are disposed in accordance with the Waste Management Plan.

9.2.2 Action Plan for Fuel Spills on Water

The following steps can be taken for spills on water:

- Limit the area of the spill on water.

- Recover small spills on water with absorbent pads and similar materials.

- Deploy containment and/or absorbent boom(s) to contain the spill area. The effectiveness of this action can be limited by winds, waves and other factors. Absorbent booms can be drawn slowly in to encircle spilled fuel and absorb it. These materials are hydrophobic (absorb hydrocarbons and repel water). Sorbent booms are often relied on to recover hydrocarbons that escape containment booms.

- Placing a large wide board (e.g., plywood) vertically across the culvert inlet to control the water level while retaining the spilled fuel. The board can be secured by stakes and absorbent materials used to recover the fuel on the water surface.
9.2.3 Action Plan for Fuel Spills on Snow

Fuel spills on snow can be contained and recovered by:

- Using the snow as a natural absorbent to collect spilled fuel.
- Compacting the snow into snow-berms and then placing a liner of plastic sheeting.
- Scraping up and storing the snow-fuel mixture in a lined containment area or placing it in drums for later disposal or incineration.

9.2.4 Action Plan for Fuel Spills on Ice

Fuel spills on ice can be contained or cleaned up by:

- Piling the snow around the edge of the spill to act as a berm. Time permitting, the berm can be lined with plastic sheeting. The underlying ice will prevent or reduce the rate of seepage of the fuel into the water below the ice.
- Scraping up contaminated snow/ice and placing it in covered drums or in a lined berm area on land.
- Deploying skimmers in open-water areas may be an option in the early fall or late spring. However, under normal ice-covered periods, this is unlikely in the Snap Lake region.
- Deploying skimmers in broken-ice conditions may be effective as spills tend to spread far less than in ice-free water.
- Pumping fuel spills through holes cut into the ice is extremely difficult under those conditions. Fuel that flows through breaks or cracks in the ice and gets trapped under the ice, is extremely difficult to recover.
- Burning on-ice offers the potential to remove the majority of a spill with minimal residue volumes left for manual recovery. Burning on-ice has always been considered as a primary arctic spill countermeasure. Permission may be given from the government to burn off pools of fuel (contact the NWT 24-Hour Spill Report Line).

9.3 Spill Response Equipment Available On-Site

9.3.1 General Equipment

The following general equipment is available on-site during closure to assist in spill response:

- various types of heavy equipment such as Loaders, Excavators, Boom Trucks, etc.;
- various hand held tools including shovels; and
- sand bags, bentonite, and a variety of absorbent materials.

An Oil Spill Contingency Unit is located next to the Environmental Shop. Spill response materials are maintained within the unit and provided in Table 9-1. As Snap Lake progresses into Closure, the quantities are subject to change based on a thorough assessment of requirements.
Table 9-1  Environmental Shop Oil Spill Contingency Unit

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>180</td>
<td>bags</td>
<td>Absorbent Peat Moss, Oil (only), 44 litres/bag</td>
</tr>
<tr>
<td>10</td>
<td>ea</td>
<td>Absorbent Rolls, Oil (only), 100’ x 3’</td>
</tr>
<tr>
<td>100</td>
<td>pk</td>
<td>Absorbent Pads, Oil (only), 17” x 17” x 100/pk</td>
</tr>
<tr>
<td>40</td>
<td>boxes</td>
<td>Absorbent Socks, Oil (only), 8” x 3” x 6/box</td>
</tr>
<tr>
<td>40</td>
<td>bags</td>
<td>Absorbent Boom, Oil (only), 4” x 10’ x 5/bag</td>
</tr>
<tr>
<td>12</td>
<td>boxes</td>
<td>Absorbent Pillows, Oil (only), 17” x 17” x 10/box</td>
</tr>
<tr>
<td>24</td>
<td>ea</td>
<td>Drip Defenders, 17” x 17”</td>
</tr>
<tr>
<td>12</td>
<td>ea</td>
<td>Mini Berm, 4’ x 4’ x 8”</td>
</tr>
<tr>
<td>6</td>
<td>ea</td>
<td>Absorbent Rolls, Universal, 100’ x 3’</td>
</tr>
<tr>
<td>24</td>
<td>pk</td>
<td>Absorbent Pads, Universal, 17” x 17”, 100/pk</td>
</tr>
<tr>
<td>48</td>
<td>pk</td>
<td>Absorbent Pads, Chemical, 17” x 17”, 100/pk</td>
</tr>
<tr>
<td>6</td>
<td>boxes</td>
<td>Absorbent Socks, Chemical, 3” x 4” x 12/box</td>
</tr>
<tr>
<td>100</td>
<td>ea</td>
<td>Heavy Duty Poly Disposal Bags, Yellow, 36” x 48”</td>
</tr>
</tbody>
</table>

The spill response equipment listed in Table 9-2 is located in an Oil Spill Response Unit near the fresh/fire water Pumphouse. This list may change as Snap Lake progresses into Closure.

Table 9-2  Pumphouse Spill Contingency Unit

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>metres</td>
<td>Oil Containment Boom, 18” c/w associated hardware</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Oil Skimmer c/w power pack and transfer hosing</td>
</tr>
<tr>
<td>6</td>
<td>ea</td>
<td>Boats c/w outboard engines (seasonal)</td>
</tr>
</tbody>
</table>

9.3.2  Spill Kits by Location

Spill kits come in a variety of sizes and are located throughout site being positioned adjacent all fuel/chemical storage and dispensing areas. Location of these kits as outlined in Figure 9-1 may change as mine progresses into the closure phases.

9.3.2.1  Small Spill Kits

Numerous small spill kits with an absorption capacity of less than 95 litres are located throughout the mine site. These small spill kits are used as a first line of defence when a spill is encountered. Table 9-3 identifies typical contents.
Figure 9-1  Location of Spill Kits
Table 9-3  Small Spill Kit Contents

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>ea</td>
<td>Absorbent Pads, Oil (only), 17” x 17”</td>
</tr>
<tr>
<td>25</td>
<td>ea</td>
<td>Absorbent Pads, Universal, 17” x 17”</td>
</tr>
<tr>
<td>5</td>
<td>litres</td>
<td>Absorbent Granular and/or Peat</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Heavy Duty Poly Disposable Bag, Yellow, 36” x 48”</td>
</tr>
<tr>
<td>1</td>
<td>pr</td>
<td>Chemical Resistent Gloves</td>
</tr>
<tr>
<td>1</td>
<td>pr</td>
<td>Uvex Safety Goggles</td>
</tr>
</tbody>
</table>

9.3.2.2  Large Spill Kits

Large spill kits with an absorption capacity of less than 425 litres are located throughout the mine site. These spill kits contain a variety of spill response equipment, as summarized in Table 9-4.

Table 9-4  Large Spill Kit Contents

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>ea</td>
<td>Tyvek Splash Suits</td>
</tr>
<tr>
<td>2</td>
<td>ea</td>
<td>Large Tarps</td>
</tr>
<tr>
<td>5-10</td>
<td>ea</td>
<td>Absorbent Socks, Universal, 4’ x 3”</td>
</tr>
<tr>
<td>1-4</td>
<td>ea</td>
<td>Absorbent Boom, Oil (only), 10’ x 5”</td>
</tr>
<tr>
<td>50-100</td>
<td>ea</td>
<td>Absorbent Pads, Oil (only), 17” x 17”</td>
</tr>
<tr>
<td>25-50</td>
<td>ea</td>
<td>Absorbent Pads, Universal, 17” x 17”</td>
</tr>
<tr>
<td>13-44</td>
<td>litres</td>
<td>Absorbent Granular and/or Peat</td>
</tr>
<tr>
<td>2-10</td>
<td>ea</td>
<td>Heavy Duty Poly Disposable Bag, Yellow, 36” x 48”</td>
</tr>
<tr>
<td>4</td>
<td>pr</td>
<td>Chemical Resistent Gloves</td>
</tr>
<tr>
<td>1</td>
<td>pr</td>
<td>Uvex Safety Goggles</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Roll Duct Tape</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Utility Knife</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Field Notebook and Pencil</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Rake</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Pick axe</td>
</tr>
<tr>
<td>3</td>
<td>ea</td>
<td>Aluminum Scoop Shovels</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Instruction Binder</td>
</tr>
<tr>
<td>1</td>
<td>ea</td>
<td>Containment Drum</td>
</tr>
</tbody>
</table>
10. SUPPORTING DOCUMENTS


APPENDIX A
GOVERNMENT OF NWT AND NU SPILL REPORT FORM
<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Date (mm/dd/yyyy)</td>
<td>REPORT DATE: 01/01/2023</td>
</tr>
<tr>
<td>Report Time (hh:mm)</td>
<td>REPORT TIME: 10:00</td>
</tr>
<tr>
<td>Original Spill Report</td>
<td>OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS</td>
</tr>
<tr>
<td>Occurrence Date (mm/dd/yyyy)</td>
<td>OCCURRENCE DATE: 01/01/2023</td>
</tr>
<tr>
<td>Occurrence Time (hh:mm)</td>
<td>OCCURRENCE TIME: 10:00</td>
</tr>
<tr>
<td>Land Use Permit Number</td>
<td>LAND USE PERMIT NUMBER: (IF APPLICABLE)</td>
</tr>
<tr>
<td>Water Licence Number</td>
<td>WATER LICENCE NUMBER (IF APPLICABLE)</td>
</tr>
<tr>
<td>Geographic Place Name or Distance and Direction from Name/Location</td>
<td>GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAME/LOCATION:</td>
</tr>
<tr>
<td>Region</td>
<td>REGION: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>UTM Coordinates 12V NAD83</td>
<td>UTM COORDINATES 12V NAD83</td>
</tr>
<tr>
<td>Casting Northing Latitude Longitude</td>
<td>RESPONSIBLE PARTY OR VESSEL NAME: RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION</td>
</tr>
<tr>
<td>Any Contractor Involved</td>
<td>ANY CONTRACTOR INVOLVED: CONTRACTOR ADDRESS OR OFFICE LOCATION</td>
</tr>
<tr>
<td>Product Spilled</td>
<td>PRODUCT SPILLED: OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS</td>
</tr>
<tr>
<td>Quantity in Litres Kilograms or Cubic Meters</td>
<td>QUANTITY IN LITRES KILOGRAMS OR CUBIC METERS: U.N. NUMBER</td>
</tr>
<tr>
<td>Second Product Spilled</td>
<td>SECOND PRODUCT SPILLED: OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS</td>
</tr>
<tr>
<td>Quantity in Litres Kilograms or Cubic Meters</td>
<td>QUANTITY IN LITRES KILOGRAMS OR CUBIC METERS: U.N. NUMBER</td>
</tr>
<tr>
<td>Spill Source</td>
<td>SPILL SOURCE: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Spill Cause</td>
<td>SPILL CAUSE: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Area of Contamination in Square Meters</td>
<td>AREA OF CONTAMINATION IN SQUARE METERS</td>
</tr>
<tr>
<td>Factors Affecting Spill or Recovery</td>
<td>FACTORS AFFECTING SPILL OR RECOVERY: DEPENDS ON CONTEXT</td>
</tr>
<tr>
<td>Describe any assistance required</td>
<td>DEPENDS ON CONTEXT: HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT</td>
</tr>
<tr>
<td>Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials</td>
<td>ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS</td>
</tr>
<tr>
<td>Reported to Spill Line by</td>
<td>REPORTED TO SPILL LINE BY:</td>
</tr>
<tr>
<td>Position</td>
<td>POSITION: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Employer</td>
<td>EMPLOYER: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Location Calling From</td>
<td>LOCATION CALLING FROM: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Telephone</td>
<td>TELEPHONE: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Any Alternate Contact</td>
<td>ANY ALTERNATE CONTACT:</td>
</tr>
<tr>
<td>Position</td>
<td>POSITION: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Employer</td>
<td>EMPLOYER: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Alternate Contact Location</td>
<td>ALTERNATE CONTACT LOCATION:</td>
</tr>
<tr>
<td>Alternate Telephone</td>
<td>ALTERNATE TELEPHONE:</td>
</tr>
<tr>
<td>Lead Agency</td>
<td>LEAD AGENCY: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Contact Name</td>
<td>CONTACT NAME: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Contact Time</td>
<td>CONTACT TIME: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>Remarks</td>
<td>REMARKS: NWT, NUNAVUT, ADJACENT JURISDICTION OR OCEAN</td>
</tr>
<tr>
<td>First Support Agency</td>
<td>FIRST SUPPORT AGENCY:</td>
</tr>
<tr>
<td>Second Support Agency</td>
<td>SECOND SUPPORT AGENCY:</td>
</tr>
<tr>
<td>Third Support Agency</td>
<td>THIRD SUPPORT AGENCY:</td>
</tr>
</tbody>
</table>
APPENDIX B

SPILL VOLUMES THAT MUST BE REPORTED TO THE GOVERNMENT OF THE NORTHWEST TERRITORIES
Appendix B. Spill Volumes that must be Reported to the Government of the Northwest Territories

<table>
<thead>
<tr>
<th>Transportation of Dangerous Goods Class</th>
<th>Description of Contaminant</th>
<th>Amount Spilled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>explosives</td>
<td>any amount</td>
</tr>
<tr>
<td>2.1</td>
<td>compressed gas (flammable) (e.g., propane, acetylene, hydrogen, butane)</td>
<td>any amount of gas from containers with a capacity greater than 100 L or if it comes into contact with water</td>
</tr>
<tr>
<td>2.2</td>
<td>compressed gas (non-corrosive, non flammable) (e.g., Halocarbon, nitrogen, argon)</td>
<td>any amount of gas from containers with a capacity greater than 100 L or if it comes into contact with water</td>
</tr>
<tr>
<td>2.3</td>
<td>compressed gas (toxic)</td>
<td>any amount</td>
</tr>
<tr>
<td>2.4</td>
<td>compressed gas (corrosive)</td>
<td>any amount</td>
</tr>
<tr>
<td>3.1, 3.2, 3.3</td>
<td>flammable liquid (e.g., Jet B, gasoline, etc.)</td>
<td>100 L</td>
</tr>
<tr>
<td>4.1</td>
<td>flammable solid</td>
<td>25 kg</td>
</tr>
<tr>
<td>4.2</td>
<td>spontaneously combustible solids</td>
<td>25 kg</td>
</tr>
<tr>
<td>4.3</td>
<td>Water reactant solids</td>
<td>25 kg</td>
</tr>
<tr>
<td>5.1</td>
<td>oxidizing substances</td>
<td>50 L or 50 kg</td>
</tr>
<tr>
<td>5.2</td>
<td>organic peroxides</td>
<td>1 L or 1 kg</td>
</tr>
<tr>
<td>6.1</td>
<td>poisonous substances</td>
<td>5 L or 5 kg</td>
</tr>
<tr>
<td>6.2</td>
<td>infectious substances</td>
<td>any amount</td>
</tr>
<tr>
<td>6.3</td>
<td>(e.g., Sewage)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>radioactive substances</td>
<td>any amount</td>
</tr>
<tr>
<td>8</td>
<td>corrosive substances</td>
<td>5 L or 5 kg</td>
</tr>
<tr>
<td>8.1 (in part)</td>
<td>miscellaneous product or substances, excluding PCB mixtures</td>
<td>50 L or 50 kg</td>
</tr>
<tr>
<td>9.2</td>
<td>environmentally hazardous (e.g., Fluorescent bulbs- mercury, refrigerant, oil from crushed filters)</td>
<td>1 L or 1 kg</td>
</tr>
<tr>
<td>9.3</td>
<td>dangerous wastes (e.g., Waste that may pose a risk to human health)</td>
<td>5 L or 5 kg</td>
</tr>
<tr>
<td>9.1 (in part)</td>
<td>PCB mixtures of 5 or more parts per million</td>
<td>0.5 L or 0.5 kg</td>
</tr>
<tr>
<td>None</td>
<td>other contaminants</td>
<td>100 L or 100 kg</td>
</tr>
</tbody>
</table>

Note: L = litre; kg = kilogram; PCB = polychlorinated biphenyls.
APPENDIX C  
HAZARDOUS MATERIAL MAXIMUMS POTENTIALLY STORED AT SITE FOR MINE OPERATIONS
### Appendix C. Hazardous Materials Maximums Potentially Stored at Site for Mine Operations

<table>
<thead>
<tr>
<th>Material</th>
<th>Site Category</th>
<th>Approximate Amount</th>
<th>Storage Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdBlue</td>
<td>POL</td>
<td>2,000 litres</td>
<td>Heated storage on surface to be decided</td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>POL</td>
<td>5,000,000 litres</td>
<td>Tank Farm</td>
</tr>
<tr>
<td>Gasoline</td>
<td>POL</td>
<td>2,500 litres</td>
<td>Adjacent Environment Shop</td>
</tr>
<tr>
<td>Gear Oils and Lubricants</td>
<td>POL</td>
<td>150,000 litres</td>
<td>- Lay down Area 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Services Complex</td>
</tr>
<tr>
<td>Jet-A Fuel</td>
<td>POL</td>
<td>31,000 litres</td>
<td>Waste Management Area</td>
</tr>
<tr>
<td>Windshield Washer Fluid</td>
<td>Other Hazardous Materials</td>
<td>9,500 litres, 500 litres</td>
<td>- Warehouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Services Complex</td>
</tr>
<tr>
<td>Ethylene Glycol</td>
<td>Other Hazardous Materials</td>
<td>4270 litres, 16,176 litres, 3300 litres</td>
<td>- Lube Shop</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Powerhouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Laydown 1</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>Other Hazardous Materials</td>
<td>6,000 litres</td>
<td>Bulk storage in process plant- drained from circulation system</td>
</tr>
<tr>
<td>Propane</td>
<td>Other Hazardous Materials</td>
<td>95 (20 pounds), 20 (100 pounds)</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Acetylene</td>
<td>Other Hazardous Materials</td>
<td>30 bottles</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Oxygen</td>
<td>Other Hazardous Materials</td>
<td>60 bottles</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Paint</td>
<td>Other Hazardous Materials</td>
<td>500 litres</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Solvents</td>
<td>Other Hazardous Materials</td>
<td>500 litres</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Sulphuric Acid (Batteries)</td>
<td>Other Hazardous Materials</td>
<td>0 litres (batteries are sealed)</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Sulphuric Acid (water treatment)</td>
<td>Other Hazardous Materials</td>
<td>109,000 litres</td>
<td>Outside Utilities Bldg.</td>
</tr>
<tr>
<td>Lime</td>
<td>Other Hazardous Materials</td>
<td>18,360 kg</td>
<td>Sewage Treatment Plant # 2</td>
</tr>
<tr>
<td>Sodium Hypochlorite (12%)</td>
<td>Other Hazardous Materials</td>
<td>500 litres</td>
<td>Potable Water Plant</td>
</tr>
<tr>
<td>Cement</td>
<td>Other Hazardous Materials</td>
<td>20,000 tonnes</td>
<td>Laydown Area 1</td>
</tr>
</tbody>
</table>
### Appendix C. Hazardous Materials Maximums Potentially Stored at Site for Mine Operations

<table>
<thead>
<tr>
<th>Concrete Additives</th>
<th>Other Hazardous Materials</th>
<th>2,000 litres</th>
<th>Laydown Area 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing Compounds</td>
<td>Other Hazardous Materials</td>
<td>100 litres</td>
<td>Laydown Area 1</td>
</tr>
<tr>
<td>Flocculants</td>
<td>Other Hazardous Materials</td>
<td>10 tonnes</td>
<td>Process Plant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 tonnes</td>
<td>Water Treatment Plant</td>
</tr>
<tr>
<td>Ferric Sulphate</td>
<td>Other Hazardous Materials</td>
<td>17,000 kg</td>
<td>Water Treatment Plant</td>
</tr>
<tr>
<td>Ferrosilicon</td>
<td>Other Hazardous Materials</td>
<td>500 tonnes</td>
<td>Process Plant</td>
</tr>
<tr>
<td>Alum</td>
<td>Other Hazardous Materials</td>
<td>2,000 litres</td>
<td>Laydown Area 1</td>
</tr>
</tbody>
</table>