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City of Iqaluit Landfill Operations and Maintenance Manual

Project number: 60571501 (500)

December 18, 2018

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AECOM: 2015-04-13

Revision History

Revision	Revision date	Name	Details
0	December 5, 2018	Jim Clare	Draft
1	December 18, 2018	Jim Clare	Final
2	March 4, 2019	Jim Clare	NWB comments

Distribution List

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1. Introduction

1.1 Purpose

The purpose of the City of Iqaluit Landfill (the Landfill) Operations and Maintenance Manual (the Manual) is to provide the landfill management and operating staff with a guidance document to carry out operations in a practical and reasonable manner and for maintaining regulatory compliance. The Manual provides a basis for:

- Involving operating staff in decision making for daily activities
- Policy and procedure reference document for operating staff
- Employee training
- Orientation of new employees

Given that there are no standards or guidelines for operations and maintenance of landfills in Nunavut, the Guidelines from Northwest Territories are used as reference of this manual. Therefore, this Manual is consistent with the requirements set out in the *Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories*, April 2003. This document will serve as the Guidelines for the purpose of the Manual.

1.2 Reference

Reference information that should be reviewed by operating staff includes the following:

- Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories, April 2003. (Available online at http://www.maca.gov.nt.ca/?page_id=1765)
- Guideline for the General Management of Hazardous Waste in Nunavut (2010). (see Appendix C)
- End-of-Life Vehicle Hazardous Materials Recovery Program Manual Operation (2011) (see Appendix D)

1.3 Content

This Manual provides an overview of the Landfill design, operating plan and specific site features. In addition, this manual provides recommended procedures and “appropriate or best practices” for site operations and management. Updates to this manual are to be recorded in Table 1.

1.4 Due Diligence

Due diligence can be defined as: *“the taking of all reasonable steps as part of the due care and attention to prevent the occurrence of an accident or mishap, as well as having a contingency plan to control an incident and limit any consequential damage”*.

Due diligence includes policy development, planning and goal setting, implementation of “best management” practices, checking and corrective action, and management review. Best management principles include:

- Good housekeeping
- Preventative maintenance
- Inspections and record keeping
- Security
- Employee hiring and training
- Incident reporting

- Operations procedures
- Emergency response planning
- Risk identification and assessment
- Review and corrective action

Table 1: List of Manual Revisions

Section	Date of Revision	Replaces (Date)	Purpose of Revision
All	November 2018	January 2014	Up date
11.	March 4, 2019	December 18, 2018	Water Board comments
15.7.1.1	March 4, 2019	December 18, 2018	Water Board comments
Appendix J	March 4, 2019	December 18, 2018	Provided 2016 version
Appendix L	March 4, 2019	December 18, 2018	Up dated Figure. Includes Storm Water Ponds.

1.5 Site Description

1.5.1 Location

Iqaluit is a rapidly growing Baffin Island community and is the Capital of Nunavut Territory. It is located at the south end of Baffin Island, on Frobisher Bay at 64 ^{o} 31' N latitude and 68 ^{o} 31' W longitude. Access is provided by commercial aircraft year-round, and sea-lift from the port of Montreal in the summer. Annual precipitation in the Iqaluit area is approximately 255 cm of snowfall and 19.2 cm of rainfall. Average annual temperatures range from a low in January of approximately -29.7 degrees Celsius (^{0}C) to a high of approximately 11.4 ^{0}C in July.

Iqaluit has developed into the eastern Arctic's largest community. In order to minimize the impact of the community on this environment, it is imperative that the solid wastes produced by the community are carefully managed.

The location of the solid waste disposal facility relative to the community is shown in Figure 1.1.

The solid waste disposal site is located in West 40. This site was built in 1995 and was intended as an interim landfill site until the location of a long term operating site could be identified and implemented. In 2001 and 2006, the Landfill was expanded to extend its lifespan and a water surface water management system was installed. Waste disposal techniques at that landfill include compaction and covering with soil materials wood waste when available.

2. Organizational Structure

In the City of Iqaluit, the Department of Public Works and Engineering is responsible for municipal solid waste (MSW) management, which includes collection of residential and commercial waste, and the management of the Landfill.

2.1 Duties and Responsibilities

2.1.1 Director of Public Works and Engineering

The Director of Public Works and Engineering (Director) is responsible for solid waste management of the City. Duties of the Director for landfill management include:

1. Administration
   - Preparation of operating budgets
   - Maintenance of operating records and administrative reports
   - Environmental monitoring and Reporting
   - Meeting and administrative reports
   - Monthly and annual reports, as required by the Nunavut Water Board License and Chief Administrative Officer (CAO)
   - Staffing
   - Authorize policies pertaining to landfill operations
   - Report to Council, as required by the CAO
2. Planning and Development:
   - Work with Engineering Department to oversee capital development projects
   - Review the overall operations to monitor that development is according to current engineering plans
   - Review and implement plans for reclamation of completed portions of the site
3. Regulatory Compliance:
   - Sampling required under the City's Water License
   - Review and submit required monitoring reports
   - Review landfill audits
   - Work with Engineering Department to review and submit other landfill related documentation to Nunavut Water Board (NWB)
4. Public Communication:
   - Respond to public and media inquiries
   - Address any complaints
5. Policies
   - Responsible to review and update all Landfill policies
6. Safety
   - Make safety training available to staff

2.1.2 Superintendent of Public Works

The Superintendent of the Department of Public Works is responsible for the management of the Landfill and reports to the Director of Public Works. Duties of the Superintendent include the following:

1. Planning and Development of the Landfill:
   - Coordinate the overall operations to ensure development is according to the current engineering plans
   - Plan for reclamation of completed portions of the site
   - Schedule and coordinate shipment of hazardous materials to accredited southern waste management facilities
   - Schedule and coordinate shipment of non-hazardous materials to southern recycling facilities as required
2. Regulatory Compliance:
   - Oversee the completion of the monitoring program and the preparation of required monitoring reports
   - Prepare and submit to the Director other related documentation required by the NWB
3. Safety
   - Ensure staff receive applicable safety training
   - Ensure staff are familiar with the site safety plan

2.1.3 Landfill Foreman

The Landfill Foreman reports to the Superintendent and is responsible for overseeing vehicular traffic and day-to-day operations of the Landfill. At the site entrance, the Landfill Foreman provides the first level of contact with the landfill customer and must provide all initial waste screening requirements. Duties of the Landfill Foreman include:

1. Gate Operations:
   - Control vehicles entering and exiting the landfill and record the amount of waste received for disposal and recycling
   - Identify wastes entering the Landfill and screen for prohibited wastes
   - Direct site users to appropriate disposal or storage location
   - Communicate with other Landfill Operators to assist in their waste screening responsibilities
   - Report to Superintendent in cases of rejecting waste
   - Collect tipping fees as per the City's Solid Waste Bylaw
2. Vehicle Spotting and Waste Inspection:
   - Direct site users to appropriate disposal or storage areas
   - Direct vehicles to safe area for unloading
   - Visually inspect wastes and spot prohibited wastes
3. Site Maintenance:
   - Carry out winter and summer maintenance of roads and drainage ditches
   - Collect spilled and wind-blown debris and litter
4. Equipment Operations:
   - Pile wood
   - Spread and compact wastes on the working face
   - Maintain the tipping pad free of debris and hidden obstacles

- Maintain equipment

5. Planning and Development of the Landfill:
   - Plan daily working face operations to comply with the overall Landfill fill plan
   - Work with Superintendent to plan disposal area construction
   - Work with Superintendent to conduct landfill audits/inspections
   - Coordinate the overall operations to ensure development is according to the current engineering plan
   - Manage storage compounds
6. Regulatory Compliance:
   - Maintain landfill operations within regulatory requirements
   - Complete landfill audits as required
   - Take corrective action for minor issues of non-compliance and notify the Superintendent
   - Recommend corrective action to the Superintendent for major items of non-compliance
7. Monitoring of surface water and waste disposal including:
   - Maintain drainage system and manage surface water as required under Water Licence No.3AM-IQA1626
   - Oversee the overall operations of surface water management to ensure no water is pounding on site and run-off outside the Landfill area; development is according to the current engineering plans
   - Perform and document regular visual inspections of the Landfill perimeter berms
   - Complete monitoring required under the Water License No.3AM-IQA1626
8. Planning and Development of the Landfill:
   - Plan daily working face operations
   - Work with Superintendent and Landfill Operator to plan disposal area expansion and soil cover supply
   - Work with Superintendent and Landfill Operator to conduct landfill audits/inspections
9. Administrative Duties:
   - Schedule delivery of fuel, oil, and supplies
   - Maintain daily operating records
10. Safety:
    - Administer the Site Safety Plan
    - Conduct Safety Orientation for Visitors and Contractors

2.1.4 Landfill Operator

The Landfill Operator (Operator) is responsible for performing duties as assigned by the Landfill Foreman. These positions would typically address both ongoing and periodic general site operation and maintenance requirements. Duties of the Operator include:

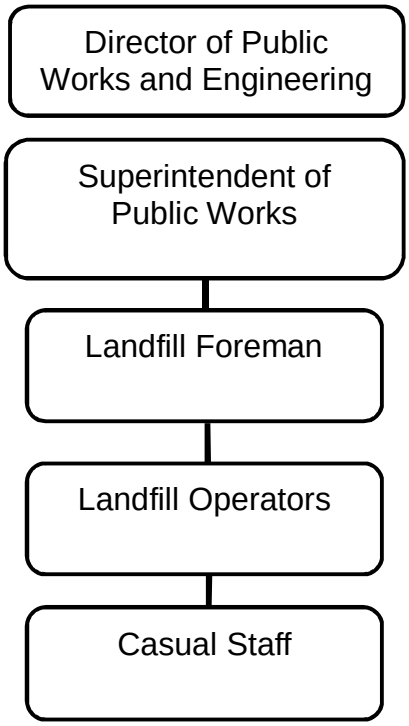
1. Vehicle Spotting and Waste Inspection:
   - Direct site users to appropriate disposal or storage areas
   - Direct vehicles to safe area for unloading
   - Visually inspect wastes and spot prohibited wastes
2. Site Maintenance:
   - Carry out winter and summer maintenance of roads and drainage ditches
   - Collect spilled and wind-blown debris and litter

3. Equipment Operations:
   - Pile wood
   - Place and compact cover soil
   - Maintain the tipping pad free of debris and hidden obstacles
   - Maintain equipment
4. Safety
   - Familiarise and adhere to the facility safety plan

2.2 Organization Structure

The organization structure for the City of Iqaluit Landfill is illustrated in Figure 2.1.

Figure 2-1: Organization Chart - City of Iqaluit Landfill



2.3 Contact List

The individuals responsible for the operation of the solid waste facility in Iqaluit are listed in the following table:

Table 2: Contact List

Title	Phone Number
Landfill Foreman	(867) 222 - 2946
Superintendent of Public Works	(867) 979-5637
Director of Public Works and Engineering	(867) 979-5653

2.4 Personnel Training

Every landfill employee must be trained to perform his or her job in a safe and environmentally responsible manner, in accordance with applicable regulations. Employees will be kept current with changes in regulations and technology through ongoing applicable training courses as regulations and the technical aspects of landfill operation require. Specific training topics may include hazardous waste management, surface water control, spill prevention, first aid and safety.

Continued on-the-job training will be provided to all employees. The training will emphasize the safe and environmentally sound operation of the Landfill. A review of this Operations and Maintenance Manual will be a prerequisite for any employee before being declared eligible for work at the Landfill. All employees will be provided with safety training covering all equipment and systems, with which they will be expected to operate on a daily basis. The use of personal protective equipment (PPE), and the handling and precautions associated with hazardous wastes, will also be included in the safety training.

A training program for more specific tasks, such as those of mobile equipment operators will be documented with written records of meetings and types of instruction. This instruction will include identification of hazardous wastes and unacceptable wastes; emergency procedures in case of fire, spill or injury; confined space entry; respirator use; and other issues that may periodically arise. As required, individuals must be trained in Confined Space Entry, Transportation of Dangerous Goods (TDG) and/or Hazardous Waste Management, Workplace Hazardous Material Information System (WHMIS), and practice proper safety procedures in accordance with applicable legislation and the requirements of the Workers Safety and Compensation Commission (WSCC). Documentation will also be kept on file at the Site Owners office and reviewed annually for any necessary updates.

3. Governance

3.1 City of Iqaluit Solid Waste Bylaw

The Landfill operator and staff must adhere to the City's waste management By-law identified in Appendix G.

3.2 City of Iqaluit Water License

The City of Iqaluit Landfill must operate within the terms and conditions set out in the Licence No. 3AM-IQA1626/Type "A" issued by the NWB to the City of Iqaluit. This Licence is effective June 17, 2016 and expires June 16, 2026. Under this licence, the City is entitled "to use water and disposes of waste associated for municipal undertakings". Appendix H includes a copy of Water License No. 3AM-IQA1626.

3.3 Acts, Regulations and Guidelines

3.3.1 Acts and Regulations

In addition to the Water Licence, the Landfill must be operated within the *Nunavut Environmental Protection Act (1998)* (EPA) and its associated Regulations, *Environmental Right Act (1988).* The EPA was amended in 1998 and came into force in April 1, 1999. It creates a framework for an integrated approach to protect the environment including air, land, water, and all organic and inorganic matter and living organisms.

The operations of the Landfill must also comply with *Nunavut Safety Act and Regulations* to protect Landfill operators, visitors, customers, or anyone at the Landfill site.

3.3.2 Guidelines

Relevant Government of Nunavut guidelines that may be used as additional reference information in the operation and maintenance of the City of Iqaluit Municipal Landfill are listed below. These documents can be viewed on the Nunavut Department of Environment (DOE) website https://www.gov.nu.ca/environment/information/documents/195%2C184

- Waste Lead and Lead Paint (2014)
- Used Oil and Waste Fuel
- Biomedical and Pharmaceutical Waste
- Waste Batteries (2011)
- Waste Solvent (2011)
- Waste Paint (2010)
- Waste Asbestos (2011)
- Waste Antifreeze (2011)
- Ozone Depleting Substances (2011)
- General Management of Hazardous Wastes (2010)
- Dust Suppression
- Mercury-Containing Products & Waste Mercury (2010)
- Guideline for Burning and Incineration of Solid Waste (2012):
- Environmental Guideline for Used Oil and Waste Fuel
- Environmental Guideline for Used Oil and Waste Fuel

The document *End-of-Life Vehicle Hazardous Materials Recovery Program Manual* 2011) prepared for the DOE may be used as a reference for End of Life Vehicles operational procedures. It is available on the DOE's website at
https://www.gov.nu.ca/sites/default/files/final_-_elv_program_manual_-_jan_10_2011_0.pdf.

The guideline for managing landfills in the NWT can also be used as a reference for managing waste disposal facilities in Nunavut. This guideline is "*Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories (2003)".* This guideline promotes effectiveness and efficiency of municipal solid waste landfills. It is available for download on the NWT MACA Solid Waste Management webpage:
https://www.enr.gov.nt.ca/sites/enr/files/guidelines/solidwaste_guidelines.pdf

4. Site Facilities

All solid waste management facilities associated with the Landfill are located within the limits of the site development, with the exception of the offsite runoff retention pond and leachate treatment pond. These facilities include:

- A site office located near the entrance to the Landfill site
- Garage
- Scrap metal area
- Scrap tire collection area
- Hazardous waste depot
- On-site runoff collection ponds
- White metal collection
- E-waste collection
- End-of Life vehicle decontamination area
- Cardboard burn facility

4.1 Recycling Storage Facilities

The site includes storage areas for recycling of bulky materials including:

- Scrap metals
- Car bodies
- Appliances/refrigerators and freezers
- Scrap tires
- E-waste

Public sorting of waste or scavenging is not permitted within the disposal area of the Landfill.

4.2 Hazardous Waste Area

This site includes storage areas for household hazardous waste (HHW) including:

- Paints and Solvents
- Batteries
- Cleaning Products
- Automotive Products (antifreeze, motor oil, car batteries, brake fluid, transmission fluid)
- Small propane tanks and cylinders

4.3 Landfill Disposal Operating Area

The existing municipal waste operating area is operated using the area method and functions as a natural attenuation system without a liner. The site is underlain by bedrock, silty sand and permafrost.

4.4 Equipment

The list of landfill equipment includes:

- Cat 816F Land Compactor
- Cat 928G Loader
- Ford F250 With tidy tank for refueling
- Ford F250

4.5 Surface Water Management

Surface water is managed within the Landfill by a series of perimeter berms that collects contains on-site within the Landfill. On-site runoff is pumped to an off-site retention pond for storage. It is then treated prior to discharge to Koojesse Inlet.

5. Site Security and Control

5.1 Supervision

At least one employee will remain at the site during all hours that the facility gates are open for public access.

Upon arrival, all vehicles entering the Landfill site shall report to the Landfill Operator. Following load check and documenting the waste load, Landfill customers will be directed to the appropriate disposal or storage area for disposal of the waste.

5.2 Hours of Operations

The City of Iqaluit establishes the operating hours of the Landfill and posts these hours, at the entrance. The Hours of Operations Policy is subject to change and is included within the Policy Section of this manual.

In the event of an emergency or as deemed necessary, the Landfill Operator may provide access to the site at alternate times with prior arrangement and approval.

5.3 Gate Controls

Traffic enters and exits the Landfill via the existing access road approximately 4 kilometres (km) from the city center. The Landfill is surrounded by a chain link fence and has controlled access through one gate at the Landfill entrance. Access to the Landfill is gained through the main entrance gate located at the west side of the site. The gates will be closed and locked outside of the normal operating hours.

Public sorting of waste or scavenging is not permitted within the disposal area of the Landfill.

Gate Control - Landfill Foreman is responsible for ensuring the gates are locked and secure after hours. The Foreman will ensure that no persons remain in the Landfill before the gates are locked.

Key Control - Access keys are assigned to the Superintendent and Landfill Operator, and potentially to other authorized personnel, to limit circulation of keys.

Emergency access keys are kept at the office of the Department of Public Works and are under the control of the Superintendent and Director of Public Works.

5.4 End-of-the-Day Closure

At the scheduled closing time, the Landfill Operator will secure the site by closing and locking the main entrance gate. “End-of-the-day closure” includes:

- Checking for customers and visitors that may be remaining on the site
- The Landfill Operator will remain at the gate to allow exit of any customers or visitors remaining at the site
- Closing and locking the entrance gate once all customers and visitors have left the site
- Conducting backup for collected data
- Checking site building to ensure there is no one present and that all doors are locked
- Conducting a final check of the working face to ensure the area is secure and there is no evidence of fires
- Closing and locking the access road gate

6. Customer Service

6.1 Guiding Principles for Customer Service

Customers of the Landfill will form opinions on what they see and how they are treated. A positive experience builds trust and confidence in the site operations and will assist in gaining co-operation on future visits.

To meet this objective, the following are guiding principles to assist the Landfill employees:

- Be positive and enthusiastic
- Keep the site, facilities, and equipment in a clean and orderly fashion
- Be involved in decision making and support the decisions of co-workers
- Be open-minded to compromises and ideas
- Be flexible with customers with reasonable discretion
- Show respect for the customer
- Assist the customer within reasonable limits
- Communicate and educate the customer
- Provide effective and efficient service
- Create “win/win” solutions that satisfy the customer, with consideration for public safety, financial considerations, and Landfill operations
- Treat the customer as we would want to be treated at their place of business

6.2 Assisting Customers with Vehicle Problems

In the event that a customer experiences problems with their vehicle, the Landfill Operator should provide assistance so that the vehicle and driver are:

- In a safe situation
- Out of the way of other customers
- Looked after so that appropriate help is provided

Assistance for vehicle problems may include:

- Assisting the vehicle driver to phone a tow truck
- Either assisting or arranging for someone to assist the driver to change a flat tire

Vehicle drivers must be informed of any risks or liabilities that may be involved in providing assistance, such as towing vehicles. Any actions taken are to be at the discretion of the Landfill Operator, with customer satisfaction and safe operation of the Landfill in mind.

6.3 Public Inquiries

The public, regulating agencies, or the media may ask questions to the Director, either directly or by phone. The Director should politely request any individual making an inquiry to identify themselves in order that the questions may be appropriately responded to.

The following are general guidelines for responding to inquiries:

1. If questions are of a general nature (i.e. hours of operations), the employee should provide these answers along with any relevant printed information that may help
2. Inquiries should be referred to the Superintendent if the questions are related to the following:
   a. Technical issues

b. Regulatory issues
c. Financial issues

3. Inquiries received from regulatory agencies or the media should be referred to the Director
4. If a question is asked and the employee does not know the answer, the employee should say so and refer the person to the Superintendent
5. If an employee is unable to take the time to answer a question because of a heavy work load during peak periods, the employee should:
   a. Explain the situation
   b. Ask the person to leave their name and phone number so that someone may call back at a less busy time

7. Waste Acceptance Procedures

7.1 Accepted and Non-Accepted Wastes

7.1.1 Accepted Waste

Any waste disposal operation has limitations with respect to the waste streams which may be handled in an environmentally safe manner. Limits must be placed on the types of waste accepted at a disposal site in order to protect the environment, the employees, the users and neighbours, as well as the equipment from damage, while simultaneously providing adequate levels of service.

The Site Owner shall allow only those materials to be deposited at the Iqaluit Landfill for which the facility has been designed for with the exception of unique circumstances reviewed in consultation with regulatory agencies.

Acceptable wastes are listed below:

- Plastic, metal, and paper wastes; packaging; cardboard; newsprint; food; rubber; leather; glass; wood; from residential, commercial or industrial premises
- Animal and vegetable (organic) waste material
- Sweepings, clothing and textiles, consumer electronics, and discarded household utensils
- Furniture and major appliances
- Non-salvageable metals
- Tires
- Construction & Demolition wastes (provided the waste is not a hazardous or banned material)

Household Hazardous Waste Streams such as:

- Cleaning Products (oven cleaners, drain cleaners, bleach, spot remover)
- Paints and Solvents (oil-based paints, thinners, paint stripper)
- Automotive Products (antifreeze, motor oil car batteries, brake fluid, transmission fluid)
- Pesticides and herbicides
- Small propane tanks & cylinders (Barbeque tanks)
- Miscellaneous Hazardous Materials (household batteries, photographic chemicals, pharmaceuticals, aerosol sprays)
- Biomedical wastes/ash that have been incinerated, and cooled prior to disposal

7.1.2 Non-Accepted Waste

Wastes which present a danger at the Landfill Site, require special disposal techniques, or may interfere with the level of service to the public, are not acceptable for disposal. In some cases, wastes which are acceptable in small quantities may not be acceptable in large quantities from a single generator because they may cause the level of service to other users to deteriorate and cause handling problems at the site and increased environmental liability. To some extent, the acceptability of large quantity wastes must be at the Site Owners discretion, depending on the ability to accommodate disposal without deterioration in the level of service. In cases where unacceptable wastes are identified, site staff will attempt to identify allowable management alternatives to material haulers.

All wastes which pose potential safety or environmental problems cannot be listed in their entirety. The Site Owner and site personnel in general must be wary of accepting wastes which could cause future operational problems and must watch for the inclusion of unacceptable wastes in regular loads of refuse.

A list of materials which MAY NOT be accepted for placement in the Landfill is as follows:

- Contaminated soils
- Explosives or highly combustible materials of any nature
- Large volumes of waste oil and fuel (more than 5 Litres per load)
- Gas cylinders, unless the valve has been removed and the cylinder properly drained by a professional trained in handling gas cylinders
- Radioactive materials
- Mercury
- Industrial/Commercial Hazardous Waste
- Drums with unidentified contents
- Large volumes of fuel tank sludges from tank farms
- Hot ashes
- Any liquids, or liquid waste, of a quantity greater than five Litres in any one load
- Biomedical wastes that are not incinerated or autoclaved prior to disposal
- Waste pharmaceuticals
- Polychlorinated Biphenyls (PCBs) or PCB contaminated materials
- Any other materials not listed as acceptable or conditionally acceptable with the approval of the Site Owner

7.2 Segregation of Materials

Materials accepted at the Landfill for recycling that require segregation from general waste include:

- Appliances containing CFCs
- Automobile batteries
- End of Life Vehicles
- Paint
- E-waste
- Propane tanks
- Scrap tires

7.3 Waste Acceptance Screening Procedure

Among the most important duties of the Landfill Operator are to ensure that wastes are properly and thoroughly screened, and if any unacceptable wastes are found, that they are safely managed. The community must be aware of the screening activities and their results.

Screening the Waste

Vehicles delivering waste to the Landfill are required to report to the Landfill Operator. The first point of on-site contact is at the gate, which allows for an initial screening process. It is not possible to screen the contents of packer trucks and transfer vans at the gate. Screening of these vehicles' contents must be done at the working face.

The second point of on-site contact is at the disposal area where vehicles are unloaded. The Landfill Operator will visually inspect loads. The Landfill Operator should look for any waste that does not fall within any of the acceptable waste types as listed in Section 7.

Hazardous or other waste that has received prior approval for shipment to the Landfill should be inspected to verify that it fits the description provided by the generator. The waste load should be inspected and clearly classified prior to being pushed or compacted.

Know Your Generators and Haulers

It is important to know the potential sources of prohibited wastes from the service area. Some examples are:

- The automotive repair industry generates solvents, paint wastes, lead acid batteries, grease and oil
- Medical and dental clinics generate bio-medical wastes
- Individuals may bring in batteries, paint, oils, spent fuel, etc.

Be cautious in accepting wastes from unknown, unlicensed, or otherwise questionable haulers.

The Landfill Operator will also identify suspicious wastes based upon visual and odor characteristics. Indicators of suspicious wastes may include:

- Hazardous signage or markings
- Liquids
- Powder or dusts
- Sludge
- Bright or unusual colours
- Drums or commercial size containers
- Chemical odours
- Smoke

General information obtained from the waste hauler shall include:

- Time and date of visit to the Landfill
- Vehicle identification/license number
- Source and nature of the waste disposed of

Inspection Safety Considerations

The Waste Inspector will wear the following safety clothing during inspection:

- Coveralls
- Safety boots
- Gloves
- Safety vest
- Face mask as required
- Eye protection

Where a load is rejected and turned away from the Landfill, the Landfill Operator will attempt to secure the following information:

- Vehicle type and license number
- Identifying company names or addresses
- The source of the waste

- Name and description of the vehicle driver
- Details of the load inspection and reasons for rejection

Emergency Handling

Should an emergency situation occur such as a spill, procedures outlined in Appendix I – Landfill Emergency Response Plan will be implemented. A copy of the Emergency Response Plan will be kept on site.

Procedures (beyond spill response) in such events involve:

1. Place notification call to the Environment Protection Division of the Department of Environment, NU as outlined in Section 13.12 and 15.6
2. Confirm and record the name and phone number of the contact person
3. Obtain and record the name and address of the company responsible for the emergency disposal or storage
4. Determine the nature of the material, handling procedures and necessary precautions to be taken.
5. Contact the Superintendent
6. Arrange for the Landfill Operator to remain after hours, if required
7. If material requires covering or handling with landfill equipment, contact the Landfill Operator.
8. If the responsible company does not have an account, information and collection of fees for the service will be done by the Public Works Department of the City of Iqaluit

8. Waste Handling

8.1 Overview

The nature of wastes accepted at a landfill requires that different types of materials be handled in different ways. Although there are special cases where the Landfill Operator must make a “best judgment” on how to handle a particular material, there are accepted procedures for most products in the waste stream. If the type of waste is unknown, then the operator should not accept the waste material until it can be verified.

8.2 Recyclable Materials

Procedures for managing recyclable materials delivered to the Landfill are outlined below.

Bulky Metals

Metals are stored in the designated storage area. Alternative storage areas may be designated by the Landfill Operator for temporary storage and should be located where there is available room to unload vehicles and load recycling transport vehicles.

Metal piles should be sorted and organized to improve marketing potential. Metals may be sorted as cast iron, pared metals, tin, wire/cable, car bodies, and appliances.

Appliances that may contain CFCs (refrigerators, freezers, and air conditioning units) are to be set aside so that the CFC contents can be purged by a qualified individual as outlined in the Guideline for Ozone Depleting Substances.

Tires

Tires will be loaded and stored on-site in a designated shipping container in the recycling area. Tires hauled by individuals will be accepted for storage in the recycling area. Once a shipping container is full it will be sealed and prepared for shipping to a tire recycler. The Superintendent will contact tire haulers/processors in the NU, if available, or in another provinces to arrange for recycling

E-Waste

All e-waste (i.e. T.V’s, radios, cell phones, radios, computers and accessories, etc.) will be accepted and loaded and stored on-site in a designated shipping container in the recycling area. Once a shipping container is full it will be sealed and prepared for shipping to an e-waste recycler. The Superintendent will arrange with local haulers/processors to arrange for recycling.

Paint

All waste paint will be loaded and stored in a designated shipping container in the recycling area. Once the container is full the container shall be sealed and arrangements made with the local processor to arrange for proper disposal and recycling. Any paint cans that are empty, and the paint is film dry, can be disposed of in the Landfill.

Automotive Batteries

All automotive batteries are to be accepted, loaded and stored in acceptable shipping containers. The batteries must be stored off the ground in weather proof containers or storage building. Superintendent shall make arrangements to have all stored batteries shipped to an approved recycler on an annual basis. Refer to Automotive Battery Policy

Propane Tanks

Only propane tanks that are empty and valves open shall be accepted. Any accepted propane tanks shall then have the valves removed. Once the valves have been removed the tanks can then be stored in the scrap metal storage compound. Refer to Propane Bottle Policy for proper management.

8.3 Hazardous Waste

Hazardous waste materials which are household in origin are to be treated or stored in the hazardous waste disposal area. Hazardous wastes from commercial/industrial sectors will not be accepted at the Landfill. In accordance with the Nunavut Waste Guidelines, all hazardous waste generated by commercial and industrial activities are to be demobilized south by the waste generator.

The hazardous waste storage area has sea lift containers for storage of wastes. This area is surrounded by fence and has a separate gated entrance from the main road.

Due to the danger of handling hazardous wastes, the handling, packaging, storage, treatment of the wastes should only be completed by personnel trained in Transportation of Dangerous Goods (TDG) and/or Hazardous Waste Management and WHMIS.

8.3.1.1 Hazardous Waste Definition

Hazardous wastes as those wastes which, due to their nature and quantity, are potentially hazardous to human health and/or the environment and which require special handling and disposal techniques to eliminate the hazard. A hazardous waste includes products, substances or organisms which, by their nature, satisfy the requirements of being a dangerous good as defined in the Federal Transportation of Dangerous Goods Act.

The Transportation of Dangerous Goods Act recognizes nine classes of dangerous goods which are considered hazardous.

Those products, substances, or organisms that would be considered hazardous generally include the following Classes of waste as defined in the Transportation of Dangerous Goods Act.

- Class 1 - Explosives
- Class 2 - Compressed gases
- Class 3 - Flammable and combustible liquids
- Class 4 - Flammable solids
- Class 5 - Oxidizing substances
- Class 6 - Poisonous, toxic and infectious substances
- Class 7 - Nuclear substances
- Class 8 - Corrosives
- Class 9 - Miscellaneous products, substances or organisms that may pose a risk to life, health, property or the environment

Typical household hazardous waste which can be expected to be stored at the Landfill includes:

- Cleaning Products (oven cleaners, drain cleaners, bleach, spot remover)
- Paints and Solvents (oil-based paints, thinners, paint stripper)
- Automotive Products (antifreeze, motor oil, car batteries, brake fluid, transmission fluid)
- Pesticides and herbicides
- Small propane tanks and cylinders (Barbeque tanks)
- Miscellaneous Hazardous Materials (household batteries, photographic chemicals, pharmaceuticals, aerosol sprays)

8.3.1.2 Hazardous Waste Collection

Household hazardous waste can be dropped off at the Landfill during operating ours, this allows the Landfill Foreman to ensure that the hazardous waste entering the Landfill is residential and not commercial.

Any known hazardous wastes spotted in the general refuse area of the Landfill will be relocated to the hazardous waste area by trained personnel.

8.3.1.3 Hazardous Waste Storage

The accumulated household hazardous wastes shall be placed in the on-site storage containers by trained personnel. Once the wastes have accumulated a significant volume, they will be prepared and shipped to a southern disposal facility.

The site operator should be trained in WHMIS and Transportation of Dangerous Goods (TDG) and/or Hazardous Waste Management. The current Material Safety Data Sheets (MSDS) must be kept on site for all products stored at the site. Supplier or workplace labels must be placed on all containers which hold a hazardous waste.

Factors to be considered when storing hazardous waste include compatibility, segregation, ventilation, climate/environment, handling, security, labeling, record keeping, and emergency response. The following summarizes some of the factors that will considered when dealing with hazardous wastes.

Compatibility

The compatibility between different types of hazardous wastes stored in the same storage container must be considered before storage. The compatibility of wastes with materials and equipment which is stored nearby is also very important, particularly when dealing with flammable wastes. The compatibility of wastes with their storage containers must also be considered. The site operator will review the WHMIS for this information.

Segregation

The final destination of hazardous wastes will be considered before storage. If future recovery may be possible, storage of the material will allow for such recovery.

Ventilation

Hazardous wastes may present a serious health hazard in storage and will therefore be well ventilated. Volatile materials in particular will be considered. Since sealift containers do not accommodate proper ventilation, the site operator will ventilate the storage container before entering.

Ventilation will consist of opening the access doors one hour prior to entering. An observer will be present upon entering to ensure that the operator is not overcome by fumes. The observer must have access to communication in the event of an emergency.

Climate/Environment

Contact between hazardous wastes and rainwater and soil will be prevented, and wastes should not be exposed to direct sunlight. For outside storage of hazardous wastes, containers will be covered by a tarpaulin and placed on an impermeable base. This will also facilitate and reduce the cost of clean-up for any spills or leaks. The containment area will be curbed and diked to collect spills, leaks and precipitation.

Handling

Handling of hazardous wastes will be in accordance with WHMIS guidelines. The site operator will obtain WHMIS information for materials accepted at the site. The Transportation of Dangerous Goods Regulations will be followed when transporting the wastes off site.

Security

Security precautions will be taken to avoid theft, accidental discharge, and any possible harm to the public. The gate to the hazardous waste storage area will be locked at all times except when the operator is working in the hazardous waste area. Sealift containers will be closed and locked when access is not required.

Record Keeping

A record of the types and quantities of hazardous wastes must be maintained in a log book to ensure safe storage. Containers must be properly labeled during the entire time in storage. If this is not carefully completed then there could be problems identifying the waste when it is time to ship it south for disposal.

Record keeping will also include ongoing quantity totals and dates received. Since relatively small quantities of materials are expected to be delivered to the site, individual lists for each material will be worthwhile.

As a minimum record keeping should include the following:

- Type of waste received
- Quantity received
- Dates received
- Name of person/company who disposed the waste if available
- Method of storage/disposal
- On-going total quantity for each type of waste

Emergency Response Plan

An emergency response plan has been developed in case of a significant spill, fire, or other emergency (See Appendix I). The depot will also be equipped with an emergency spill kit and fire suppression equipment.

8.3.1.4 Transport and Disposal

Hazardous waste collected and stored by the City will be shipped to a receiver or hazardous waste management facility located outside of Nunavut. As per the Department of Environment, Government of Nunavut *Environmental Guideline for the General Management of Hazardous Waste*:

- Hazardous waste will only be shipped to a receiver or facility that has been registered in the receiving province or territory to accept that waste
- Waste manifests will accompany each shipment of waste in accordance with the Transport Authorities' requirements and in compliance with the Interprovincial Movement of Hazardous Waste Regulations
- The Landfill Foreman will work with the carrier to ensure that any hazardous waste shipped is packaged, documented, labeled and placarded in compliance with the method of transport used

- The Landfill Foreman will receive all documentation stating that the Hazardous Waste has been received by a registered facility (manifest)

8.4 Sewage Sludge

Dewatered sewage sludge from the Waste Water Treatment Plant is accepted for direct disposal into the active working face. Prior to delivery of the sludge a small “disposal pit” shall be prepared at the active working face. A load of waste from one of the commercial City waste collection trucks shall be dumped close to the area prepared for the sludge. Once the sludge is dumped it shall be immediately covered with the reserved waste load. The Waste Water Treatment Plant must call ahead and make prior arrangements with the Landfill to allow the Landfill adequate time to make necessary preparations for the acceptance of the sludge. Arrangements for sludge acceptance should not be early in the morning and ideally would occur later in the day and prior to the last waste collection truck arriving at the Landfill.

8.5 End of Life Vehicles

The New Hampshire Department of Environmental Services identified a number of best practices with respect to dismantling end-of-life vehicles, including:

- Prior to removing parts and dismantling vehicle components, completely drain all vehicle fluids, including antifreeze, brake fluids, engine oils, transmission fluids, windshield washer fluid, power steering fluid, rear axle housing fluids, etc. Do this over an impervious surface.
- Do not mix the fluids. Recycle, reuse, or dispose of fluids in an appropriate manner.
- Dismantle and drain vehicles, parts, scrap, and cores in one centralized location that is under a roof and over an impervious surface (for example, concrete). Make sure there are no open drains or cracks in the surface.
- Use drip pans when unclipping hoses, unscrewing filters and removing parts.
- Replace drain plugs when done draining.
- Fully drain parts and cores on a drain table or drip rack before moving them to a storage area.
- Keep spill control equipment nearby. Clean up spills immediately.
- Seal all fluid lines after draining to prevent leaks. Metal lines can be crimped or bent; rubber hoses can be plugged with clamps, balls, or golf tees.
- Remove and separate recyclable and potentially hazardous components, including the fuel tank, radiator, tires, battery, catalytic converter, air bag units, and mercury switches.
- Remove and capture air conditioning refrigerants (R-12 and R-134a). Qualified persons, using certified equipment, must perform this work.
- Remove engines through the hood. Do not tip vehicles on their sides, because this allows fluids to run out and spill on the ground.
- Establish a good routine for dismantling vehicles and stick with it.
- At “you-pull-it” facilities (where customers are allowed to remove parts), make sure the flu-ids are drained from vehicles before customers are allowed to remove parts. Instruct customers on proper procedures to prevent leaks during removal of parts, and provide spill control supplies for convenient customer use.
- Store engines, transmissions, and other oily, greasy parts off the ground, over an impervious surface, and under cover to prevent soil, groundwater, and storm water contamination. Have spill controls, including drip pans and absorbents handy.
- Keep an inventory of the vehicles and parts stored at the facility. 1

[1] New Hampshire Department of Environmental Services. N.H. Green Yards BMP Guide Sheet #11. May 2003.

In Canada, the Automotive Recyclers of Canada recently prepared the *National Code of Practice for Automotive Recyclers Participating in the National Vehicle Recycling Program* for Environment Canada[2]. The document describes the environmental considerations of related to managing end-of-life vehicles and reviews the national code of practice for reuse and resale, administration, spills, dealing with hazardous materials, automotive recycler processing areas, and equipment and infrastructure. The document is available for download at www.certifiedautorecycler.ca/rescources.html.

As noted previously, the document *End-of-Life Vehicle Hazardous Materials Recovery Program Manual Operation* (2011) prepared for the DOE may be used as a reference for End of Life Vehicles operational procedures. It is available on the DOE's website at http://env.gov.nu.ca/sites/default/files/final_-_elv_program_manual_-_jan_10_2011_0.pdf.

8.6 Burn Box Operation

The Landfill utilizes an Airburners S-220 Refractory Walled Air Curtain Burner with a Kubota V2403-TE Diesel Engine to burn cardboard. Cardboard can be burned when conditions allow and the S-220 burner is to be operated according to the Operating Manual provided in Appendix K. The burn box is generally used to burn baled cardboard. **The burn box cannot be used when the wind speed exceeds 30 kilometers per hour (km/h).** The site operating procedures, read in conjunction with the Operating Manual, are as follows.

1. Engine Start
   - Perform pre start checks - Oil, coolant, fuel and air filter
   - Check weather to ensure the winds are blowing under the 30 kilometres per hour limit
   - Ensure that the power take-off clutch lever is disengaged.
   - If needed, turn key switch counter clockwise to the PREHEAT position for a few seconds
   - warm up the engine at idle 1000RPm for 5 to 10 mins
2. Cold lighting
   - Load box with dry material if possible
   - Spray 5-10 gallons of diesel fuel
   - Using propane torch light the material from under the rear doors and from the access door in the forward panel on the manifold side of the unit
   - Start fan when there is a good flame
   - Engage fan clutch after turning RPMs to 1400 (engage clutch handle slowly until it locks in place)
3. Hot lighting
   - Load box with dry material if possible
   - Wait until there is good flame then start fan (if not too hot can assist by using torch)
   - Engage fan clutch after turning RPMs to 1400 (engage clutch handle slowly until it locks in place)
4. Loading box
   - Using either bucket or grapple place material in box
   - Place material gently into box -avoid dumping material
   - Alternate ends to avoid overloading
   - Never overload box load to only 1/2 to 3/4
   - Loading slowly will burn faster than loading large quantities
5. Shut down
   - Stop loading 1 to 2 hours prior to end of shift
   - DO NOT stop fan when flames are closer than 24" from manifold

[2] Automotive Recyclers of Canada. National Code of Practice for Automotive Recyclers Participating in the National Vehicle Recycling Program. March 2010.

- If there is still significant material in box leave the fan engaged for the night at 1400 RPM
- If material is almost gone reduce RPMs to 1400 and disengage PTO
- Allow engine to cool off then shut down

6. Cleaning
    - Open back doors and check temps
    - If they are over 100C the rake must be used and pull material out
    - If pulling out change over to bucket to clear pile by back doors
    - If temps are cooler then can unload using the bucket and material piled to the side of box

8.7 General Guide

A general guide for the handling of various waste materials is provided in Table 3.0. This guide is only intended for reference; specific circumstances may dictate handling requirements and procedures.

Table 3: General Guide to Waste Handling

GENERAL GUIDE TO WASTE HANDLING			
Type of Waste	**Examples**	**Special Concerns**	**Handling Procedures**
Asbestos	Insulation, coated pipes	• Airborne particles post a health risk to landfill employees and customers	• DO NOT ACCEPT asbestos for disposal • Refer to site policies and Guidelines for the General Management of Hazardous Waste in NWT for acceptance and handling of asbestos
Bulk Liquids (except for select sump waste)	Oils, sump liquids, industrial liquids	• Bulk liquids are prohibited from disposal	• Do not accept liquid wastes for disposal
Bulky Metals	Appliances, culverts, sheets, equipment parts	• Consumes landfill space • Recyclable materials • Difficult to incorporate into working face • Appliances may contain CFCs	• Divert to metal storage area for recycling • Apply Ozone Depleting Substances Management Policy
CFC's	Refrigerators, Freezers	• Contains CFC's	• Remove cfc's and store for shipping • Move white goods to recycle area
Clean Fill	Uncontaminated soil	• Suitable for cover material on the landfill	• Divert to soil stockpile at working face for use as cover material
Combustibles	Carbide, metal dust, hot lime	• Combustible with water and air • Risk to site employees and customers	• Apply hazardous waste acceptance procedure • Separate from other waste and cover with soil
Compressed Gas Canisters	Propane bottles/tanks, industrial canisters, CFC canisters	• May be hazardous • May contain CFCs • May be dangerous to site employees and customers	• Do not accept for disposal if containers hold any contents • Do not compact • Store for recycling if appropriate
Construction and Demolition Wastes (Inerts)	Concrete, rocks, wood, glass, metals, asphalt, plastics	• Bulky materials may be difficult to spread and compact • Consumes landfill space • May contain hazardous wastes such as asbestos	• Dispose mixed inert loads in landfill operating area • Where practical, divert asphalt to a storage area for reuse

GENERAL GUIDE TO WASTE HANDLING			
Type of Waste	**Examples**	**Special Concerns**	**Handling Procedures**
Electronic Waste	Televisions, radio, computers	• N/A	• Store separately in shipping containers • Ship south for recycling when practical
Empty Containers	45 gallon drums, 20 litre pails, etc.	• May contain prohibited wastes (liquids, hazardous products) • May burst upon compaction and pose danger to site employees or customers • Some “empty” containers may be still classed as hazardous wastes unless properly cleaned	• Apply contaminated solids acceptance procedures • Do not accept containers unless contents are known to be non-hazardous solids • Do not compact sealed containers • Determine original contents of the containers • Look at container labels for original contents or warnings
End of Life Vehicles	Hazardous waste e.g. fluids such as gasoline and oil.	• Proper handling of hazardous materials	• Adhere to proper handling procedures outlined in this manual
Explosives	shells, dynamite	• Prohibited from landfills • May indicate criminal activities • High risk to site employees and customers	• Do not accept • If unloaded, isolate the area from site employees and customers • Contact RCMP
Fire Place or Barbecue Ash	Ash	• Easily airborne • If hot ashes exist, may ignite fires when unloaded	• Accept with caution • Do not unload directly on the working face • Unload away from working face or other burnable items and only unload onto soil • Ensure there are no hot coals present before incorporating onto the working face
Fluorescent Light Bulbs	Light bulbs	• Contains mercury • Can break easily	• Store in a secure location (garage) • Put fluorescent light bulbs through the Bulb Eater • Store contained mercury for shipping • Broken glass can be added to the municipal waste pile
Household Hazardous Waste	Paints, solvents, oils, cleansers, pesticides, etc.	• Public is encouraged to separate HHW from municipal waste stream • HHW is to be dropped off at the landfill by the Public	• HHW has to be stored in a shipping container • Ship south for proper disposal or recycling

GENERAL GUIDE TO WASTE HANDLING			
Type of Waste	**Examples**	**Special Concerns**	**Handling Procedures**
Industrial Solids	Powders, shavings, granules, sands, or dry chemicals	• Dust is easily airborne • May pose health risks to site employees and customers • May be abrasive or corrosive to equipment • May have hazardous properties	• The facility does not accept industrial waste
Land Clearing Debris	Soil, rocks, roots, , vegetation	• May be difficult to incorporate with refuse if it contains large solid materials • Primarily clean soils (i.e. with limited vegetation) may be suitable as cover material	• Determine if suitable for cover material if material is suitable as cover material, direct it to soil stockpile at working face for use as cover material • If material is unsuitable as cover material, dispose of it as inert waste
Lead Acid Batteries	Automobile, truck, and equipment batteries	• Wet cell batteries contain acids • Contain lead • May spark upon compaction and ignite fires	• Store on wooden pallets in recycling compounds • Place batteries into battery bags for shipment south to recyclers • Provide secure storage using a sea Can • Store as per Transportation of Dangerous Goods
Mattresses	Mattresses, box springs	• Difficult to handle in working face • Box springs may bind up in equipment	• Dismantle mattresses • Place steel springs into scrap metal storage area and remaining material can be disposed of at the working face.
Municipal Solid Waste (MSW)	Household refuse, commercial refuse including paper, food wastes, yard wastes, metals, plastics, glass, and other refuse	• Bulky items may bridge over other wastes thereby reducing compaction • Potential for odours and attraction of vectors • Potential for blowing litter	• Spread in thin layers on the working face and compact • Apply cover material
Organic Waste	Household organic waste, gardening residue, soil	• Potentially compostable material	• Place in working face

GENERAL GUIDE TO WASTE HANDLING			
Type of Waste	**Examples**	**Special Concerns**	**Handling Procedures**
Paint and Paint Cans		• Paint cans may not be empty • Paint may not be dry	• If paint cans are empty and dry, direct to working face for landfilling • Paint cans that are not empty and/or that contain wet pain must be placed in the shipping container and shipped south for recycling • May solidify paint by drying or adding cement powder before landfilling
Sewage Sludge	Municipal Sewage Sludge from the Wastewater Treatment Plant	• Heavy metals	• Treatment plant should make prior arrangements for disposal at the end of the day • Prior to arranged delivery time prepare a location in the working face for disposal, set aside a waste collection truck load of waste • Sludge to be placed in the prepared disposal area and immediately covered with the waste that was set aside.
Used Oil (incl. filters, oil containers)	Engine and transmission oil	• Liquid waste • Possibly flammable	direct customers to used oil drop facility
Used Tires	Passenger car and small truck tires (15 inch or less), medium truck (up to 19 inch), OTR tires (large equipment tires)	• Bulky and consume landfill space • Tires do not tend to stay buried but work their way to top of disposed waste material	• All tires accepted • Tires are not to be disposed of at the working face • Tires to be immediately loaded into a shipping container • When shipping container filled arrange for shipment south to recycler
Wood Waste	scrap lumber	• Difficult to incorporate into general refuse • Consumes landfill space • Divert treated wood to construction and demolition material area	• Incorporate into the working face • Wood waste can be crushed with the compactor and mixed with soil material and used as cover material

9. Operational Procedures

9.1 Operating Principles

The Landfill is to be operated by the following principles:

- Appropriate staff are on-site during operations hours
- Access to the Landfill is controlled
- Only approved or authorized waste is accepted for storage or disposal
- The Landfill is developed according to the engineering plans and fill plans
- Wastes are compacted to the greatest practical density
- Wastes are covered as necessary to control nuisances
- Surface water is managed and controlled within the requirements of the City's Water License
- Safe operating practices are followed and all Landfill personnel are encouraged to improve their skills and knowledge
- Records are maintained with respect to operations activities and site development
- Landfill operations are managed by a Landfill Operator

9.2 Landfill Staging

Refer to the fill plans and Landfill Decommissioning Plan for detailed Landfill staging and fill sequencing.

9.3 Traffic Control

9.3.1 Signage

Signs should be posted throughout the Landfill to inform and provide directions to customers for the appropriate locations for unloading. See the following table for recommended signs and placement.

Table 4: Recommended Signs and Placement

Location	Purpose	Type
At Highway	Direction Board	Permanent
At Gate	Name of Site; Operating Hours; Emergency Numbers; Safety Notices; Prohibited Waste	Permanent
Waste Oil Storage	Accepted Products	Permanent
Tire Storage	Sign boards for passenger tires, truck tires, and off road tires	Portable
Metal Storage	Acceptable Metals	Permanent
Working Face	Direction Signs; Safety Signs	Portable
Access Roads	Direction Signs; Speed Signs	Permanent
Battery Storage	Sign Board	Permanent
E-Waste: monitors, TV, computers, etc.	Sign Board	Permanent
White Goods: refrigerators, stoves, dishwasher, etc.	Sign Board	Permanent

9.3.2 Traffic Control at the Entrance

The Landfill Foreman should provide directions to Landfill customers upon entrance to the Landfill. Directions should include:

- General directions to the proper location for unloading vehicles
- To follow direction signs to the appropriate location
- To follow the instructions of operating staff
- Any special instructions that apply to the particular load carried

All loads of waste delivered by self-haul customers are to be inspected and the waste screening form completed.

All City waste collection trucks are to be log in using the Waste Truck Load Record form.

9.3.3 Traffic Control at the Working Face

During hours of operation, it may be necessary to direct traffic at the working face. When directing traffic, the Landfill Operator should:

- Always ensure his/her own personal safety when directing traffic
- Always face the movement of traffic
- Coordinate the flow of traffic to the working face including holding vehicles at a “staging” area until space is available for unloading
- Direct vehicles to an area where it is safe to unload
- Direct vehicles to areas where landfill equipment is not operating (at least 3 metres separation from operating equipment)
- Direct trailer units into an area where they have room to manoeuvre into position, without jack-knifing, for dumping
- Direct customers with hand signals, when appropriate, for safety reasons
- Encourage customers to unload quickly and in a safe manner to allow access to other site users
- Direct vehicles that will take more time to unload to an area where they will not interfere with other vehicles and will not cause delays to other customers

9.4 Tipping Fees

Rates are outlined by the Solid Waste Bylaw (see Appendix G).

9.5 Disposal Area and Working Face

The municipal solid waste disposal area is the largest area at the Landfill. Residential, restaurant, institutional, commercial and construction wastes are placed here. The site is surrounded by drainage ditches which contains runoff on-site until the run-off is pumped to the off-site retention pond. This area is also surrounded by berms and fencing to minimize windblown debris.

Part of the disposal area is working face area and is defined as the active portion of the Landfill where wastes are disposed of by spreading and compacting with landfill equipment. The Landfill is designed and constructed using the area fill concept. The working face shall be kept to a minimum. A narrow daily disposal area will help reduce litter and cover material (mulch of wood, furniture, mattresses and plastic) use.

The width of the working face depends primarily on the traffic volume and should be wide enough to allow the day's maximum number of trucks to unload. Allow 4.5 to 5 metres (15 to 18 feet) per truck.

For efficient operations of compaction equipment, the working face should generally be constructed on a 25% (4H:1V) to 35% (3H:1V) slope. Typically, vehicles are to be unloaded at the bottom of the working face and waste is to be pushed up the slope.

Only one working face for municipal solid waste should be active at any one time, except where the Landfill Operator may designate additional working faces, as necessary, for the following reasons:

- Allow access during adverse weather (e.g. the active working face may become inaccessible)
- Manage higher-than-normal traffic volumes
- Provide adequate separation of commercial and public vehicles for safety purposes
- Ensure the safe handling of hazardous wastes

9.7 Waste Placement Procedures

The Landfill shall be developed in accordance with Landfill site development as provided by the fill plans which are updated on a regular basis.

The working face area shall be compacted regularly to maximize density (thereby minimizing the disposal area), minimize cover requirements, and reduce bird attraction and odour. The compacted waste area is then covered with cover material to minimize the problems of odour, birds, and flies. Material cover also provides surface drainage from the finished surface, thereby reducing infiltration and subsequent leachate production.

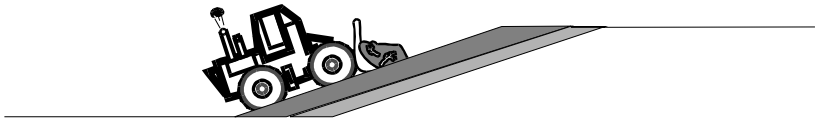
To monitor filling and monitoring airspace usage, the Landfill management should conduct topographic surveys to calculate the amount of airspace consumed, on an annual basis. The Landfill management may also conduct random audits throughout the year.

Compaction of solid waste is required to:

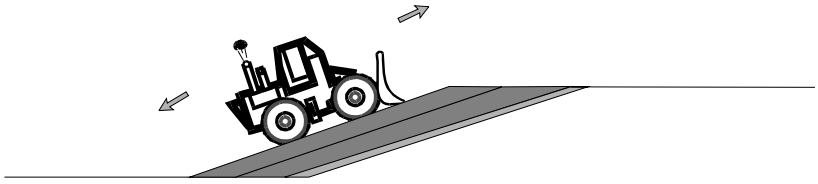
- Maximize waste density to optimize utilization of the Landfill airspace
- Minimize daily cover by providing an even surface on which cover is placed
- Reduce the potential for wind-blown litter

Figure 9-1 illustrates typical compaction procedures.

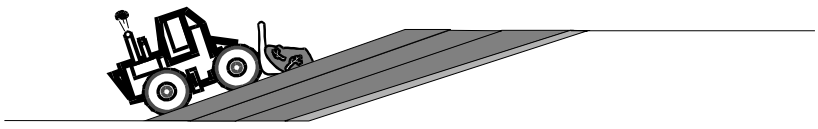
Figure 9-1: Compaction Procedures



SPREAD WASTE UPHILL IN THIN LAYERS (O.5 M)



COMPACT EACH LAYER WITH 3 - 5 PASSES



BUILD SUCCESSIVE LAYERS

Once compaction is complete, cover material should be placed to cover the wastes on a regular basis. Cover the compacted waste with a minimum 150 mm of the cover material (mulch of wood, furniture,). Ideally cover waste once per month during the summer months. Due to frozen soil during winter months regular placement of cover soil is not practical, however the waste deposited during winter months should be covered as early in spring as practical. Each layer of solid waste and cover material will be sloped towards the collection ditches to allow drainage. A compaction and covering cycle is to be completed in the fall to prepare for the onset of winter.

Cover applications at the Landfill include:

- A cover once per month during the summer months
- Cover prior to winter freeze up and early in the spring
- A final cover when the Landfill is closed

9.8 Cover Material Management

Properly placed cover material at a landfill is important to a well-run landfill. Improperly placed cover material results in increased operational costs and in the needless loss of valuable airspace.

Factors that affect soil consumption include:

- Compaction of the wastes
- Thickness of cover material
- Surface of the wastes
- Working face and operating area dimension

10. Nuisance Management

10.1 Litter Control

The ***first level of litter control*** involves actions to monitor that loads on vehicles hauling to the site are secured to prevent waste from falling or blowing onto roads leading to the site.

The ***second level of control*** is applied at the working face by directing vehicles to sheltered areas where possible, and by compacting and covering wastes.

The ***third level of control*** is retrieving litter that accumulates in site fencing, along roads leading to the site, on the site, or on adjacent lands.

The Landfill Foreman is responsible for patrolling and either cleaning or arranging for cleaning of:

- The access road and road leading to the site
- On-site permanent and temporary roads
- The Landfill property
- Adjacent lands around the perimeter of the Landfill

Should any loads be “illegally” unloaded along roads leading to the site or at entrance gates or fence lines along the property, the waste load should be inspected for any identifying wastes (i.e. addressed envelopes, utility bills, etc.) and the City of Iqaluit Municipal Enforcement Officer should be contacted. This waste must be cleaned up immediately to comply with operating and approval requirements.

10.2 Dust

Dust is generated by:

- Traffic dust on access roads
- Unloaded powdery or fine grained wastes
- Soil blowing from stockpiles or soil cover

Dust blowing from wastes may be controlled by:

- Unloading in a sheltered area away from the public disposal areas
- Requiring the waste generator/hauler to moisten or wrap the waste prior to delivery to the Landfill
- Covering the waste with other waste or cover material as soon as possible after unloading

Traffic dust may be minimized by:

- Reducing vehicle speed limits on gravel roads
- Applying water or dust suppressant to gravel road surfaces in hot dry weather

Soil stockpiles should be maintained to prevent blowing soil.

10.3 Noise

The Landfill is located in an isolated location away from any residential development and off-site noise is not anticipated to be of concern. Noise caused by operating equipment and vehicles may affect employee hearing, therefore, employees must comply with hearing protection PPE requirements as per the City H&S policy .

10.4 Odours

Odour issues can result in public complaints, negative public perception of the landfill operations, and nuisances to those who are most affected. Odours are more common in warm weather, during temperature inversions, and with breezes that carry odours from the site.

Odours are caused by:

- Decomposition of organic wastes
- Disposal of waste products with strong odours (dead animals, sludges, etc.)
- Chemical reactions in the landfill
- Stagnant water

Odours may be controlled through:

- Applying intermediate soil cover with the advance of the working face
- Immediately covering any wastes that, by their nature, emit strong odours (cover either with soil or other wastes)
- Working with waste generators to reduce odours at the source
- Immediately correcting any runoff seepage that may develop

10.5 Animals

A fence has been constructed around the perimeter of the site. This fence should be inspected on a regular basis to determine if there has been any breach of the fence. Any breach of the perimeter fence should be reported and arrangements made to repair as soon as possible.

10.6 Animal and Insect Controls

Following are “best management” approaches to minimizing the potential of an animal and insect infestation:

- Eliminate areas of ponded water other than designated retention ponds (insects and animals require water)
- Maintain a small working face
- Continue compaction of wastes
- Apply intermediate cover as the working face advances
- Apply soil or alternative cover where wastes once per week during the summer months, or more frequently as required

Should the Landfill Operator notice any signs that may indicate a rodent infestation or bear activity, he/she shall take action immediately. If a rodent extermination program is necessary, expert advice should be consulted. In the event of bear issues, the Department of Environment Wildlife Office should be contacted at (867) 975 - 7780.

10.7 Fires

Fires are included as a nuisance because of issues with safety, air quality, property damage, and general nuisances to site employees, customers, and neighbours. Fires are caused by:

- Hot loads unloaded at the working face
- Chemical reactions with a particular type of waste
- Intentional ignition
- Smoking (cigarette butts tossed onto the working face)
- Flammable debris on hot parts of the landfill equipment
- Sparking from compacting wastes such as automobile batteries

Should a fire occur, procedures outlined in Section 16.2 – Fire Management, should be implemented.

11. Surface Water Management

In 2011, the City of Iqaluit retained an engineering consulting firm to complete a West 40 Landfill Drainage Management Review that discusses the collection of the run-off within the Landfill, different treatment options and discharge criteria that should be followed. Please see Appendix E for a copy of the report.

The surface water run-off control system includes the following components See Figure 1 Appendix L:

- Run-off retention pond along the east and south edges of the landfill site. Retained water in this retention pond is pumped across Akilliq Drive to two (2) off site retention ponds.
- Off-site Retention Pond 1 – constructed in 2006 this pond has a capacity of approximately 5,000 m^3.
- Off-site Retention Pond 2 – originally this pond was constructed to retain and treat run-off water generated by the 2014 landfill fire. This pond is now integrated into the landfill surface water management system to provide additional storage capacity.
- In 2019 a landfill perimeter berm is being constructed to retain run-off water along the west side of the landfill and divert runoff to two (2) additional on-site run-off holding areas. A run-off holding area will be created at the north end of the site and at the south end of the site along the west perimeter. This retained water will be pumped into the existing storm water onsite retention pond.

On an as required basis retained run-off water must be pumped from the two west holding ponds to the east run-off retention pond. On an as required basis, retained surface water in the east on-site retention pond is to be pumped to the off-site retention ponds across Akilliq Drive. When water is being pumped from this on-site retention pond it must be sampled and analysed as per Section 15.7 Monitoring. This monitoring location is identified as IQA-08 in the Water License.

As required, generally on a semi-annual basis, water from the two off-site retention ponds will be discharged to the Akilliq Drive ditch where it will drain into Koojesse Inlet.

The City of Iqaluit is in the process of applying for Water Board approval to treat this retained run-off water. Once this approval is granted by the Water Board the water will be treated prior to discharge.

12. Landfill Leachate Management and Treatment

Leachate and surface water run-off from the Landfill is collected in a collection ditch/catchment pond that is constructed along the east and south perimeter of the Landfill in accordance with the surface water management plan developed in 2011. All run-off from the Landfill is to be diverted to this ditch/pond. On a regular basis the collected water is to be pumped from this collection ditch to the retention pond constructed on the west side of Akilliq Drive. The leachate is retained in this pond and on an as needed basis, once volume in the pond reaches capacity, The City contracts for the leachate to be treated.

In 2016 the City of Iqaluit submitted an amendment to the Nunavut Water Board an amendment to the licence to treat leachate generated at the Landfill. The details of this treatment process and related Spill Contingency Plan is provided in Appendix K.

13. Landfill Safety Plan

This section is to be read in conjunction with the City of Iqaluit safety requirements.

13.1 Introduction

Due to the nature of the facility, safety precautions should be taken by those personnel involved in the operation and maintenance of the Landfill. All personnel should be familiar and abide by the City of Iqaluit Occupation Health and Safety Program, which contains information such as training requirements, personal protective equipment requirements, WHMIS & Transportation of Dangerous Goods, Chemical Storage & Fire Protection, and First Aid. All personnel should be familiar and abide by the Nunavut Safety Act and Regulations.

Some of the safety precautions which Landfill personnel should follow include:

- Water and puncture proof gloves, coveralls, and safety boots are to be worn at all times
- Eye Protection and hard hats are recommended
- Work clothes should not be worn home
- Hands are to be washed frequently, as a minimum after work and before eating
- An appropriate fire extinguisher and a No. 1 First Aid Kit should be available at the site operators buildings
- Personnel should receive appropriate vaccinations and ensure they are kept up to date
- Proper lifting techniques should be exercised, lift with your legs and not your back
- Only personnel trained to handle hazardous materials should do so

Management is responsible to maintain an effective health and safety program, and provide the equipment, materials and training necessary to promote safe work practices and environments.

Supervisors are responsible to ensure that workers are supplied with the proper equipment and materials to conduct work safely, and to ensure that workers are trained in and follow established safe work procedures.

It is the duty of every worker to assume responsibility for their own safety by complying with legislative, company and industrial standards as well as the prompt reporting of all unsafe acts or conditions to supervisors to ensure immediate action and resolution.

13.2 Purpose

The City of Iqaluit Municipal Landfill Safety Plan is intended to:

- Provide guidance and instructions for Landfill Operator on safety-related matters
- Aid Landfill Operator in identifying potentially dangerous situations and taking appropriate action

The safety of site operating staff and the public is of prime importance at all times. Site employees shall not endanger themselves or others on the site. Employees are obligated to report unsafe practices and are empowered to notify other employees or site users acting in an unsafe manner. All accidents, injuries, or near misses are reported to the Landfill and the following steps are taken:

- Investigate the incident immediately
- Determine the cause
- Complete the accident/incident report
- Take immediate measures to correct the cause and prevent it from reoccurring
- Have a safety meeting with employees as soon as possible after the incident

13.3 Safety of Site Users

By the very nature of its business, a landfill can be a very busy place with continual movement of various types of vehicles. It is the Landfill Operator's responsibility to maintain the safety of the site users by informing users of the landfill rules and monitoring that the rules are conformed to. To protect the safety of site users, the following basic rules shall apply:

- Children, pets, and individuals not unloading waste must remain in vehicles
- Only adults are allowed to unload vehicles in areas as directed by Landfill Operator
- Wastes shall be unloaded to the rear of vehicles and not strewn about
- Smoking at the unloading area is not allowed - the site is non-smoking in all areas;
- No scavenging is allowed
- Users must leave unloading area immediately after unloading vehicles, unless advised to stay for inspection

To protect the safety of site users, the Landfill Operator shall:

- Control access to the site
- Inform users of the rules upon reporting to the office
- Post and maintain adequate directional signs
- Enforce the site speed limit
- Maintain an orderly site
- Immediately inform users of unsafe practices

13.4 Working Safely Around Public Vehicles

Important considerations for working around the public include:

- The actions of the public are unpredictable.
- Never stand/go/run behind vehicles. Keep the tipping area clear and level so vehicles can have easy access.
- Potentially dangerous loads may include lumber, pipe, brush, or other materials; when unloaded without care these could harm persons or vehicles. If possible, spot these loads for unloading in a separate area away from other landfill users. If space does not allow this, do not allow these loads to unload until the area is safely clear of any other users.
- Avoid pushing waste around the unloading vehicles.
- Keep the working area free of glass, pipe, wire, wood, and other debris that could cause tripping hazards, and/or foot puncture hazards.

13.5 Safe Equipment Operations

- Machines shall be operated only by individuals who are properly trained and fully understand the machine.
- Perform a pre-check walk-around every time you get on the equipment near the working face;
- Check breaking system.
- Always use seat belt.
- Clean windows and adjust mirrors for best vision.

- No machine shall be operated unless all safety devices are operational and in good repair, i.e. brakes, backup alarms, fire extinguishers, lights, horn, etc.
- Check site for unsafe operating conditions such as large bulky items that will cause equipment instability.
- Ensure area around the machine is clear before moving.
- Use stepping points and handholds when mounting and dismounting equipment.
- Do not crush sealed containers with unknown contents.
- Always use caution around site users who may not be aware of dangers.
- When parking the equipment always:
  - Park on a level surface.
  - Lower blades, buckets.
  - Move transmission lever to park.
  - Apply the parking break.

13.6 Personal Protective Equipment

Appropriate personal protective equipment (PPE) for Landfill site work includes the following:

- Approved safety boots.
- Coveralls.
- Gloves.
- Safety goggles.
- Earplugs (when around loud equipment).
- Safety vest.
- Dust masks (when in dusty surroundings).

Special safety equipment may be required for dealing with fires and other incidents.

13.7 Safety Supervision

Site safety at the Landfill is coordinated through the Landfill Operator. All operations are to be conducted with safety as a priority at all times.

The safety of site operating staff and the public is of prime importance at all times. Site employees shall not endanger themselves or others on the site. Employees are obligated to report unsafe practices and are empowered to notify other employees or site users acting in an unsafe manner. All **accidents, injuries,** or **near misses** are reported to the Landfill Foreman, the Director of Public Works and the City's Safety Officer, and the following steps are taken:

- Investigate the incident immediately.
- Find out the cause.
- Make a complete accident report.
- Take immediate measures to correct the cause and prevent it reoccurring.
- Have a safety meeting with employees as soon as possible after the incident.

Submit report to WSCC.

13.8 Landfill Accidents

Accidents

Accident frequency for landfills tends to be higher than for most other construction industries. This is generally due to the nature of the waste and the fact that garbage is unpredictable and potentially dangerous.

All accidents at the Landfill will be investigated and an Accident Report Form for the incident will be completed. Complete the form providing as many facts as possible; provide only the facts. Do not place blame or fault, and include the following information as required on the form:

- Who was involved?
- Which vehicles were involved?
- Were there any personal injuries?
- What property was damaged?
- Which agencies or individuals responded to the accident?
- Date, time, weather conditions, witnesses, and other pertinent information.

13.9 Landfill Emergencies

Landfill Emergencies should be dealt with according to the Landfill Emergency Response Plan (see Appendix I) which sets out appropriate procedures to address foreseeable emergencies. The key elements of this plan are:

1. What is the nature and severity of the emergency?
2. What is to be done?
3. Who does it?

The emergency response plan addresses the following items:

- Fires
- Accidents and Medical Emergencies
- Environmental and Operational Emergencies

During any landfill emergency, the press will likely become aware and cover the story. NOTE: Do not make any statement or comment to the press without approval of the Director of Public Works. The Director will be the only spokespersons for the City of Iqaluit Waste Management (Department of Public Works).

13.10 Personal Decontamination Procedures

In instances where workers accidentally come in contact with unknown substances, the following procedures are to be followed. As well the Landfill Foreman should fill out the Incident Report

Skin Contact

- Wash with water for approximately 15 minutes. See a physician if any sign of irritation occurs.

Eye Contact

- Flush eye(s) with a gentle stream of water for 15 minutes. See physician immediately.

Ingestion

- Contact emergency services immediately and provide them with as much information as possible about the product that was ingested. Do not induce vomiting unless instructed to do so.

Inhalation

- Remove person to fresh air. If discomfort persists, take victim to physician. Provide physician with as much information on the inhaled material as possible.

13.11 Contacts

This section provides a list of those individuals to be contacted under various conditions. NOTE: In all accidents that involve injuries and/or alcohol, call the RCMP.

If an accident occurs on-site, contact:

- Landfill Foreman
- Emergency and Protective Services of the City
- Department of Public Works
- Any employees which may be impacted
- Nearby employees who are trained to respond to this type of emergency

If there are injuries, contact:

- Iqaluit Emergency Services
- The RCMP (fatality)
- Landfill Foreman
- Superintendent

13.12 Telephone Numbers

- Emergency Services Dispatch/Ambulance/Fire Department: (867) 979-4422
- Fire Fighters (general): (867) 979-5650
- RCMP: (867) 979-1111
- Public Works Administration: (867) 979-5630
- Spill Line 24 hours
    - Tel: (867) 920-8130
    - Fax: (867) 873-6924
    - E-mail: spills@gov.nt.ca

14. Landfill Closure

14.1 Closure

When a new solid waste management facility is opened and this facility closes, it will be decommissioned according to the City of Iqaluit West 40 Landfill Decommissioning Plan (2014), see Appendix F. While the Landfill is still open, the final decommissioning plan should be considered as the Landfill is developed. As each area is completed, the perimeter slopes and surfaces are reclaimed. In this way the Landfill is closed and reclaimed progressively throughout the active landfill life.

15. Record Keeping and Reporting

Landfill management must establish and maintain an operating record and prepare required reports. Record keeping and reporting is an important part of landfill operations.

15.1 Daily Operator Log

The Landfill Foreman will maintain a record of daily operating activities. The log will be maintained in the Landfill site building/office and submitted to the Superintendent at the end of the month. Daily records include, but are not limited to:

- Weather conditions (i.e. precipitation, wind speed and direction, temperature)
- Operating staff on-site
- Equipment on-site
- Operations activities (waste placement, compaction, sorting, recycling, site clean-up, etc.)
- Monitoring (visual or measured)
- On-site issues encountered and response or corrective action taken

15.2 Load and Load Inspection Records

Load records are maintained at the site and kept on file at the Landfill Foreman's Office.

Local records generally include:

- Time and date of delivery
- Waste hauler or customer
- Volume of waste
- Type of waste
- Fees collected

15.3 Annual Report

The annual operations report will be prepared by the Superintendent and will include:

- A record of the amounts and types of wastes received, disposed, stored, or recycled at the Landfill
- Major incidents, and corrective actions taken, if applicable
- Locations of waste disposal
- Record of public complaints and response actions
- Annual environmental compliance audits
- Current operations and design plans
- As-built drawings and survey records
- Environmental monitoring results
- Spill Reports

The environmental annual report, which includes groundwater monitoring report, shall be submitted to the Engineering Department for inclusion in the Department’s annual report to the NWB. The annual operations report must meet the requirements prescribed in the City of Iqaluit Water License.

15.4 Engineering Reports

Engineering reports will be developed where new construction activities occur and will include:

- As-built drawings and records;
- Current design plans and reports; and
- Construction QA/QC procedures, results, and survey records.

All Engineering reports will be submitted to the NWB as per Water License requirements.

15.5 Corrective Action Report

In the event that a corrective action is undertaken, the corrective action shall be documented and maintained in the operating record. A corrective action report may include:

- A description of the problem;
- A description of activities and results; and
- A description of the monitoring and effectiveness of the corrective action.

15.6 Spill Reporting

In the event of a substance release, the Landfill Foreman shall immediately notify the Superintendent and the City's Spill Contingency Plan should be implemented (see Appendix J). The spill must be reported to the 24 – Hour Spill Report Line. The Foreman must call and fill out the spill response forms as provided by Nunavut Environment at the following web page: https://www.gov.nu.ca/environment/documents/spill. The NT-NU Spill Report is also provided in Appendix B.

15.7 Monitoring

The City of Iqaluit is required to provide monitoring at the West 40 Landfill as per The Type "A" Water Licence No. 3AM-IQA1626, Part I and Schedule I.

The landfill is to be monitored at three (3) locations:

- IQA-08: Discharge from the leachate discharge location in the landfill run-off detention pond/ditch
- IQA-08A: Station located up-gradient of the Landfill
- IQA-08B: Station located down gradient of the Landfill

A plan showing the monitoring locations is provided in Appendix L.

15.7.1.1 Monitoring Station IQA-08

Monitoring Station IQA-08 is located in the landfill run-off detention pond at the south end of the landfill which is used to collect landfill on-site runoff. Any water collected in this pond is pumped on a regular basis, as required, to the storage and treatment ponds located across Akilliq Drive.

When pumping of the retained water to the off-site retention ponds occurs, testing of the water is to occur:

- Once prior to pumped discharge to the storage and treatment ponds
- Once during pumped discharge to the storage and treatment ponds.

The samples are to be collected mid-depth in the ponded water. Testing results are to be provided in the Annual Report. The following table provides the testing requirements.

Table 5: Water Testing Parameters

Test Group	Analytical Parameters	Units
Biological (B)	Biochemical Oxygen Demand	Mg/L
	Total and Fecal Coliform	CFU/100mL
Effluent (E)	Total Suspended Solids (TSS)	Mg/L
	Temperature (field)	^0C
	Conductivity (field and lab)	uS/cm
	pH (field and lab)	pH units
Nutrients (N)	Ammonia-N, Nitrate-N, Nitrite-N	mg N/L
	Total Phosphorus, Orthophosphate	Mg/L
ICP-Metals Scan (Total)	Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, PB, Li, Mn, Mo, Ni, Se, Sn, Ag, Sr, Tl, Ti, U, V, Zn, Hg	Mg/L
Flow (F)	Volume	M^3
Landfill Specific (LS)	Polychlorinated Biphenyls (PCBs)	Mg/L
	Benzene, Toluene, Ethylbenzene and Xylene (BTEX)	

As per Licence Part E (4) the water within the pond is to meet the following criteria

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
Total Suspended Solids (TSS)	50.0 mg/L	100.0 mg/L
pH	Between 6 and 9	

15.7.1.2 Monitoring Stations IQA-08A and IQA-08B

Monitoring Station IQA-8A is located in the road ditch up stream of the landfill, and IQA-08B is in the road ditch downstream of the landfill. Water is to be sampled at these locations once per year, in the spring, when there is run-off flowing in the ditches.

Testing results are to be provided in the Annual Report. The following table provides the testing requirements.

Table 6: Water Testing Parameters

Test Group	Analytical Parameters	Units
Biological (B)	Biochemical Oxygen Demand	Mg/L
	Total and Fecal Coliform	CFU/100mL
Effluent (E)	Total Suspended Solids (TSS)	Mg/L
	Temperature (field)	^{0}C
	Conductivity (field and lab)	uS/cm
	pH (field and lab)	pH units
Nutrients (N)	Ammonia-N, Nitrate-N, Nitrite-N	mg N/L
	Total Phosphorus, Orthophosphate	Mg/L
ICP-Metals Scan (Total)	Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, PB, Li, Mn, Mo, Ni, Se, Sn, Ag, Sr, Tl, Ti, U, V, Zn, Hg	Mg/L
Flow (F)	Volume (flow estimated)	M^3
Landfill Specific (LS)	Polychlorinated Biphenyls (PCBs)	Mg/L
	Benzene, Toluene, Ethylbenzene and Xylene (BTEX)	

15.8 Water License Reporting Requirements

The City's Water License has specific reporting requirements for the West 40 Landfill (see Appendix H for the Water Licence). This reporting includes:

- Water monitoring reports
- Emergency discharge reports
- Engineering design reports (for planned work) and as-built drawing (for completed work)
- Annual Operation and Maintenance Manual revisions
- Follow up on Water Inspector orders/directives
- Shipping of recyclables
- Shipping of hazardous waste
- Abandonment and restoration

15.9 Health and Safety Program Records

Health and Safety Program Records must be maintained as per the City's Health and Safety Program, the Nunavut Health and Safely Act and Regulations, and WSCC requirements. These include but are not limited to the following types of records:

- Daily vehicle/equipment inspections
- Safety meetings
- Incident reports (accidents/near misses)
- Site safety inspections
- Equipment maintenance