Spill Contingency (SC) Response Plan

(supplement to Appendix E - Spill Contingency Plan)

Hamlet of Cambridge Bay, Nunavut

Prepared by:

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Cambridge Bay Spills Contingency and response Plan (SCP)

Introduction:

The spill contingency (SC) Action plan describes the proper responses to any possible types of spills that may occur in the operation of the sewage, waste and hazardous facilities. This plan included the Spills Response Contact List, related duties and responsibilities, equipment and other resources availability to clean up a spill and the reporting requirements in the event of any hazardous, contaminants, toxic, chemical, fuel or waste spills within the facility or within the community.

Purpose:

The purpose of this SC action plan is for awareness of the danger and response for potential spills of any type or level, including a worst-case scenario for the people and pets of the hamlet. The plan identifies key response personnel and their roles responsibilities in the event of a spill, as well as the equipment and resources available to clean up a spill. The details spill response procedures will minimize potential health and safety hazards environmental damage and clean-up efforts. The plan has been prepared to ensure quick access to all the information required in responding to a spill.

The Spill Contingency Plan will be used by the Hamlet for activities associated with hamlet's operation to

- Solid waste and metal waste facilities;
- Sewage waste and effluent management facilities;
- Storage and handling of hazardous materials in and out of the facility.
- Intake pump house and water treatment plant
- Water intake, truckfill, transportation and in the house tank delivery
- Road clean-up, grading, packing and snow ploughing activities

The annual snowfall in Cambridge Bay is approximately 130 cm and the annual rainfall 11cm. In January-march, the mean temperatures approximately -35^0 C while in July-August, temperature mean rises to 12^0 C. Freeze up usually starts during the month of Nov but may happen as early as Sep or Oct while spring thaw usually happens around late May

Steps in Spill Responses:

It is the responsibility of any person to inform the designated or work-related individual who fist witness the occurrence of a spill or been referred by another person. The hamlet is ultimately involved for the reporting and monitoring of the spill situation. For an effective response to spill, a systematic action planning be followed with the following flow chart:

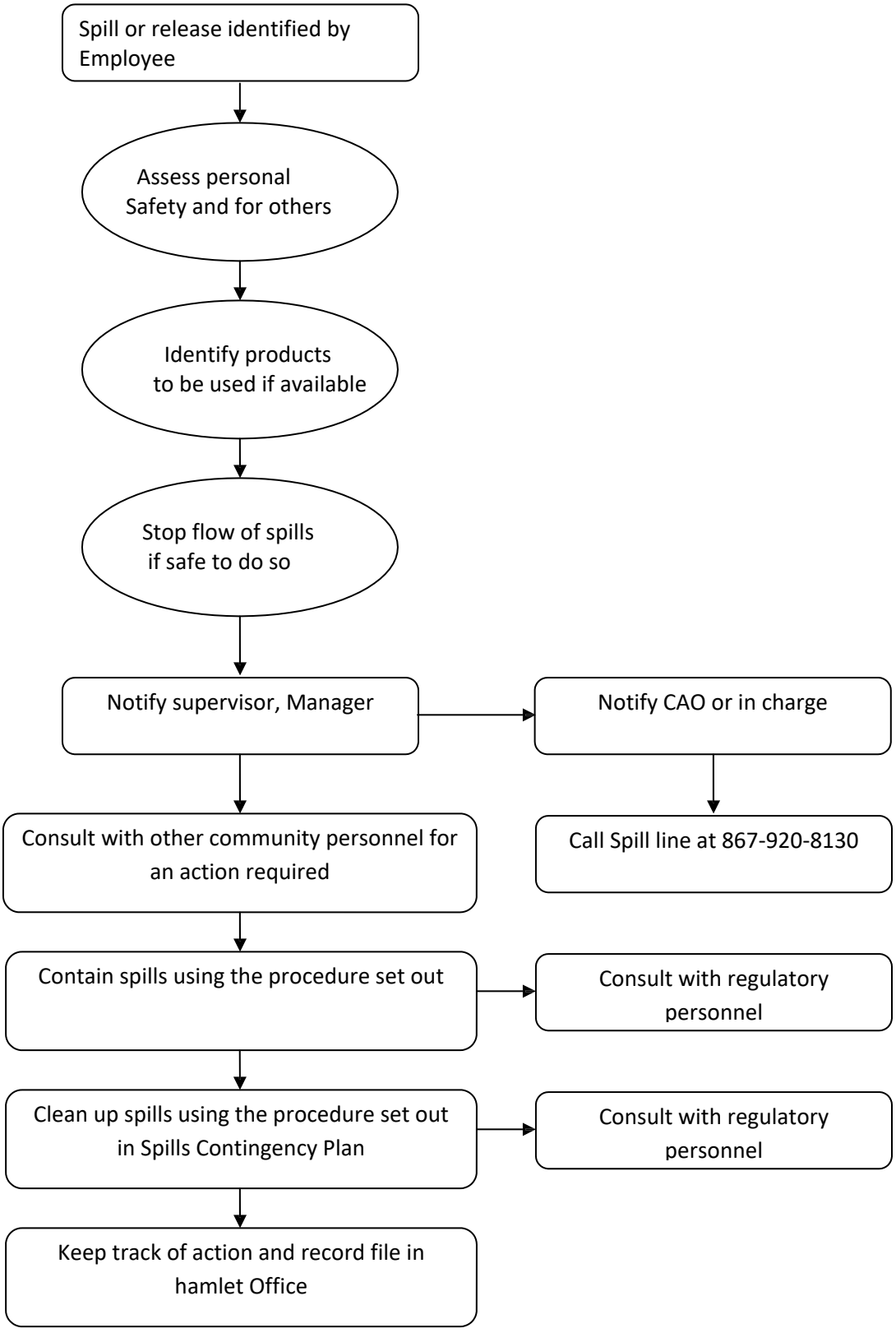

Figure: Flow-Chart of Communication Lines

Locations of Spills Hazards Storage

Hamlet of Cambridge Bay uses sodium hypochlorite solution (12% strength) for the disinfection of the potable water at the treatment plant. These chlorine solution pails of 20L store at the WTP building. The empty pails (after uses) are store inside C-can at the metal waste facility. Any residual of chlorine solution inside the pails at the waste facility are concern to the operator or public (waste depositor) since chlorine is harmful to skin, eye and respiratory system irritation or burns.

The community sewage disposal facility (lagoon) is to the east of the Solid Waste facility. Raw sewage drop-off location is close near to the Solid Waste front entry and across the road. Sewage spills can be a concern to the Solid Waste facility user and operator.

Gasoline products and fuel oil are used for resident and facility building heating system, pump house and other equipment. This fuel stores in drums and pails at different location inside and outside of buildings. Spills of fuels and oils are severe concerns to environment and fire safety.

Potential Sources of Hazardous material Spills on site

Materials	**Storage Container and Location**	**Normally On-site**	**Maximum On-site**	Uses
Oil	Stored in containers at municipal storage building	5 # 45 gallons drum	220 gallons	Servicing community vehicles
Gear oil	Stored in containers	5 # 45 gallons	220 gallons	Serving community vehicles
Antifreeze	Stored in containers in garage	unknown	unknown	Serving community vehicles
Sodium hypochlorite solution	Stored in seal pails at the WTP	20 # 20 L pails	400 L	For Water treatment
Diesel	GN-PPD Facility Tanks	unknown	unknown	For heating fuel
Gasoline	GN-PPD facility tanks	unknown	unknown	Vehicles fuel
Jet Fuel A-1	PPD tank and airport tanks	1 large tank and 1 vertical tank	unknown	Aircraft uses
propane	Co-op and northern store	20 lbs BBQ tanks	Unknown numbers	Household uses

In general, hazardous materials within the facility or in the community, environmental impacts are lower in winter as snow is natural sorbent and ice forms a barrier lining for eliminating soil or water contamination. Spills can be more readily recovered when identified and reported.

Environmental Impacts by type of hazardous materials:

Gasoline:

- Harmful to wildlife and aquatic life
- Not readily biodegradable
- Has potential to bio-accumulate in environment
- Volatilizes easily
- Runoff into water bodies must be avoided

Worst Case Scenario: All fuel drums open simultaneously, and contents pour onto ground and Surrounding environment.

Diesel:

- Harmful to wildlife and aquatic life
- Not readily biodegradable
- Has potential to bio-accumulate in environment
- Burns slowly (more readily contained than volatile fuels)
- Runoff into water bodies must be avoided

Worst Case Scenario: All fuel drums open simultaneously and contents pour onto ground and surrounding environment

Waste Oil and Miscellaneous Oils and Grease:

- Harmful to wildlife and aquatic life
- Not readily biodegradable
- Has potential to bio-accumulate in environment
- Runoff into water bodies must be avoided

Worst Case Scenario: All storage drums open simultaneously and contents pour onto ground and surrounding environment.

Sewage*:*

- Human health hazard, and unsightly appearance
- High nutrient concentrations could negatively impact water bodies and runoff into water bodies must be avoided

Worst Case Scenario: Full waste truck releases on ground and surrounding environment.

Sodium hypochlorite solution:

- Harmful if inhaled, corrosive, causes eye and skin burns, causes digestive and respiratory tract burns
- Run-off into water bodies must be avoided
- Wear protective face masks to prevent inhalation of dust

Worst Case Scenario: All pails open simultaneously and contents pour onto ground and surrounding Environment

Procedure for Action:

It is important to stay calm and plan for personal safety first before jumping to an action plan in the event of a spill. Experience in taking effective action helps both the spilled materials and adverse effect to human health.

The following steps and procedure can be followed by the first person on the scene:

- Ensure personal safety and safety of other personnel around the scene
- Determine the product that spilled and assess the rough order quantity
- Assess the hazardous risks and impact to persons in the vicinity of the spill
- If possible, control the danger of the spills to human life
- If possible, stop the spills, otherwise look for an action plan
- Gather information on the status of the situation and possibilities of spread of spills
- Contact the supervisor, manager or CAO

Respond and Reporting:

An effective respond and reporting are mandate in dealing with spills event. The designated personnel or experienced individual must make a report immediately and at least within 24 hours of the spills. It is expected the supervisor or CAO position can make such effective respond and report.

Appendix E

Spill Contingency Plan

Hamlet of Cambridge Bay

Spill Contingency Plan

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AECOM: 2012-01-06

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1. Introduction

This spill contingency plan describes the proper responses to several types of spills that may occur in the operation of the Hamlet of Cambridge Bay's (Hamlet) water and waste facilities. Included in the plan is a spill response Contact List for Nunavut, and the reporting requirements in the event of a chemical, fuel, or waste spill.

2. Locations of Contaminant Storage Areas

Cambridge Bay's water and waste management facilities include a raw water distribution pumphouse next to Water Lake, and a sewage disposal facility (lagoon) and solid waste disposal facility northeast of the Hamlet.

The Hamlet stores a 12% solution of sodium hypochlorite in the raw water pumphouse, which is used to disinfect drinking water.

At Cambridge Bay's water and waste facilities, fuel oil is used for heating and to run pumps and other equipment. The fuel storage areas are listed below; tank volumes were unavailable:

- Raw water pumphouse at Water Lake (69°08'18N, 105°03'56W)
- Truckfill station in Cambridge Bay (69°07'07N, 105°03'17W)
- Garage (69°07'07N, 105°03'17W)

These locations are shown in the figure below, along with the Municipal Solid Waste Facility.

Figure 2-1: Fuel Storage Facilities and Municipal Solid Waste Facility

3. Spill Response Training

Hamlet operations personnel should have up-to-date spill training so they are prepared in the event of a chemical, fuel or waste spill. This training will at least include on-the-job training, and may include formal spill training courses and on-site spill training exercises (mock spills). Hamlet personnel may receive formal spill response training from the Department of Environment, GN in Iqaluit.

If the Hamlet brings contractors on-site to make modifications to the water and waste facilities, the contractors should be made aware of procedures to be followed in the event of a spill.

Workplace Hazardous Materials Information System (WHMIS) training should be given to employees. WHMIS training is legally required in Canada for all employees who are exposed/likely will be exposed to a hazardous material at the workplace.

4. Action Plan in the Event of a Spill

This section contains an outline of the steps to take for reporting, clean-up, and disposal of any spilled contaminants and contaminated soil or water.

4.1 Chemical Spills

The Hamlet uses a 12% solution of sodium hypochlorite to disinfect its raw source water. This solution is stored and applied in the pumphouse next to Water Lake. Possible sodium hypochlorite spills range from a small leak or spillage during normal operation, to a major spill caused by damage to a storage drum.

Sodium hypochlorite can cause several adverse health effects, including skin, eye and respiratory system irritation or burns. If ingested in significant amounts, this chemical can cause a wide range of symptoms, from nausea to death. Sodium hypochlorite can cause dangerous reactions with some chemicals, and therefore should not be allowed to mix with other chemicals.

The action plan laid out here for sodium hypochlorite spills is generally applicable to any other chemical spills that the Hamlet may deal with, but some chemicals may have special handling and disposal requirements. Refer to WHMIS (Workplace Hazardous Materials Information System) labels and MSDS (material safety data sheets) for chemical-specific information.

4.1.1 Initial Action

In the event of a chemical spill, the following measures should be taken immediately:

- Evacuate unnecessary personnel.
- Ventilate area of leak or spill (opening all doors and windows).
- Wear personal protective equipment (gloves, safety glasses, impervious material long-sleeved shirt/coat).
- If available wear respirator/self-contained breathing apparatus (SCBA), especially for large spills.
- Remove all other chemicals from the area if safe to do so.
- For small spills, dilute with water, mop or wipe up and place in proper container.
- For large spills, contain by diking (soil/dry sand/kitty litter), absorb with inert material (soil/dry sand/kitty litter) and place in chemical waste container.
- After mopping up chemical, wash area well with soap and water, mopping into spill container and not to the ground.

- Do not use combustible materials! (i.e. sawdust or cardboard).
- Contain runoff from spill clean-up.
- Notify the Northwest Territories/Nunavut twenty-four (24) hour spill reporting centre at (867) 920-8130 and receive disposal information.

4.1.2 Follow-Up Action

After the spill has been cleaned up, other reporting, disposal, and follow-up activities may be required. The following measures should be taken if applicable:

- Dispose of chemical, inert absorbent material, and mop-up water as directed by Spill Reporting Line personnel
- Arrange for repair or replacement of chemical containers, pipelines and equipment, if damaged or leaking.
- Submit a detailed report on the occurrence to an AANDC Inspector, within thirty (30) days of reporting the event.

4.1.3 Spill Kit

A spill kit should be on-hand in the pumphouse in the event of a sodium hypochlorite spill. The kit should include:

- Heavy-duty gloves
- Safety glasses
- Mop/wringer/spill squeegee
- Shovel/ broom/dustpan
- Chemical spill container with sealable lid
- Sand/kitty litter (absorbent, non-flammable material).

Alternatively, a 50 Gallon Universal Sorbent Spill Kit can be provided, which includes:

- (10)–3" x 48" socks
- (4)–3" x 10' socks
- (50)–15" x 17" pads
- (4)–pillows
- (50)–wipers
- (5)–disposal bags and ties
- (5)–tamperproof seals
- (2)–pair nitrile gloves
- (1)–emergency response guidebook

4.1.4 First Aid

The following first aid recommendations relate to spills of sodium hypochlorite. For first aid with other chemicals, follow any chemical-specific instructions or call the twenty-four (24) hour Spill Reporting Line for assistance.

Skin Contact

Immediately flush skin with water for at least twenty (20) minutes while removing all exposed clothing. Get medical attention immediately. Wash all exposed clothing with soap and water and dry before reuse, thoroughly clean exposed shoes.

Inhalation

Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Ensure the person is at rest – no physical exertion. Get medical attention immediately.

Ingestion

If swallowed, **DO NOT INDUCE VOMITING**. If the person is conscious, have the person rinse their mouth with water. Have the person drink large quantities of water. If milk is available, have person drink milk AFTER the water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Information on poison control should sodium hypochlorite or other hazardous chemicals be ingested can be obtained by calling the Cambridge Bay Health Centre at (867) 983-2531 or the Baffin Regional Hospital Emergency Department at (867) 979-7350.

Eye Contact

Immediately flush eyes with plenty of water for at least twenty (20) minutes, lifting lower and upper eyelids occasionally at eye wash station. Get medical attention immediately.

Note to Physician:

> Consider oral administration of sodium thiosulfate solutions if sodium hypochlorite is ingested. Do not administer neutralizing substances since the resultant exothermic reaction could further damage tissue. Endotracheal intubation could be needed if glottic edema compromises the airway. For individuals with significant inhalation exposure, monitor arterial blood gases and chest x-ray.

4.2 Petroleum Product and Antifreeze Product Spills

Petroleum products have many operational uses in the Hamlet's water and waste systems, and used petroleum product drums or other containers end up at the Hamlet's solid waste disposal facility. Petroleum product spills range from minor spills during operations such as gas tank filling, to constant leakage from pipelines in need of repair, to major spills causing large contaminated soil/water issues.

Depending on the location of the spill, a petroleum product spill may result in contaminated soil, snow, ice or water. The contaminated material must be cleaned up and removed for disposal along with the spilled petroleum product.

Antifreeze or engine coolant products are used in automotive engines and generally consist of ethylene glycol or propylene glycol mixed with distilled water; of the two, propylene glycol is significantly less toxic. Like petroleum products, used antifreeze product drums or other containers end up at the Hamlet's solid waste disposal facility, and can range from minor spills to large spills from punctured drums.

Petroleum and antifreeze product spills can be handled in the same manner. Refer to WHMIS (Workplace Hazardous Materials Information System) labels and MSDS (material safety data sheets) for chemical-specific information.

4.2.1 Initial Action

In the event of a petroleum or antifreeze product spill, the following measures should be taken immediately:

- Shut off ignition sources, if safe to do so.
- Identify the spilled material and locate the source.
- Stop the spill at the source, if safe to do so.
- Take actions to contain/clean up spilled material.
- Record relevant information for reporting: this includes quantity of material spilled, product type, location, date, weather, and other relevant information.
- Notify the Northwest Territories/Nunavut twenty-four (24) hour spill reporting centre at (867) 920-8130 and receive disposal information.

4.2.2 Follow-Up Action

After the initial clean-up and reporting procedures, other activities may be required such as reporting and disposal. The following measures should be taken if applicable:

- Dispose of soil as directed by twenty-four (24) hour Spill Reporting Line personnel or an AANDC Inspector.
- Arrange for repair or replacement of petroleum product containers, pipelines and equipment, if damaged or leaking.
- Submit a detailed report on the occurrence to an AANDC Inspector, within thirty (30) days of reporting the event.
- For large spills, install wells to monitor the groundwater for signs of contamination as explained in the Subsurface Monitoring Plan (Earth Tech, 2008). Determine the level of final clean-up in consultation with an AANDC inspector.

4.2.3 Spill Kit

One spill kit should be on-hand in at each of the fuel storage areas and the municipal solid waste facility. The kit should include:

- Heavy-duty gloves
- Safety glasses
- Mop/wringer/spill squeegee
- Shovel/ broom/dustpan
- Chemical spill container with sealable lid
- Sand/kitty litter (absorbent, non-flammable material).

Alternatively, a 50 Gallon Universal Sorbent Spill Kit can be provided, which includes:

- (10)–3" x 48" socks
- (4)–3" x 10' socks
- (50)–15" x 17" pads
- (4)–pillows
- (50)–wipers
- (5)–disposal bags and ties
- (5)–tamperproof seals
- (2)–pair nitrile gloves
- (1)–emergency response guidebook

4.3 Waste Spills

The Hamlet's lagoon and landfill sites are monitored through the Monitoring Program. The wastewater lagoon will discharge on an annual basis over an approximately 3 week period, beginning normally around the end August; this requires the use of a temporary pump. Outside of this period, low flows could be expected at the Sewage Wetland outfall, as part of normal operation since the main Retention Sewage Lagoon berm is composed of low permeability materials. Spill reporting requirements for a normal lagoon discharge are not required, though additional testing requirements for annual discharge, as part of the Monitoring Program, are.

Waste may, however, be spilled before reaching the waste disposal facilities. There may also be chemical or fuel product spills at the landfill, contaminating the surrounding soil. These spill situations should be handled with the same procedures as for Petroleum or Antifreeze Product Spills above.

5. Spill Response Contact List

Table 5-1: Contact List

Organization	Contact	Phone Number
AANDC Water Resources	Water Resource Officers in Iqaluit	(867) 975-4295
Northwest Territories/Nunavut 24 Hour Spill Report Line		(867) 920-8130
Nunavut Department of Environment Cambridge Bay Conservation Office		(867) 983-4164
Environment Canada	Environmental Protection Operations, Environmental Emergencies	(780) 951-8861
Kitikmeot Inuit Association – Cambridge Bay		(867) 983-2458

6. Reporting Requirements

The Hamlet's Water License (2001, amended 2005 and 2009) calls for any chemical or petroleum product spill or unauthorized discharge of waste to be reported immediately to both the twenty-four (24) hour Spill Reporting Line and an AANDC Water Resources Inspector (see contact details in previous section). Spills to be reported include spills that have already occurred, or potential spills that are about to occur. Spills must be reported if the amount is greater than or equal to the amount listed in the Nunavut (or interim GNWT) Spill Contingency Planning and Reporting Regulations for each contaminant.

Environment Canada requires that spills or environmental accidents be reported to the twenty-four (24) hour Spill Report Line. A phone number for Environment Canada's Environmental Emergencies office in Edmonton is listed above, in case Hamlet staff need more information.

When reporting a spill to the twenty-four (24) Hour Report Line, give as much of the following information as possible:

- Date and time of spill,
- Location of spill,
- Direction spill is moving,
- Name and phone number of a contact person close to the location of spill,

- Type and quantity of contaminant spilled,
- Whether spill is continuing or stopped,
- Actions taken to contain, recover, clean-up and dispose of contaminant,
- Name and phone number of person reporting spill and person in charge of the facility.

The Hamlet must also submit to an Inspector a detailed report on the occurrence within thirty (30) days of reporting the event.

A Nunavut spill report is included at the back of this plan.

7. References

- AANDC. "Guidelines for Spill Contingency Planning".
- Northwest Territories Water Board. "Guidelines for Contingency Planning" 1987.
- GNWT. "Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations", 1993.
- Nunavut Water Board. "Water License NWB3CAM0914", 2009
- Canexus Material Safety Data Sheet. "Sodium Hypochlorite". December, 2006. http://www.canexus.ca/site/assets/pdf/MSDS/hypochlorite/2006%20Na%20Hypochlorite%20E.pdf
- Clear Tech Technical Department, Material Safety Data Sheet. "Sodium Hypochlorite". Saskatoon, SK. November, 2000. http://www.rockyview.ab.ca/pdfs/ClearTech%20bleach.pdf
- CSBP Material Safety Data Sheet. "Sodium Hypchlorite". June, 2005. http://www.csbp.com.au/downloads/chemicals/1139359082_Sodium_Hypochlorite_(12.5_Solution).pdf
- J.T. Baker Material Safety Data Sheet. "Sodium Hypochlorite". Phillipsburg, NJ. January, 2007. http://www.jtbaker.com/msds/englishhtml/S4106.htm

8. Material Safety Data Sheets (MSDSs)

Material Safety Data Sheets have been provided for the following possible contaminants:

- Diesel / Fuel Oil
- Ethylene Glycol
- Gasoline
- Motor Oil
- Propylene Glycol
- Sodium Hypochlorite

These MSDSs are presented for informational purposes only and should not be used for WHMIS purposes; MSDSs from the Hamlets vendors should be acquired and maintained for WHMIS compliance and, if applicable, should replace the sheets in this plan.

The list of contaminants presented above is not intended to be a comprehensive list of potential contaminants the Hamlet might face, but merely present the common contaminants that the Hamlet might encounter on a regular basis. Always review the MSDS for any of any chemical you are unfamiliar with.