Environmental Emergency Response Plan
Tata Steel Minerals Canada Ltd.
Direct-Shipping Ore Project

Prepared for:

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July 18 2013

Table of Contents

List of Figures

List of Tables

List of Appendices

1.0 INTRODUCTION

1.1 Commitments

Tata Steel Minerals Canada Ltd. (TSMC) is committed to the provision of adequate resources to implement and maintain the Emergency Response Management System for its activities, including the necessary human, material, and financial resources.

1.2 Purpose and Scope

This Emergency Response Plan (ERP) has been developed by TSMC to identify potential emergencies that could arise during the construction and production phases of the Direct Shipping Ore Project in western Labrador/eastern Québec (the Project) and to establish the framework for responding to these situations. This ERP serves as a tool in attaining TSMC's goals and objectives in terms of environmental management. It can be used as a reference document during the planning and execution of the Project, and as a field document to provide quick guidance to workers undertaking specific tasks outlined in the ERP. At the corporate level, the ERP serves as a working document to ensure that compliance with environmental policies and legislation has been achieved.

This ERP outlines the best practical procedures to address the prevention of, preparedness for, response to, and recovery from environmental emergencies caused by uncontrolled, unplanned, or accidental releases of any toxic or hazardous substances currently listed under Schedule 1 of the Federal E2 regulations (Appendix A). The plan will be updated annually to reflect specific responses, protocols, response teams and management contact information (once established), as well as any changes in regulations.

1.3 Guiding Principles

Emergency events or situations are characterized by immediate threat to life, health, safety, environment, or property. The ERP is designed mainly to address the environmental characteristics using the following principles:

- Ensure safety and well-being of personnel, the environment, and property
- Identify evacuation routes and muster station locations
- Ensure effective communication between personnel and the emergency team
- Ensure that procedures exist to respond to, intervene, stop, or limit the emergency situation
- Initiate response procedures and follow-up programs for emergencies
- Ensure when occurrences are investigated, root cause determinations are made and mitigation measures are implemented to prevent re-occurrence.

1.4 Definitions

Spill:

Federal and NL Provincial: A spill is a leak or release of >70 L on land, or of any amount into aquatic environments, of a liquid material, which may be petroleum products or otherwise hazardous, from the storage tank, pipeline or other container in which it is stored or being transferred.

QC Provincial: A spill is a leak or release of any amount on land or into aquatic environments, of a liquid material, which may be petroleum products or otherwise hazardous, from the storage tank, pipeline or other container in which it is stored or being transferred.

Hazardous Material: Any chemical, radiological, or biological material that is potentially hazardous to health, safety, property, or environment, including 'Hazardous Products' as defined under the *Hazardous Products Act* and 'Dangerous Goods' as defined under the *Transportation of Dangerous Goods Act.*

1.5 Regulatory Framework

This ERP has been developed to ensure that TSMC respects all applicable laws, regulations, and requirements for Federal and Provincial authorities. As the Project is situated on the Québec/Labrador border, applicable regulations and reporting requirements will depend on the activities or emergencies jurisdiction. The following regulatory and government documents constitute an integral part of the plan:

- Environmental Emergency Regulations (Canada wide)
- Canadian Environmental Protection Act (Canada wide)
- Hazardous Products Act (Canada wide)
- Transportation of Dangerous Goods Act (Canada wide)
- Environmental Protection Act (NL) and associated documents (Labrador activities)
- Loi sur la qualité de l'environnement (L.R.Q., c. Q-2) (Québec activities)
- Règlement sur les matière dangereuses (Q-2, r.32) (Québec activities)

1.6 Organization and Responsibilities

1.6.1 Emergency Response Team

The Construction/Operations Manager, and the environment and permitting department, are responsible for establishing and implementing the environmental response team. The team will comprise site employees who receive special training to assist in an emergency. The above noted managers will select qualified candidates in sufficient numbers to facilitate the response programs required by the plan as well as a designated Emergency Coordinator to coordinate activities in the event of an emergency and to make final decisions. The Emergency Coordinator will be in charge of coordinating efforts between internal personnel as well as with external contact agencies if necessary. The Emergency Response Team will receive the special training required for adequate response to onsite emergencies. The team will be trained in appropriate procedures to:

- Implement onsite emergency response procedures
- Assist with evacuation procedures
- Respond to emergencies involving fires or explosions

- Control and mitigate spills or other accidental releases.

Mock exercises, including spills, evacuations, and other potential emergencies, will be conducted regularly (at least quarterly) to ensure the success of this plan. Training and exercises will ensure that employees develop and maintain the skills necessary to respond quickly and effectively to emergency situations, as outlined in the ERP, and are familiar with the hazards and materials which are generally used and stored on site. The employees will be able to locate and know how to operate response equipment, and will be in a position to effectively contact off-site resources if necessary.

TSMC's emergency personnel contact information is presented in Table 1.1 and will be updated as responsibilities are assigned.

Table 1.1 Emergency Contact Information for TSMC Personnel

Person	Title	Contact Information

1.7 Relationship to Other Plans

The Emergency Response Plan builds upon and is complementary to the existing Environmental Protection Plan (EPP). The Train Operator Spill Management Plan, Fuel Farm Management Plan, and Waste Management Plan (used oil) are under construction and will be considered as inclusions as appendices to the ERP.

1.8 Update of this Emergency Response Plan

The Emergency Response Plan will be regularly updated on the basis of:

- Management reviews,
- Incident investigations,
- Regulatory changes,
- Changes to the Emergency Response Team
- Changes to Emergency Response procedures, and
- Other project related changes.

2.0 LOCATION OF STORAGE FACILITIES

Fuel will be brought in by rail with the main fuel storage location at the fuel farm, and secondary storage at the plant (Figure 2-1). Fuel will be transported by pipeline from the fuel farm to the site, the plant, the garage, and to the light vehicle fueling station. Fuel will also be transported by truck along the Goodwood Road and around site to fuel mobile equipment.

In addition to fuel, other supplies, including oil, will arrive by rail and will be stored in select locations (to be determined - TBD).

Laboratory supplies and chemicals such as chlorine will be present onsite in small quantities and are not covered under the ERP. Laboratory chemicals will be properly stored and labeled as per Workplace Hazardous Material Information System (WHMIS) regulations, and will be handled by trained employees.

Untreated sewage will be transported by pipeline to one of two planned treatment facilities, either at the plant or the camp. Liquid waste from the plant will be transported to the camp via an approximately 3 km long pipeline, while solids will be transported by truck as needed.

Coagulants (i.e., flocculants) for ore processing will be present and used in the plant section of the Project. Composition and quantities are to be determined.

Glycol will be present on site in quantities and locations to be determined.

Ammonium nitrate and explosive materials will be stored offsite at a storage facility operated by an independent contractor (see Figure 2-1). As only small amounts of prepared explosives will be present onsite at any point in time, explosives and emulsions are not covered in depth in this ERP and will be the responsibility of the contractor.

2.1 Hazardous Waste

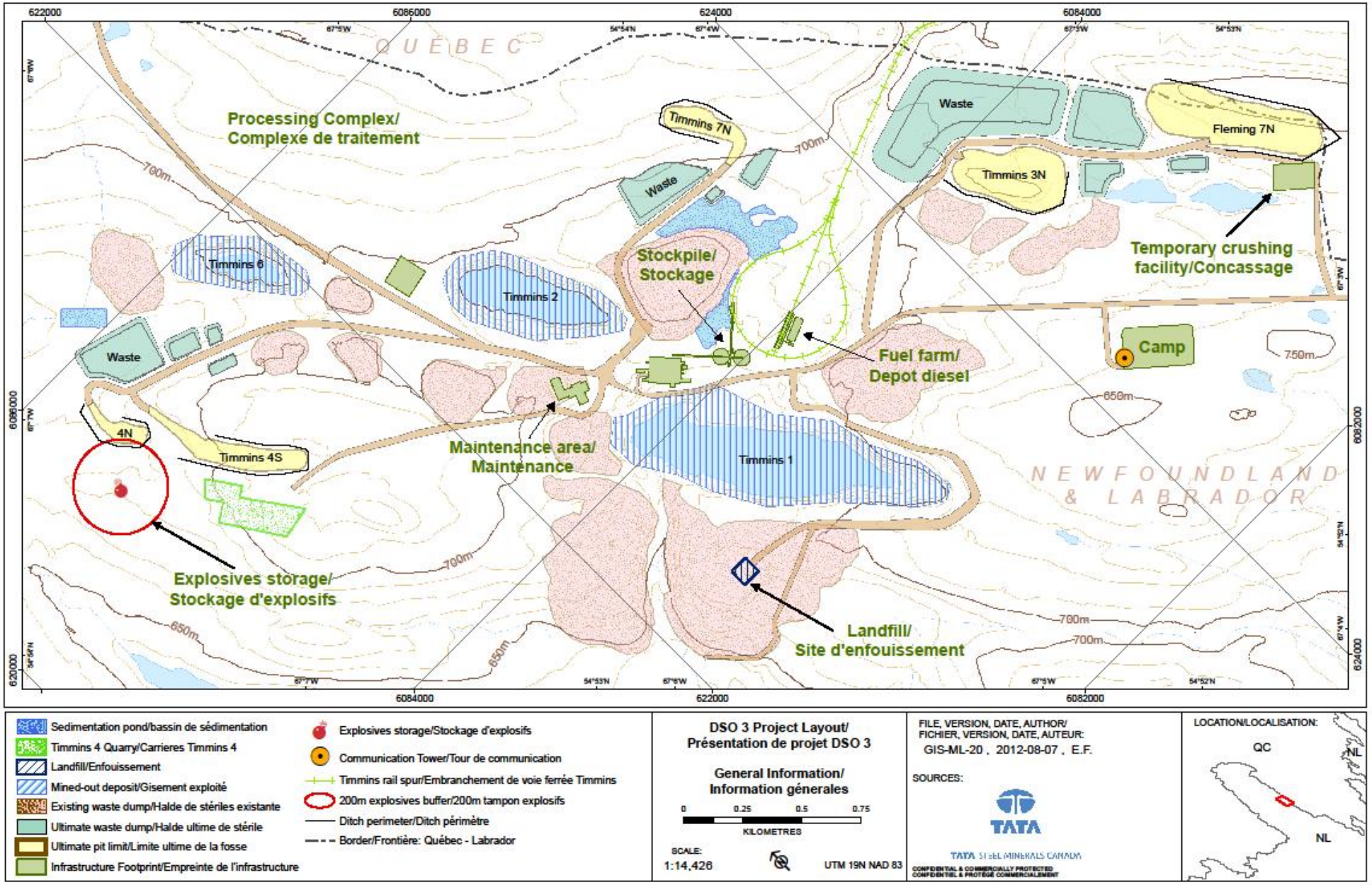
Hazardous waste storage may include any used product that must be removed by qualified contractor, including oil. As heavy equipment operations are through an independent contractor, used oil storage and removal will be, for the most part, the responsibility of said contractor. Only small amounts of used oil from two generator sets will temporarily be stored in the 'used oil room' (location to be determined) until it can be removed from site via a qualified contractor (Naskapi Waste Management).

Soils contaminated with hazardous waste are covered under 'Regulations respecting contaminated soil storage and contaminated soil transfer stations in Québec (chapter Q-2, r.46) and under the Environmental Protection Act (Section 26(2) and 29(a and b)) in Newfoundland and Labrador. Any contaminated soils shall be excavated and removed from site by a licensed waste disposal contractor or sent for remediation on site. Temporary storage locations and regulations vary with varying concentrations of hazardous material in the soil, however, it is best practice that soils be placed in a leakproof container on an impermeable surface, and protected from bad weather. At minimum, contaminated soils will be placed in an lined and bermed containment area where contaminated water (i.e., rain runoff) can be removed periodically and sent for treatment. Volumes should not exceed 50 m^3 per site or be stored in excess of 180 days.

Soils contaminated with small amounts of oil, diesel, grease, or other hydrocarbons will be stored onsite in approved containers until removal via qualified contractor. Soils contaminated by excess volumes of hydrocarbons that prohibit soil removal will require recovery of free product and will undergo onsite remediation. Only small amounts of contaminated soil are expected to be stored on site at any given time.

2.2 Fuel Shipping

Fuel shipments to site will occur on a regular basis during both summer and winter. Shipment will be by rail with a train hauling 12 fuel wagons per week during the summer months, and 12 fuel wagons every two days during the winter months (approximately). Fuel wagons will be double walled and will only be parked for short periods of time (exact time TBD) while awaiting transfer to the fuel tanks, and thus berming will not be required around the full rail yard. To contain any potential spills during fuel transfer berming will be present under and around the rail section where fuel contents will be transferred to the fuel tank. Furthermore, spill kits will be available in the immediate vicinity of the fuel transfer station. While waiting for the rail line to be completed, a fuel truck will be delivering fuel to the site from Shefferville with approximately (X number) of shipments per week.


622000
6086000
624000
6084000
QUÉBEC
NEWFOUNDLAND & LABRADOR
Processing Complex/
Complexe de traitement
Timmins 7N
Waste
Fleming 7N
Timmins 3N
Temporary crushing facility/Concassage
Stockpile/
Stockage
Timmins 6
Timmins 2
Waste
Fuel farm/
Depot diesel
Camp
4N
Timmins 4S
Maintenance area/
Maintenance
Timmins 1
Explosives storage/
Stockage d'explosifs
Landfill/
Site d'enfouissement
700m
650m
750m
6096000
6082000
620000
624000
6084000
622000
6082000
Sedimentation pond/bassin de sédimentation
Timmins 4 Quarry/Carrieres Timmins 4
Landfill/Enfouissement
Mined-out deposit/Gisement exploité
Existing waste dump/Halde de stériles existante
Ultimate waste dump/Halde ultime de stérile
Ultimate pit limit/Limite ultime de la fosse
Infrastructure Footprint/Empreinte de l'infrastructure
Explosives storage/Stockage d'explosifs
Communication Tower/Tour de communication
Timmins rail spur/Embranchement de voie ferrée Timmins
200m explosives buffer/200m tampon explosifs
Ditch perimeter/Ditch périmètre
Border/Frontière: Québec - Labrador
DSO 3 Project Layout/
Présentation de projet DSO 3
General Information/
Information générales
0 0.25 0.5 0.75
KILOMETRES
SCALE:
1:14,426
UTM 19N NAD 83
FILE, VERSION, DATE, AUTHOR/
FICHIER, VERSION, DATE, AUTEUR:
GIS-ML-20 , 2012-08-07 , E.F.
SOURCES:
TATA
TATA STEEL MINERALS CANADA
CONFIDENTIAL & COMMERCIALLY PROTECTED
CONFIDENTIEL & PROTÉGÉ COMMERCIALEMENT
LOCATION/LOCALISATION:
QC
NL
NL

3.0 GENERAL RESPONSE TO EMERGENCIES

3.1 Equipment and Personal Protection

Emergency response equipment will be strategically placed primarily in areas of fuel handling to facilitate immediate first response in the event of a hydrocarbon or hazardous material release to land or water. Equipment will include spill kits and fire extinguishers. The equipment will be sized appropriately and able to accommodate an effective spill response affecting the largest container present. Absorbent materials of sufficient quality and quantity, as appropriate for their locations and potential use, shall be placed in areas of fuel storage. Appendix B provides a list of the different spill kits and the minimum recommended contents that are to be available onsite. Over the course of operations, when materials in spill kits have been utilized, they will be replaced immediately. In addition to spill response material, a variety of mobile heavy equipment including excavators, front-end loaders, bull-dozers, and haul-trucks are available to aid in spill response and recovery efforts. In case of emergencies involving bodily harm, first aid kits will be placed in strategic locations, including fuel storage areas.

The appropriate supervisor will approve a list of the necessary spill response equipment, clean-up material, and devices that are required for each work location before commencement of work (i.e., fuel farm, mobile fueling stations). Material Safety Data Sheets (MSDS) are required to assess potential hazards associated with spills of petroleum or chemically based materials. MSDS will be kept at the Safety office and the environmental team will ensure that the list is accurate and up to date at all times.

3.2 Communication

Effective communication systems are critical to the success of emergency response. The following provides an overview of communication procedures to be followed in an emergency event. Main communication systems will be used internally to alert workers to danger, convey safety information, and maintain site control. The main system will

consist of alarms or short signals that are easily conveyed and understood by audible signals. Radios will be used when work teams are working away from the main communication systems.

During an emergency, a dispatch station (Security) will be contacted immediately. The dispatch station will be manned 24 hours a day by onsite personnel and will be equipped to handle all radio and telephone communication in case of an emergency. In the event of an emergency, there will be prompt notification of appropriate individuals including the Construction/Operation Manager, the environment and permitting department, the site safety lead, environmental lead, the emergency response team, medical staff, and the on-site company manager.

An appropriate pre-designated company manager or employee will be charged with external communication during emergencies[1]. Meetings will be held to inform the local community and the public about onsite accidents, spills, or emergencies, if necessary. Tata corporate will coordinate dissemination of information to the media whenever necessary.

3.3 General Evacuation Procedures

All employees will be instructed about emergency procedures during site orientation. Muster location maps showing evacuation routes will be posted at conspicuous places throughout the site including working areas, facilities, and notice boards. A muster list will be prepared and posted with the muster map. The list will provide information about emergency signals, instructions for operating emergency alarm systems, and the responsibilities of personnel. The list we be updated periodically to address current emergency response needs.

[1] Tata corporate will handle external communication whenever possible.

4.0 RESPONSE ACTIONS TO EMERGENCIES

4.1 Initial Responses

Project personnel working at a site or at a facility may be the first to encounter an emergency and will be expected to initiate a response action. In such an emergency, a general response will be followed before any other activities. The general procedures include the following:

- Avoid danger to yourself, others, or the environment,
- Prevent further environmental effects, loss of material, or damage to equipment if this can be done safely,
- Report to the appropriate supervisor the type and location of the emergency as well as hazards present and other health and safety concerns,
- Communicate with individuals in the vicinity of the emergency to preliminarily assess their condition,
- Assess the size and severity of the emergency (i.e., minor or major)
- Ensure the safety of personnel and evacuate to a temporary safe location, if necessary.

4.2 Response Action

Response actions are considered briefly for environment related situations. A minor incident does not interrupt site operations, is not life-threatening, and does not result in any substantial environmental damage. In the event of a minor incident, onsite resources will be required to remedy the situation. Evacuation or offsite resources will not be necessary, and the environment and permitting department can coordinate response.

A major or serious emergency may be an emergency that requires an interruption to the site operations. The incident may be life threatening and could involve substantial environmental or property damage. A serious emergency may require offsite resources for effective response. In the event of a serious emergency, further severity will be assessed by the Operation/Construction manager. In consultation with the environment

and permitting department, a decision will be made whether on or both onsite and offsite resources will be needed to remedy the situation.

In the event that multiple incidents occur simultaneously at the same location, their cumulative effects will be exponentially greater than the effect of any singular incident or emergency. TSMC will be prepared to handle a number of minor incidents, or a combination of major and minor incidents with effective response plans and training in place. All sites will be equipped with adequate spill response plans and training in place. In the event of multiple major incidents at the same location, severity will be assessed by the environment and permitting department and if necessary offsite resources will be called in for an effective response.

5.0 OPERATIONAL INCIDENTS

5.1.1 Fires

Firefighting equipment, including extinguishers, pumps, and hoses will be stationed at various work areas including shops, the fuel farm and dispensing areas, fuel trucks, kitchens, generators, and anywhere fuel or flammable material is regularly handled. Personnel will be evacuated from site if a fire cannot be immediately controlled or impacts necessities of life or personnel safety. Trained onsite personnel will respond to fires using onsite equipment. Regulatory authorities will be notified as needed. All on-site personnel will be trained in the use of fire extinguishers, and all Emergency Response Team personnel will be trained in the use of all firefighting equipment.

5.1.2 Shipping Accidents

Accidents involving light vehicles, fuel trucks, or any other vehicle (i.e., train) transporting fuel or other hazardous material covered under Schedule 1 will be reported to a supervisor and/or dispatch as soon as possible to initiate the Emergency Response Action. Priority response, if warranted will be given to necessities of life, and, if a fuel spill has occurred, the spill plan will be initiated.

5.1.3 Fuel and Other Chemical Spills

A spill response plan is developed specifically to address fuel and other hazardous materials spills (Section 7).

5.1.4 Explosives

Very small amounts of 'prepared' explosives will be onsite at any given time. Explosive materials and their individual components (i.e., ammonium nitrate) will be housed offsite through an independent contracting company. In the event of any explosives related issues, an immediate evacuation of the surrounding area would occur and the Emergency Coordinator would deploy the Emergency Response Team.

5.2 Multiple Emergencies

Multiple emergencies can occur either by coincidence or by one incident leading to or causing another. In the case of multiple emergencies, the guiding principles outlined in Section 1.3 will provide direction for appropriate response action. The emergency team will anticipate potential multiple incidents that could occur due to the occurrence of an emergency and be prepared to take actions as may be required. Sufficient resources will be available to address the potential for multiple emergencies. The Emergency Coordinator, assisted by the environment and permitting department, will coordinate response actions and will determine the order in which incidents will be addressed (i.e., potential injuries to employees or public, fuel spills in waterways, fuel spills on land).

6.0 ROLES AND RESPONSIBILITIES

As part of the ERP, TSMC is responsible for implementing, through its project management team, the following procedures with regards to emergencies:

- Train site personnel in emergency and spill response procedures and the proper use of response equipment and materials,
- In the event of an emergency or spill, mobilize required site personnel, equipment and tools,
- Implement the required health and safety procedures at the site of the emergency or spill,

- Eliminate the fire hazards and potential ignition sources near the emergency or spill area,
- Control the source of the spill (i.e., reduce or stop product discharge),
- Contain the spilled product using the most appropriate methods and equipment (i.e., dykes, ditches, sorbent materials, containment booms, and other barriers),
- Evaluate the possibilities of recovering spilled materials,
- Obtain, if required, assistance from government agencies such as the Provincial Governments, Environment Canada, or Fisheries and Oceans Canada,
- Obtain, if required, additional assistance by hiring local help from the nearby community or firms specialized in spill response operations,
- Comply with applicable guidelines and regulations,
- Conduct a preliminary assessment of environmental impacts to freshwater and terrestrial ecosystems and natural resources,
- Report the spill[2] to the Government of Newfoundland and Labrador (through the Fisheries and Oceans Canada hotline) and/or Québec (applicable province to the spill), to Environment Canada, the Kativic Regional Government (if applicable), and to the water license inspector within 24 hours of the event, and submit a written spill report using the appropriate form (see Section 9 on Reporting Requirements. Note: spill reporting will be issued or approved by Tata corporate office; all communications with government and First Nations shall be approved by TSMC),
- Investigate every occurrence, regardless of damage or injury, to determine root cause and implement control measures to prevent reoccurrence.

6.1 Response Management Structure

All spill procedures and response functions are to be implemented through the Emergency Response Management Team. Table 6.1 presents the management team responsible for overseeing emergency spill response operations and their contact information.

[2] Reporting spills on land are required for any amount in Québec and over 70 L in Newfoundland. Spills of any amount entering water require reporting in both jurisdictions.

Once a spill event is reported, a specific strategy for containment and clean-up will be the responsibility of the environmental team leader or environmental site representative in cooperation with Safety and security; priority is given to the Safety and security. Other site personnel such as the Fire Chief, Manager of Environment and Permitting, Environmental Coordinator, Environmental Technicians, Safety Officials, and Construction/Operation Manager may act as technical advisers before and during the intervention. The trained Spill Response Team will conduct all emergency spill response operations under the leadership of the Environmental Lead. During the cleanup phase of the intervention other site personnel (e.g., heavy equipment operators, labourers) could be involved in the intervention.

The Management Organizational Chart is provided as Figure 6-1, and the Spill Response Team organization chart is provided as Figure 6-2.

Table 6.1 Emergency Response Management Team

Name	Contact Information	Role

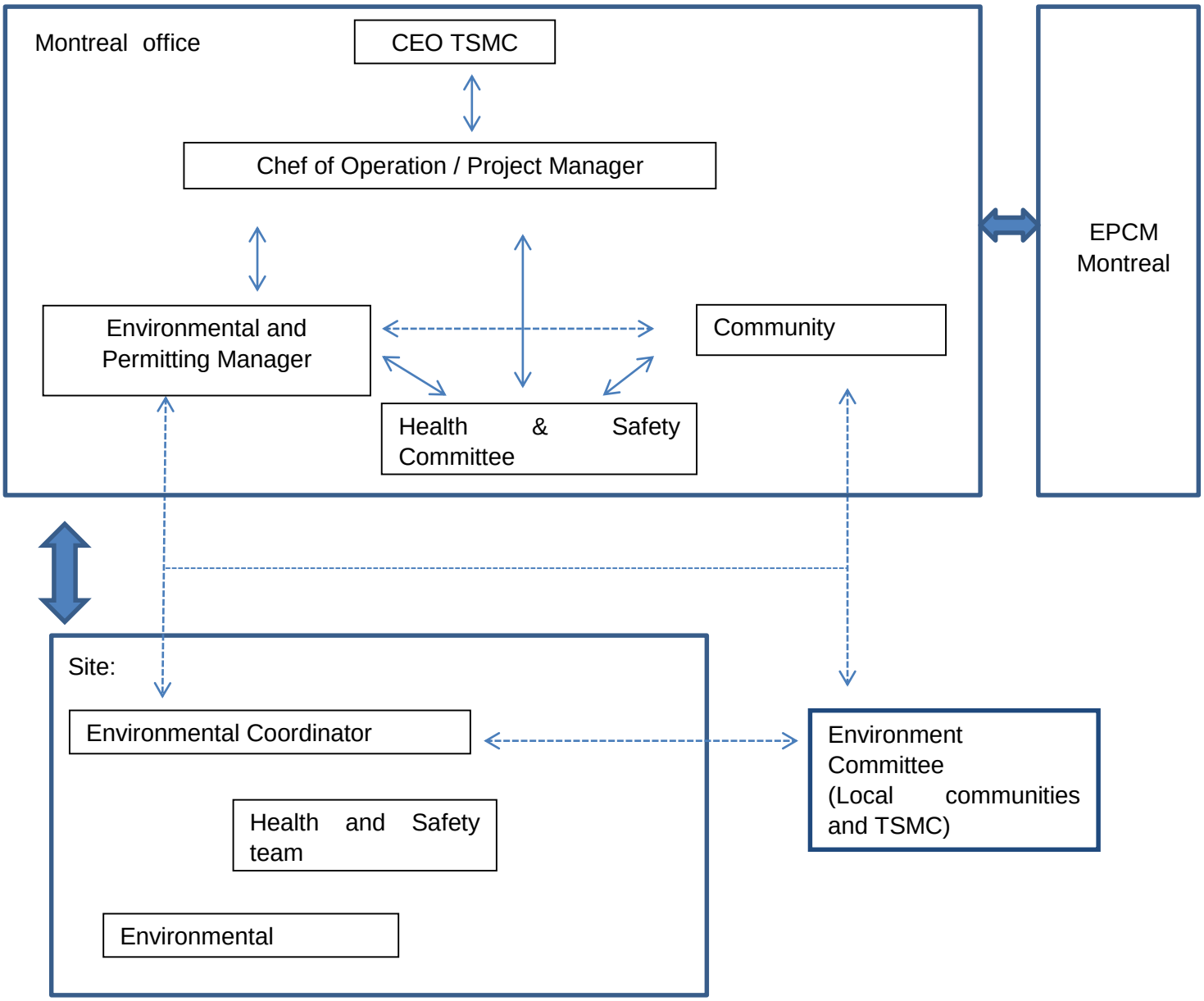


Figure 6.1 Management Organization Chart (reproduced from EPP)

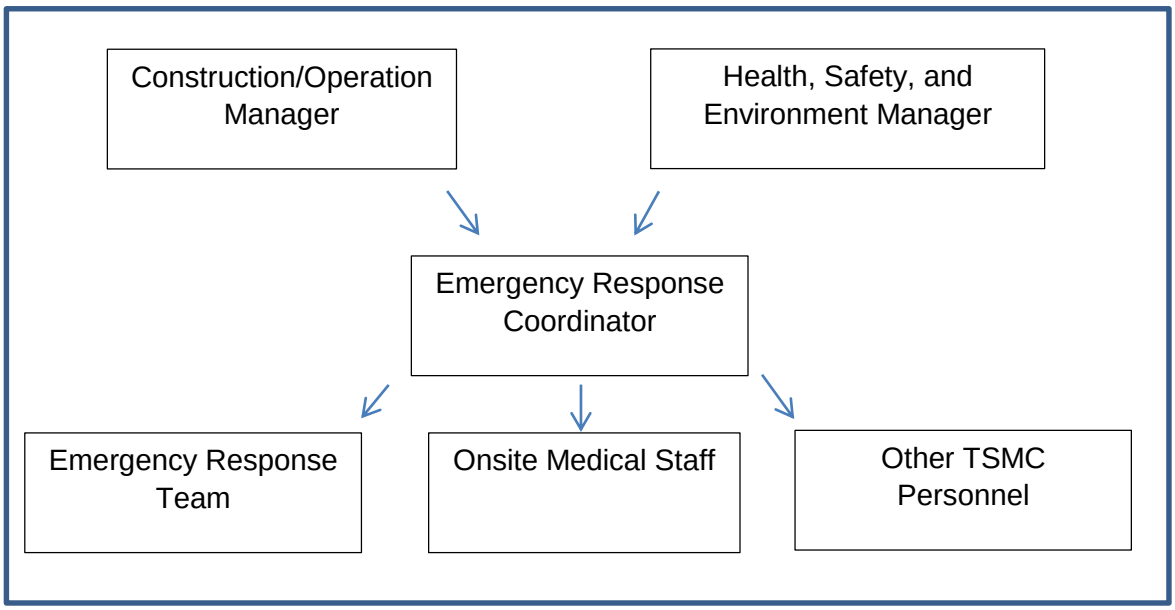


Figure 6-2 Environmental Response Organization Chart

6.1.1 Emergency Response Coordinator

As part of the emergency response plan, the Coordinator, acting as incident commander, is responsible for implementing the following procedures:

- Assume authority over the scene and personnel involved,
- Activate the Emergency Response Plan,
- Evaluate the initial situation and assess the magnitude of the emergency (i.e.,spill),
- Develop an overall plan of action,
- Collect photographic records of the event and cleanup efforts,
- Prepare a root cause analysis and an incident investigation for major emergencies,
- Report to the Construction Manager and provide recommendations on resource requirements (additional manpower, equipment, material) to complete the cleanup effort. The responsibility of the coordinator is to mobilize personnel and equipment to implement the cleanup.

6.1.2 Manager of Environment

The responsibilities of the environment and permitting department include the following:

- If a spill has occurred, report it to the appropriate Tata representative at the corporate level for prompt reporting to provincial and federal regulators, the nearby communities, and the Kativik Regional Government (if spill is in Québec).
- Provide liaison with management to keep them informed of cleanup activities,
- Collect photographic records of the spill event and cleanup efforts,
- Obtain additional required resources not available onsite for spill response and cleanup,
- Act as the spokesperson with government agencies as appropriate,
- Document the cause of the spill and effectiveness of the cleanup effort, and recommend the appropriate measures to prevent a recurrence of the spill,
- Prepare and submit follow-up documentation required by appropriate regulators,
- Ensure that the spill is cleaned up and follow-up communication and reports with the appropriate regulators (NL, QC, Federal, Kativik).

6.1.3 Corporate Contact

The responsibilities of the Corporate Contact include the following:

- Work with the environment and permitting department on regulatory follow-up as necessary,
- Act as the spokesperson with government agencies as well as the public and media on any significant spill events,
- Assist with acquiring of off-site resources as necessary.

6.1.4 Other Site Personnel – Responders

All responders are to be trained under the Emergency Response Plan outlined in Section 6.3. The specific tasks of responders are outlined in accordance with the spill scenarios outlined in Section 8, as applicable.

6.1.5 Onsite Medical/Rescue Team

Depending on the scale of the spill/scenario, fire response and the on-site medical team may be necessary and will be initiated if required.

6.1.6 Shipping Companies

When shipping hazardous materials to and from the site, transport companies are required to carry out their operations in accordance with federal and international Transport of Dangerous Goods Regulations.

6.2 Regional Environmental Emergencies Team (REET)

Environment Canada's Regional Environmental Emergencies Team (REET) is a multi-agency, multi-disciplinary group specializing in environmental emergencies. REET is designed to provide consolidated and coordinated environmental advice, information and assistance in the event of an environmental emergency. REET members represent several federal, provincial, and municipal government departments, aboriginal communities, private sector agencies, and local individuals.

During emergency response situations a REET operates as a flexible and expandable multidisciplinary and multi-agency team brought together to obtain and provide comprehensive and coordinated environmental advice, information and assistance to the Emergency Coordinator.

6.3 Training

The environment and permitting department will be responsible for coordinating emergency response training onsite. The Emergency Response Team will participate in training and emergency response exercises to ensure that all members are trained in equipment use and emergency response methods. The Emergency Response Team members will be trained in emergency identification and currently accepted response action techniques. Training will be related to specific emergency response roles, and will include:

- Emergency chain-of-command,

- Communication methods and signals,
- Emergency equipment and use,
- Emergency evacuation,
- Offsite support and use,
- Firefighting,
- Spill response; and
- Spill recovery operations.

Emergency personnel will receive training in first aid and cardiopulmonary response (CPR) and will practice hands-on rescue techniques. Employees will undergo formal safety and emergency response training. The training will identify site-specific hazards and hazards associated with the project in general. The training will also review standard operating procedures, use of personal protective equipment, signaling an emergency, evacuation routes and muster locations, reporting and notification protocol, and other general safety procedures.

As part of the site orientation and ongoing awareness training, all site personnel are informed that any spill of fuel or other hazardous liquids or solids, whatever the extent, has to be reported to their immediate supervisor.

An appropriate number of site personnel will be selected and appropriately trained to form the Emergency Response Team. Crew members will be trained in emergency spill response procedures and operations. Training includes knowledge in the following:

- Properties of hazardous materials used onsite (including proper storage, transportation, handling, and disposal e.g., WHIMS, HAZWOPER),
- Common causes of spills,
- Environmental effects of spills,
- Fire prevention,
- Firefighting,
- Worker health and safety during emergency intervention,
- Personal protective equipment and clothing,
- Spill response procedures and techniques on land, water, snow, and ice, and during all four seasons; and

- Spill response equipment and materials.

6.4 Hands-on Training and Deployment

Hands-on training will include:

- Review of inventory of spill equipment,
- Hands-on instruction – boom connections, tow bridles, rope handling, basic knots, and attachment and deployment accessories,
- Simulated deployment of booms and related gear on and off water using appropriate vessels or vehicles; and
- Debriefing and lessons learned.

6.5 Exercises

Following the regular delivery of training (see previous section), a comprehensive spill exercise will be undertaken in order to reach and maintain an appropriate level of competency. The exercise is structured to test the readiness of both management and responders, and to practice and validate the logistics of the deployment of spill gear. The exercise content will be different from year to year so that it can best validate the various elements of the ERP and the appropriateness of the response. Factors that will be evaluated include:

- Activation of the ERP,
- Effectiveness of management response,
- Site safety,
- Communications,
- Equipment deployment for specific scenarios; and,
- Reporting and coordinating with external agencies.

6.6 Communication

The types of communications for which members of the team will participate include the following:

- Spill reporting protocols,

- Formal written correspondence with stakeholders,
- Design, construction, and planning meetings,
- Field inspection and monitoring reports disseminated by the environment and permitting department,
- Electronic communication,
- Toolbox meetings,
- Formal written correspondence and meetings with government regulatory bodies; and,
- Formal environmental awareness training.

Communication will be appropriately recorded and filed for future reference. Where appropriate, the copies of communications will be forwarded to the Construction Manager(s).

6.7 External Communication

Effective forms of communication include the proactive notification to external stakeholders of project activity. Project activity updates will be provided to the communities of the region through various means including regular meetings, public notices, and radio announcements as appropriate. All media communications are to be from a single designated source (Tata corporate office); all other personnel will be trained to refer media inquiries to that source to avoid making any other statements.

7.0 SPILL RESPONSE PROCEDURES

A spill is defined as the discharge of a hazardous product out of its containment and into the environment. Potential hazards to humans, vegetation, water resources, fish and wildlife vary in severity, depending on several factors including nature of the material, quantity spilled, location, and season (see Section 7.7 – Wildlife protection procedures). Diesel is the main product that may be spilled and therefore spill response procedures focus on this hazardous material. Other chemicals that may be spilled include sewage water, coagulant, glycol, small quantities of lubricants and oils, and releases of gaseous material. Note that spill response procedures will be different depending on the magnitude and nature of the release. A diesel spill of five liters can easily be contained

and cleaned by one person, while a spill of a larger magnitude will be much more hazardous and require more personnel.

All site personnel are trained on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill will take the following steps:

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,
4. Remove any source of ignition in the immediate vicinity.
5. Notify dispatch and/or the environment and permitting department, who will initiate the spill response operations.

All spill response interventions carried out by the spill response team follow these general procedures:

Safety – Reduce or prevent the danger to persons in the area. If the spill cannot be approached due to fire (or potential for fire), magnitude of spill, or substance (i.e., corrosive or other highly dangerous material), the area should be immediately evacuated until it is safe to approach the spill (i.e., proper PPE or spill response equipment).

Source Control – If it is safe to do so, reduce or stop the flow of product without endangering anyone. This could involve very simple actions such as turning off a pump, closing a valve, or sealing a puncture hole with almost anything handy (e.g., a rag, piece of wood, tape), raising a leaky or discharging hose to a level higher than the product level inside the tank, or transferring fuel from a leaking container or 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 or in ice).

Protection – Evaluate the potential dangers of the spill to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive receptors. This can also be achieved by using various types of barriers. Wildlife protection procedures may be necessary.

Clean up the Spill – Recover and containerize as much free product as possible. Recover and containerize/treat contaminated soil, water, and snow. Pressure-wash contaminated bedrock surfaces, shorelines, and ice, and recover as much of the oily water as possible for containerization and/or treatment. It is imperative to minimize the disturbance to the area as much as possible.

Report the Spill – Collect basic 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. Reporting requirements are presented in Section 9. **Spill reporting is coordinated by Tata Corporate.**

7.1 Prevention

Taking necessary steps to prevent the occurrence of a discharge into the environment is prudent both economically and environmentally as spills increase operating costs and lower productivity. Preventative measures can include putting containment measures into place (covered in the following section, i.e., berms and dykes), or focused methods of preventing a spill. These include:

- Ensuring valves are protected from being bumped and are properly closed,
- Hoses and tanks are regularly inspected for signs of cracking,
- Barriers are in place to protect fuel tanks and lines such as described in *Storage and Handling of Gasoline and Associated Product Regulations CNLR 58/03*,
- Vehicular access to fueling areas is for authorized personnel and only for necessary activities (i.e., maintenance or fueling),
- Training of personnel conducting fuel transfers; and,
- Attendance for duration of all fuel transfers.

7.2 Spills on Land

Response to spills on land will include the general procedures previously detailed. If a large spill is suspected (>5 L) or there is a spill into water, immediately contact dispatch or the environment and permitting department by radio or telephone to initiate the Emergency Response Plan. For smaller spills that are contained and do not pose a threat to enter a water body, contact your supervisor and the environment and permitting department to report the spill and for instructions on cleanup. Note that depending on the magnitude of the spill, the steps outlined below may vary in order (e.g., if you knock over a 25 L fuel canister and there is no immediate danger, pick up the canister to stop the flow of fuel and place spill pads on the surface prior to contacting security). The following procedures outline response to a diesel fuel discharge; however they can be applied to any low density (i.e., floating) liquid spill. Miscible liquids (mixes readily with water) will be covered separately in Section 7.3.2. A condensed, step by step version of these procedures can be found in Appendix C.

7.2.1 Safety

Safety is of utmost importance. Immediately warn other personnel working in the area. Before approaching a spill, the immediate vicinity should be evaluated for any hazards or potential sources of fire. Sources of fire should be extinguished and/or removed from the area. When approaching a large spill, always approach from upslope or perpendicular to the slope in order to avoid contact with any free flowing material. Where possible, approach the spill from upwind to avoid any gases or the potential of a runaway fire if one were to occur. Do not approach the spill if it is not safe to do so or if proper PPE is not on hand. If possible, ensure that a fire extinguisher is nearby at all times. In case of fire, avoid being surrounded by fuel on all sides (i.e., always have an exit route).

7.2.2 Stop Free Flow of Product

When it is deemed safe to approach the spill, the first steps should involve reducing or stopping the flow of product whenever possible. As noted above, this could involve very simple actions such as turning off a pump, closing a valve, or sealing a puncture hole with almost anything handy (e.g., a rag, piece of wood, tape), raising a leaky or

discharging hose to a level higher than the product level inside the tank, or transferring fuel from a leaking container or tank.

7.2.3 Reporting

After attempting to stop or reduce the flow of product, immediately contact security and/or your supervisor by radio or telephone. If possible, do not leave the location of the spill provided it is safe to do so. Have someone else call security if a radio or telephone is not available. Security will initiate the spill response team. Ensure to report your location to the dispatcher (e.g., north side of the crusher, km 10 north on the Goodwood Road.), report the nature of the spilled material (e.g., diesel fuel), the volume of spilled material (approximate), the direction of flow (e.g., towards a river, into a wetland) and whether fuel is still being discharged.

7.2.4 Containment

After source control and reporting, containment of the spill is the next priority. The main containment techniques involve the use of two types of barriers: dykes and trenches. Selecting the type of barrier depends on the ground surface and available materials. For example, a trench would not likely be dug when booms are available. Either type of barrier should slow the progression of the spill and serve as containment to allow recovery of the spilled product. Barriers should be placed downgradient (down-slope) from the source of the spill, and as close as possible to the source of the spill in order to minimize the affected area. If a spill cannot be rapidly or easily contained, it should initially be diverted away from any source of water.

Dykes

Depending on the volume spilled, the site of the spill, and available material at the site, a dyke may be built with soil, booms, lumber, snow, or other suitable items. A plastic liner should be placed at the foot of and over the dykes to protect the underlying soil or other material and to facilitate recovery of the spilled product. A plastic liner will also decrease the permeability of the dyke. Dykes should be constructed in a manner to accumulate a thick layer of free product in a single area (V-shaped or U- shaped with the spill on the open side of the V or U).

Trenches

Trenches are useful in the presence of permeable soil and when the spilled fuel 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 so water is allowed to continue flowing underneath the layer of floating oil (if applicable). Similar to dykes, trenches can be built in a V or U shape to accumulate the spilled material. Also related to trenches, a simple excavation can be made in an area of slightly lower elevation where spilled material will pool. Recovery of spilled material is covered under Section 7.2.5.

7.2.5 Recovery

Once the product has been contained, the next step is to recover and containerize the product. The use of large quantities of absorbent materials to recover higher volumes of spilled fluids should be avoided if possible. If ponding has occurred, large volumes of free-product should be recovered and containerized by using vacuums and pumps appropriate to the spilled material. Mixtures of water and fuel may be processed through an oil-water separator during or following recovery. Absorbent sheets should be used to soak up residual fuel on water, on the ground (soil and rock), and on vegetation. Dry absorbent material such as treated peat moss may also be sprinkled on vegetation to absorb films of petroleum products.

Smaller spills that have largely been absorbed into the top layer of soil can be excavated by hand using a spark resistant shovel or by using heavy equipment. Contaminated soil should be placed in a weatherproof container and disposed of properly (see Section 2.1 – Hazardous Waste).

7.2.6 Remediation

Subsequent to the initial response and recovery, Tata will remediate the affected area and confirmatory sampling will be conducted to ensure a thorough clean up. Excavated areas will be backfilled with uncontaminated soil following clean up.

7.3 Spills into Water

Response to spills near or into water include the general procedures previously detailed in Section 7.2, including safety, stopping the free flow of product, and reporting. The containment procedures listed in Section 7.2.4 can serve to keep spilled material away from any water bodies and as a source control. Various containment, diversion, and recovery techniques for spills into water are discussed in the following sections. The following elements must be considered when conducting response operations:

- Type of waterbody or water course (lake, stream, river, wetland);
- Water depth and surface area;
- Wind speed and direction;
- Type of shoreline; and
- Seasonal considerations (open-water, freeze-up, break-up, frozen).

7.3.1 Containment and Recovery

Large waterbody

Containment of a diesel fuel slick in a large waterbody requires the deployment of mobile floating booms to intercept, control, contain, and concentrate (i.e., increase thickness) the floating oil/fuel. One end of the boom is anchored to shore while the other is towed by a boat and used to circle the diesel fuel 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) would be mobilized to site if required.

Small waterbody

If diesel fuel is spilled in 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 shorelines (spills resulting from traffic incidents). The diesel fuel slick can be 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 subsequently be recovered using a portable skimmer, a vacuum, and/or sorbent materials.

Small stream

In small slowly-flowing rivers, streams, channels, inlets, or ditches, inverted weirs (i.e., siphon dams) can be used to stop and concentrate moving diesel fuel for collection while allowing water to continue to flow unimpeded. In order to prevent fuel flowing over a barrier or check dam in an emergency situation (i.e., in a remote area), a rudimentary siphon dam can be made by simply inserting a pipe through the dam at its base. Care must be taken to ensure that the water level does not decrease enough to allow fuel to flow through the pipe. This can be attained by raising the exit end of the pipe to the height of the desired water level as in Figure 7.2.

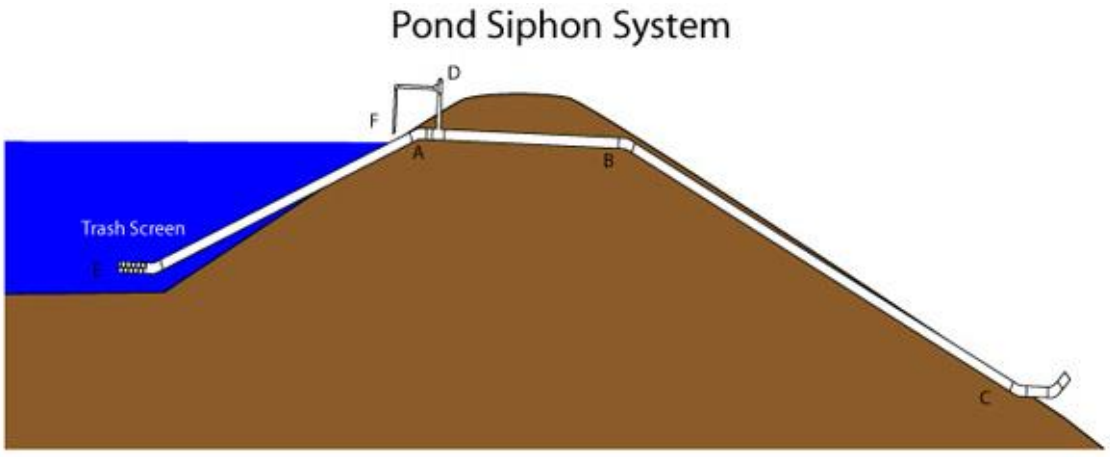


Figure 7-1. Illustration of siphon dam removing water from below a fuel slick.

Figure 7-2. Photo depicting a rudimentary siphon dam.

In the case of floating diesel fuel flowing towards 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 an emergency, a culvert block can be made by placing boards or a piece of plywood just above and below the surface of the water thereby stopping the uppermost level of water, or floating oil, from going through the culvert. In both cases diesel fuel will then be recovered using a portable skimmer or sorbent materials. In very slow flowing streams, fuel can be contained and recovered as noted above in the small waterbody section.

Large stream

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. Once fuel has been diverted it can be recovered using a portable skimmer or sorbent materials.

7.3.2 Miscible Materials

Miscible materials are substances that will readily mix with water (i.e., will not float on the surface like oil). Miscible materials that will be onsite in large quantities include glycol and sewage water. Both glycol and sewage, when mixed with water, will readily disperse and mix with the water and thus contaminate the water body. Ensure proper PPE is used if working near a sewage spill as it is considered a biohazard. When working near a glycol spill, ensure that there is plenty of ventilation and that personnel are not breathing vapors (i.e., work up-wind from a spill and ensure proper use of vapor purifying respirators). Glycol is mildly flammable, therefore ensure sources of ignition are removed.

Sewage, depending on the relative amount in comparison to the size of the water body, may create a very high biological oxygen demand (BOD) potentially removing all oxygen from the system and causing a fish kill. With prompt response, a barrier from the top to the bottom of the water column may contain and concentrate large amounts of spilled substance (mainly solids) for removal via pumps.

Glycol (ethylene glycol) dissipates rapidly in water and is a toxin. A concentration of 41,000 mg/L will kill 50% of trout within 96 hours (LC50). Glycol will generally break down in approximately 10 days. There is very little that can be done for cleanup, however, wildlife should be kept from entering the water body (Section 7.7) and any dead fish should be recovered to prevent the scent from attracting animals.

Spills of miscible materials on land can generally be contained similarly to diesel fuel (Section 7.2), however, caution must be taken that these substances do not contaminate groundwater through seepage. Prompt removal of the top layer of soil and proper disposal would potentially avoid contamination.

7.4 Spills on Snow and Ice

Response to spills on snow or ice include the general procedures previously detailed in Section 7.2, including safety, stopping the free flow of product, and reporting. In general,

snow and ice will slow the movement of hydrocarbons. Snow and frozen ground also prevent hydrocarbons from migrating down into soil or at least slow the migration process and will often prevent seepage of fuel into water. The presence of snow may however hide the diesel 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 much as possible.

Following the snow melt, TSMC personnel will re-assess the spill area in order to confirm no soil penetration of spilt material for spills larger than 50 L.

7.4.1 Containment

When encountering a spill on snow and ice, most of the response procedures for spills on land may be used. 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 recovery of the fuel.

7.4.2 Recovery

Free-product can be recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice can be scraped up manually or by using heavy equipment, depending on volumes of spilled material and the area covered. The contaminated snow and ice is placed in containers or within lined berms on land. Once enough snow has melted, the oily water is removed from the storage and processed through an oily water treatment system. Any under ice fuel can be recovered by auguring through the ice and using a vacuum pump.

7.5 Spills into Wetlands

Wetlands vary greatly in size and composition. They may be composed of mainly peat with very little surface water (i.e., bog) or may be mainly composed of emergent plants with large amounts of flowing or standing surface water (i.e., fen or marsh). Responses to spills in these environments will therefore generally be a combination of the above noted procedures of spills on land and into water (winter procedures would default to

Spills on Snow and Ice). The response would include the general procedures previously detailed in Section 7.2, including safety, stopping the free flow of product, and reporting.

Spills into a relatively dry wetland (i.e., no standing water) would generally be contained using the methods outlined in Section 7.2.4 using berms and dykes. Any free product could be contained using vacuums or pumps while remaining peat could be excavated or skimmed off using heavy equipment.

Spills into wetlands with flowing water would require the use of booms such as those outlined in Section 7.3.1 and a similar recovery. Spills into wetlands that have standing water may or may not require booms depending on the size of the water body and the magnitude of the spill. A large magnitude spill would likely benefit from booms strung out over both the land and water portions of the wetland. A smaller scale spill may be completely contained within the wetland. In either case recovery would entail pumping/skimming the spill from the water body and excavating the land based portion of the spill area.

7.6 Halocarbons and Gaseous Material Releases

As indicated in Section 7.0, a spill is defined as the discharge of a hazardous product out of its containment and into the environment, which includes hazardous gases. The main source of hazardous gas on site relate to heat exchangers or air conditioning in the plant (halocarbons). Many of the halocarbons associated with heat exchange have varying ozone depletion potential and are considered greenhouse gases. Halocarbons also tend to displace air and therefore add an extra safety factor to the response procedures.

As halocarbon gases tend to displace air (oxygen), immediately evacuate persons from the site or building and contact the Emergency Response Team and Schefferville Fire Department. However, if it is safe to do so (i.e., the release is outdoors) and the release can be immediately contained by closing a valve, proceed to do so with caution. Otherwise, someone trained using a Self-Contained Breathing Apparatus (SCBA) will be required to contain the leak. Following isolation of the leak and containment, ensure all hazardous material (gas) has been removed prior to entering the building or approaching

the site. Ensure proper ventilation, especially in lower lying areas, basements, pits, or trenches. If any liquid is present, ensure it is wiped up with spill pads by someone wearing the appropriate PPE (SCBA, Hazmat suit, rubber gloves). Following cleanup of any liquids, ensure that the area is well ventilated including upper and lower levels if present.

If a fire occurs near a halocarbon storage area or air conditioning unit, extreme caution must be taken as corrosive by-products may be produced including hydrochloric acid or halogenated furans and dioxins.

7.7 Wildlife Protection Procedures

At any point during the spill response, wildlife may be affected by the spill. In response to a spill event, techniques used to prevent wildlife from becoming oiled or contaminated, by preventing animals from entering the contaminated area, will consist of hazing and other deterrents. This can be accomplished using a combination of both audible and visual devices, including but not limited to:

- Pyrotechnics (i.e., shell crackers, screamers, etc.)
- Visual scare tactics (i.e., helicopters, vehicles)
- Broadcast sounds (i.e., audible bird scarer)
- Exclusion (i.e., netting applied in smaller contaminated areas such as settling or evaporation ponds)

These techniques need to be set in place immediately after a spill occurrence so as to minimize impact to wildlife.

The size of the spill and location in relation to sensitive wildlife areas must be assessed at the time of the event to facilitate determination of appropriate deterrence levels. Only workers trained in the safe and proper use of certain hazing equipment will be permitted to haze wildlife. Personal Protective Equipment will be worn by all personnel using equipment, as per manufactures instructions, and at the minimum will include the use of eye and ear protection. Other workers in the vicinity of such devices should also use ear

protection or remain a safe distance away. Hazing through the use of pyrotechnics should not be used too close to dry vegetation or flammable spill materials due to fire hazard.

Hazing should be equal and continuous in all contaminated areas to prevent wildlife from being hazed into an area where they may be in danger. It is also important to ensure that hazing efforts do not cause already contaminated animals to scatter, and that techniques are applied as soon as possible to prevent wildlife from contacting spills.

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 shall be inspected for contaminated wildlife to be collected. Emergency Response Teams 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 alive oiled wildlife be dealt with humanely, capture and handling of wildlife shall only be done by trained and permitted 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 labeled with the date and time the animal was found, name of finder, location, and name of species, if known. Wildlife treatment facilities will then be contacted for advice on treatment (see Table 7.1). All contaminated wildlife will be held in a warm quiet place until treatment. The CWS will be consulted to determine the most humane treatment strategy (rehabilitation or euthanization) to be implemented for live oiled wildlife.

For wildlife mortalities each carcass shall be bagged and labeled individually. The date and time animal was found, name of finder, location, and name of species, if known, shall be documented. Canadian Wildlife Services (CWS) shall be consulted and approval obtained prior to disposing of any dead wildlife. 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 shown in Table 7.1.

Table 7.1 Emergency Contacts in Case of Spills Affecting Wildlife

Name	Location	Phone Number	Purpose
Canadian Wildlife Services (CWS)	St. John's, NL Gatineau, QC	1-709-772-2083 1-819-997-2800	• Knowing and providing information on the 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 unoiled birds from becoming oiled • Ensuring the humane treatment of captured migratory birds and species at risk by determining the appropriate response and treatment strategies which may include euthanization or cleaning and rehabilitation.
Cobequid Wildlife Rehabilitation Centre	Brookfield, NS	1-902-893-0253	Provide veterinary care and rehabilitation for wildlife
Le Nichoir	Hudson, QC	1-450-458-2809	Avian rehabilitation specialists
Union Québécoise de réhabilitation des oiseaux de proies	St. Hyacinth, QC	1-514-345-8521 Ext. 8545	Rehabilitation specialists for birds of prey (Veterinary School)
Wildlife QC		1-866-248-6936	Provincial rehabilitation for wildlife
Canadian Coast Guard		1-800-563-9084	The Coast Guard Emergency Response will direct the caller to the appropriate management team.
International Bird Rescue	International	1-888-447-7143	Wildlife rehabilitation specialists, can manage all aspects of wildlife response

7.8 Emergency Contacts

In case of an emergency requiring off-site assistance, key contacts from Schefferville are listed in Table 7.2. Note that the environment and permitting department or security will generally be notified prior to contacting off-site services and will therefore be contacted by either the environment and permitting department or security.

Table 7.2 Offsite Key Contacts in Case of Emergency

Ambulance	(418) 585-2055
Police	(418) 585-2626 24 hours - (418) 310-4141
Fire	(418) 585-2463
Clinic	Day - (418) 585-2645 Night - (418) 585-2646
Environmental Emergency Service (QC)	1 (866) 694-5454
RCMP (NL province wide)	1 (800) 709-7267

7.9 Disposal of Spilled Material

Steel drums or other appropriate containers as approved they the environment and permitting department are used to contain and transport contaminated soil or materials for treatment. Temporary storage of contaminated materials can be within lined berms for a period of no more than 30 days, and any run-off from the soils must be recovered, analyzed and decontaminated if necessary. Depending on the nature of the spilled contaminant (hydrocarbons), used sorbent material can be burned in an incinerator or shipped to a licensed facility for treatment and disposal. Soils contaminated with diesel fuels can be transported to the onsite land farm for onsite bioremediation.

7.10 Spills Involving Fires

Collisions or traffic accidents resulting in fuel spills can be the source of fires. Although diesel fuel is not extremely flammable, fires are nevertheless a possibility and are included in the emergency response plan.

Small fires that are away from the source of fuel can be extinguished relatively easily using an appropriately sized fire extinguisher, however larger fires or fires that are near the source of the spill (i.e., leaking tank) have a much greater potential danger associated with them. Unless personnel are trained in the use of fire extinguishing equipment and the fire is small and away from the source of fuel, the onsite fire crew should be notified immediately via radio and/or telephone (contact dispatch) and informed of the situation. Personnel should evacuate to a safe distance. Large fires may require the evacuation of all personnel from a large radius surrounding the immediate area.

In the case of a small fire, personnel may attempt to extinguish the fire with a fire extinguisher provided it is safe to do so and the employee is adequately trained and knowledgeable in the types of fire extinguishers for different types of fire. When approaching a fire, always approach from upwind or at a slight angle and away from the fuel source. Pull the pin on the fire extinguisher, aim the nozzle at the base of the flame, squeeze the handle/trigger, and sweep from side to side until the fire is extinguished. Once the fire is extinguished and it is deemed safe to do so, proceed to the spill response procedures outlined in Section 7.2.

8.0 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. Note that spill reporting to regulators (by Tata Corporate) is not mentioned for the purpose of this exercise and is covered separately in Section 9. Similarly, these scenarios do not include situations where fire occurs. Fires are covered under Section 7.10

Various types of materials are susceptible to cause environmental, health and safety concerns should a spill occur while being transported, stored and handled: fuel, untreated sewage, coagulants, glycol, and halocarbons (Freon). These materials are handled/used

daily in sufficiently large quantities to warrant 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 potentially occur.

8.1 Fuel Spills

For locations of the fuel farm and temporary fuel depots at each of the Project sites, see Figure 1-1. For the expected max quantities of fuel stored at each location during construction and operation, see Table 8.1.

Fuel tanks are designed to have bermed spill containment with capacity equal to the volume of the largest tank plus 10% of the volume of the remaining tanks or 110% of the volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted. Bermed areas will be liquid tight to a permeability of no less than 25 L/m^2/day.

The above basis is consistent with the document *Storage and Handling of Gasoline and Associated Products Regulations, 2003,* CNLR 58/03. The lining in the bermed area at the fuel farm is an impervious membrane. The main refueling station is equipped with a lined and bermed area to contain minor spills or leaks during refueling. The liner is protected by sand bedding. Vehicles and mobile equipment drive onto this bedding for refueling. All fuel transfer is done by pumps with auto shut off valves (similar to gas station pump handles).

All fuel storage areas are equipped with spill kits for emergency response and a current Spill Response Plan will be maintained that identifies spill kit locations and response plans. The spill kits will contain 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).

For each method of fuel storage and transfer, specific procedures related to fuel storage and transfer will be developed, and proper containment and emergency response equipment will be provided to meet or exceed regulatory requirements (Section 7.1).

Heavy equipment will generally be refueled via a mobile fueling station (i.e., fuel truck) at various locations throughout the mine site. All fuel trucks will be equipped with auto shut off valves and will be required to carry an appropriately sized spill kit. In addition, fuel trucks will follow the rules set out in the Federal 'Gasoline and Gasoline Dispensing Flow Rate Regulations' if applicable. A spill pan will be used when refueling to prevent a discharge in the event of a splahback or overfilled tank.

Table 8.1 Location and Volume of Fuel

Location	Spill kit location	Container Capacity	Number of Containers
Fuel Farm		1,700,000	X 2
		75,000	X 3
		50,000	X 2
		200,000	X 1
Subtotal for storage area		3,925,000	8
Other Fuel Storage Areas			
Gasoline			

8.1.1 Potential Fuel Spill Scenario 1 – Fuel Farm

The Fuel Farm is located near the sedimentation pond and the sinter fines stockpile in an impermeable secondary containment structure (lined and bermed containment area). The construction will be in compliance with building codes and best practices for tank farm facilities. The low point of the containment area will be fitted with a pumping system for capture/disposal of runoff in the secondary containment area. The same pumping system is used to recover large spills, should they occur. For the capacity of the tank farms at each location, along with the finished capacity of the secondary containment see Table 8.1.

A worst case scenario would involve a complete rupture of the largest capacity tank, bypassing the berm, and flowing into the sedimentation pond. Fuel recovery would require immediate response in order to avoid fuel flowing out of the sedimentation pond into fish bearing waters. This would require 1) containing the spilled fuel in the sedimentation pond, 2) preventing any remaining fuel on land from entering the sedimentation pond, 3) removing any fuel from the water, and 4) removing any fuel and contaminated soil.

With such a large fuel spill, phoning/radioing for immediate assistance would be imperative. With assistance, a few main steps would need to be taken simultaneously starting with stopping the flow of fuel. With a full rupture of the tank, it would be unlikely that the fuel could be stopped from exiting the tank, however, it may be possible to transfer fuel from the ruptured tank into other tanks until the fuel level is below the leak/rupture. Similarly, repair of the berm would ensure that fuel which had already exited the tank would remain in the lined and bermed area. This could be as simple as placing a few booms where the berm has been ruptured, or may require a few loads of gravel and repair using heavy equipment. The third time sensitive step would include containing the fuel that has spilled into the sedimentation pond prior to it flowing into fish bearing waters. This would require immediately blocking the exit culverts and/or having a floating boom available for rapid deployment near the outflow. Blocking the exit culverts would require the cessation of pumping water into the sedimentation pond, and therefore stopping the dewatering process. Fuel could then be recovered as outlined in Section 7.3 – Spills into water. Depending on the amount of fuel that entered the sedimentation pond, containing the spill in the water may be feasible simply by deploying a few floating booms, and therefore not interrupting the dewatering process.

Preventing any remaining fuel from entering the waterbody could be attained by methods outlined in Section 7.2 – Spills on land, and 7.4 – Spills on snow and ice, utilizing such methods as placing small check dams, berms, and dykes to redirect the flow. Fuel recovery and cleanup would be achieved as noted in the above mentioned sections.

Although a complete rupture of the largest fuel tank would be catastrophic, it is also highly unlikely. The most likely source of spills in the fuel farm area would occur during refuelling or refilling of tanks. These operations will be carried out by trained personnel who stop the fuel transfer operations whenever a leak is detected. Any fuel spilling in these instances would be contained in the lined and bermed area.

8.1.2 Potential Fuel Spill Scenario 2 – Train Derailment

There is expected to be a fuel shipment arriving at site by rail on a weekly basis during the summer months and every two days during the winter months. With the relatively high number of fuel wagons arriving by rail, a train derailment spilling 12 fuel wagons is a worst case scenario.

If uninjured, the driver would act as first responder and immediately call for assistance and report the spill (conductor would have a dash mounted radio – reporting can be done as noted in Section 7.2.3 – informing of the location, substance spilled, amount spilled, if the spill is on land or water, presence of fire, and if the spill is contained). The radio dispatcher would initiate the Emergency Response Team. Depending on the distance from site and proximity to roads, personnel and equipment may have to be brought in by air or rail. If by chance the derailment was not near a water body, the conductor and Emergency Response Team could potentially create a dam in the railway ditching using any available materials (i.e., downed trees, gravel, booms, snow) and line the ditch/dam with plastic sheeting to prevent seepage. Vacuums, pumps, and heavy equipment would be brought in by rail for cleanup.

If the spill occurred near a waterbody, fuel would likely flow down the ditching into the water. The first responders could attempt to stop the flow of fuel as noted above and subsequently boom the watercourse or lake as noted in Section 7.3.

8.1.3 Potential Fuel Spill Scenario 3 – Pipeline

Above ground fuel pipelines will transport fuel from the fuel farm tanks to various locations on site. A complete rupture of a major pipeline (e.g., vehicular collision) would present a worst case scenario. Of utmost importance in such a case is to immediately close any valves controlling the fuel up-flow of the rupture. If a valve is nearby, it may be

possible to attempt this personally or may require radioing/phoning dispatch for it to be turned off remotely. It may be necessary to close the valves on either side of the rupture in order to prevent a backflow of fuel. Once the flow has stopped, fuel is likely to continue leaking out of the ruptured section as the fuel in the pipeline continues to drain. Containment and recovery can be attained as noted in Section 7.2. It is imperative that fuel be ditched or dyked away from any sources of water.

8.1.4 Potential Fuel Spill Scenario 4 – Fuel Truck

Fuel for heavy equipment will be transported by fuel truck daily (two fuel trucks running 24 hours/day) along the Goodwood Road. Additionally, fuel will be transported from Shefferville to site by fuel truck while awaiting completion of the rail line. A traffic accident resulting in a rupture of the fuel truck would present a worst case scenario.

If uninjured, the driver would act as first responder and immediately call for assistance and report the spill (driver will likely have a dash mounted radio – reporting can be done as noted in Section 7.2.3). The radio dispatcher should initiate the Emergency Response Team and any heavy equipment near the spill. If a small fire has occurred, the driver may attempt to extinguish the fire with a fire extinguisher and or attempt to stop the flow of fuel. If the fire is large or near the fuel tank, all efforts must be made to evacuate the area.

If no fire is present, the driver will be sufficiently trained in order to initiate the ERP using the spill kit kept in the truck. Large volumes of fuel should be diverted away from any waterbodies by trenching or building small dykes with the tools on hand (i.e., shovel, pick, nearby loader). If the spill kit is so equipped, placing booms on the ground or across small waterways (as noted in Section 7.3) may prevent further contamination until the Emergency Response Team can arrive. Emergency personnel may be required to boom the exit point of the river if containment is not possible at the spill site. If possible, the driver should maintain communication with the dispatcher and Emergency Response Team to update the situation.

8.2 Explosives Transport and Storage

Explosives will be handled through an independent company. Only small amounts of 'ready-made', or prepared explosives will be present on site at any given time. At no time will there be large stockpiles of ammonium nitrate on site, and therefore it is highly unlikely a spill would occur.

8.2.1 Potential Explosives Spill Scenario 1

In the event of a vehicular accident occurring while transporting explosives, the explosives contracting company and the Emergency Response Team would be notified immediately in order to evacuate the surrounding area and put in place the emergency response plan. On-site emergency medical services would be contacted to respond or put on standby, depending on the severity of the explosion. It is highly likely that in the case of an explosion, firefighting services would be required from the Emergency Response Team. After the risk to human life and property has passed, a qualified professional would be required to 'clear the area' (i.e., indicate that there is no longer a risk of explosion) prior to clean up. With fire crew on standby, the Emergency Response Team would commence with cleanup as appropriate for ammonium nitrate and/or fuel spilled on site.

8.3 Untreated Sewage Discharge

Wastewater and sewage will be collected at two separate locations, including the camp and the processing plant. Sewage water will be piped to one of the septic systems prior to being released into the environment while solids will go by truck as necessary (Note: the Federal Wastewater Systems Effluent Regulations do not apply to QC or NL above the 54th parallel, however, Québec legislation continuous to apply, with the exception that small septic, under 20 persons, falls under municipal legislation above the 55th parallel. Large septic remains under Provincial QC legislation, small septic of under 20 persons defaults to municipal legislation).

8.3.1 Potential Sewage Spill Scenario 1

A spill from the holding facility/treatment plant due to pipe or mechanical failure could potentially release a large amount of untreated sewage. Operators from the treatment plant would be first responders and, assuming it is safe to do so, attempt to stop and contain the spill using appropriate measures including closing valves above and below the rupture. Dykes and berms can be put in place in order to contain the spill and prevent any material from flowing into a waterbody, such as described for fuel spills in Section 7.2. Clean up can be undertaken using a vacuum truck or loader. Impacted soils would be excavated and disposed of properly while liquid material would be pumped and returned to the treatment facility (assuming the reason for the release has been corrected). The affected area should be roped off to prevent personnel or public from entering the area.

Any untreated sewage entering a waterbody could partially be contained with a floating boom and skimmed via vacuum truck, however, this method would only function with the floating portion prior to mixing (see Section 7.3.2). Even small amounts of untreated sewage would likely result in *E.coli* contamination. Extra water treatment may be required if the spill is in a source of potable water. An increased biological oxygen demand could potentially arise from a large spill and consume the majority of oxygen in the water. Fish kills could result in slow flowing streams or lakes and ponds if increased oxygen is not input into the water body. This can be done using air bubblers or pumping oxygen directly into the deep sections of the waterbody.

8.3.2 Potential Sewage Spill Scenario 2

A spill from the sewage truck resulting from a traffic accident could potentially release a large amount of untreated solids directly into the environment. Operators from the sewage truck would be first responders and, assuming it is safe to do so, attempt to stop and contain the spill using appropriate measures. Dykes and berms can be put in place in order to contain the spill and prevent any material from flowing into a waterbody, such as described for fuel spills in section 7.2 – spills on land. Clean up can be undertaken as noted in Section 8.3.1.

8.4 Glycol Spills

Glycol will be used in sufficiently large amount onsite that could trigger the need for an emergency response in the event of a spill. As noted in section 7.3.2, glycol readily mixes with water and will not float like fuel. It is imperative that glycol be contained prior to entering a waterbody. Glycol should be cleaned up using vacuums, pumps, and heavy equipment as soon as possible to avoid groundwater contamination. Contaminated soil should be excavated and disposed of properly. Due to the toxic nature of glycol, a spill should never be left unattended where wildlife can come into contact with the product. Due to the sweet taste of glycol, wildlife will readily drink or eat glycol contaminated water and soil causing death.

8.4.1 Potential Glycol Spill Scenario 1

Above ground pipelines will transport glycol to various locations on site. A complete rupture of a pipeline (e.g., vehicular collision or pipe failure) would present a worst case scenario. Of utmost importance in such a case is to immediately close any valves controlling the flow of glycol. If a valve is nearby, it may be possible to attempt this personally or it may be necessary to radio/phone dispatch for it to be turned off remotely. It may be necessary to close the valves on either side of the rupture in order to prevent a backflow. Once the flow has stopped, glycol is likely to continue leaking out of the ruptured section as the pipeline continues to drain. Containment and recovery can be attained as noted in Section 7.2. It is imperative that all glycol be ditched or dyked away from any sources of water and be cleaned up as soon as possible.

9.0 REPORTING REQUIREMENTS

Reporting of spilled or released hazardous materials is integral to the ERP. The spill report shall be sent to different jurisdictions depending on the location and amount of spilled material. **Spill reporting will be done by the environment and permitting department and Tata Corporate**.

- Any and all hazardous material spilled or released, regardless of size or location, must be reported to the environment and permitting department who will report to Tata corporate. The corporate office notifies provincial level officials of all spills verbally or via e-mail as soon as possible.
- In Newfoundland and Labrador, any hazardous material spilled or released into water or spills over 70 L on land must be reported verbally to the Provincial Government and the Canadian Coast Guard as soon as possible and a written report shall be submitted by Tata corporate shortly thereafter.
- In Québec, any and all hazardous material spilled or released into water or on land must be reported to the Provincial Government (of Québec) as soon as possible. Spills into water or over 70 L on land must also be reported to the Canadian Coast Guard.
- Spills or releases of hazardous material spilled in Québec that are reported to the Provincial Government should also be reported to the Kativik Regional Government.

After the initial field emergency response to the spill event, spills are reported to the 24-hour Spill Report Line:

<u>24-Hour Spill Report Line (Federal)</u>

Tel. (709) 772-2083 in Newfoundland and Labrador

1-800-563-9089

Fax. (902) 426-7924

or

(**514) 283-2333 in Québec**

1-866-283-2333

Fax. (514) 496-2087

Failure to report a spill can lead to fines. After contacting the Federal 24-hour Report Line, the affected provincial government(s) shall be promptly notified along with the Kativik Regional Government (if spill occurs in Québec). It is the responsibility of the

environment and permitting department and Tata Corporate to prepare the proper reports and transmit them to the appropriate regulatory authorities. Note that both the federal and provincial governments must be contacted.

Table 9.1 Contact List for Reporting Spills Occurring in Newfoundland and Labrador

Department	Person	Telephone	Fax	Email
Newfound and Labrador				
Federal NL	-	(709) 772-2083	(902) 426-7924	
Provincial NL	Troy Duffy	(709) 643-6114		duffyt@gov.nl.ca
Env. Protecion Officer		(709) 896-5473		
Service NL	Ken Russell	(709) 896-5471		krussell@gov.nl.ca

Table 9.2 Contact List for Reporting Spills Occurring in Québec

Department	Person	Telephone	Fax	Email
Québec				
Federal QC	-	(514) 283-2333	(514) 496-2087	
Provincial QC	-	1-888-694-5454 1-866-694-5454		
Kativik Regional Government	Monica Nashak	(819) 964-2961 Ext. 2276		mnashak@krg.ca

The verbal notification must include the following:

- The reporting person's name and telephone number
- The name of the person who owns or has the charge, management, or control of the substance immediately before the environmental emergency
- The date and time of the release
- The location of the release
- The name and CAS registry number of the substance released

- The means of containment (from which the substance was released) and a description of its condition
- The number of injuries or deaths resulting from the environmental emergency
- The surrounding area/environment affected and potential impact of the release (mobility of release and weather or geographic conditions at the site)
- A brief description of the circumstances leading to the release
- The cause of the release (if known)
- Details on the actions taken or further actions contemplated (to contain, recover, clean up, and dispose of the substance involved)
- The names of agencies notified or on-scene
- Other pertinent information.

When an environmental emergency occurs in respect of a substance set out in Column 1 of the Schedule 1 (Environment Canada's Environmental Emergency Regulations – See appendix A for list), a written report is required to be sent to the Federal Regional Director of the Environmental Enforcement Division of the Enforcement Branch or the Department of the Environment in the Region where the environmental emergency occurs (see Table 9.3 for contact information).

Table 9.3 Contact List for Reporting Spills by written report

Newfoundland and Labrador	Québec
Regional Director, Environmental Enforcement Directorate, Atlantic Region Environment Canada Queen Square 45 Alderney Drive, Dartmouth NS B2Y 2N6 Fax: (902) 426-7924	Regional Director, Environmental Enforcement Directorate, Québec Region Environment Canada 105 McGill St. (3rd Floor) Montréal QC H2Y 2E7 Fax: (514) 496-2087

The written report must include the following:

- The name, civic address, and telephone number of the person who owns or has the charge, management, or control of the substance released

- The date, time, and location of the substance release
- The number and CAS registry number of the substance released,
- The quantity of the substance released, or, if the quantity cannot be determined, an estimate of the quantity
- The identification of the container from which the substance was released and a description of its condition
- The location of the release and description of the potential negative effects on the environment or on human health or life
- A description of the circumstances and of the cause of the release (if known) and of the measures taken to mitigate any negative effects on the environment or on human life or health
- The identification of all persons and agencies notified as a result of the release
- All measures taken or planned to be taken to prevent similar releases

10.0 POST CLEAN-UP

Following reporting and clean-up, it is often recommended that a third party be engaged to perform confirmatory sampling to ensure that clean-up is completed prior to back filling and site restoration.