Environment

Hamlet of Tuktoyaktuk

Solid Waste Disposal Facilities Operation and Maintenance Plan

Prepared by:

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1. Introduction

This Operation Plan is for the existing waste disposal facility and will serve to guide in the operations of this facility until it is replaced with the new engineered Municipal Solid Waste (MSW) Disposal Facility located approximately 12 kilometres (km) south of the community.

Water use and waste disposal in the Hamlet of Tuktoyaktuk is regulated by a Type B Water License issued by the Northwest Territories' Inuvialuit Water Board (IWB) as provided in **Appendix A.**

1.1 Objective

This plan has been developed to:

1. Provide the Hamlet of Tuktoyaktuk with "best management practices" for the operation and maintenance of its existing MSW disposal facility
2. Document these practices for review by the IWB and the community
3. Support the application of an updated water license

1.2 Operating Principles

The facility is to be operated according to the following principles:

- Only approved or authorized waste is accepted
- Wastes are compacted to the greatest practical density
- Wastes are segregated (metal, appliances, tires)
- Hazardous wastes are stored at the municipal yard (batteries, oil, antifreeze, solvents)
- Safe operating practices are followed
- Records are maintained with respect to operations and site development

A contact list for relevant Hamlet of Tuktoyaktuk personnel responsible for the Solid Waste Disposal Facility may be found in **Appendix B,** and is shown below in **Table 1.1.**

Table 1.1 - Solid Waste Collection and Disposal Facility Contacts

Contact Name	Contact Organization	Position	Contact Information
Grant Scott	Hamlet of Tuktoyaktuk	Senior Administrative Officer (SAO)	867-977-2286
Davy Krengnektak	Hamlet of Tuktoyaktuk	Municipal Services Manager (MSM)	867-977-2479
Grant Scott	Hamlet of Tuktoyaktuk	Hamlet Safety Official	867-977-2286
Irwin Elias	Elias Services	Waste Collection Contractor	867-977-2153

1.3 Operation Policies

Operation Policies were developed to provide specific details related to the operation and maintenance of the facility in general accordance of the requirements of the IWB Water License.

These Policies, presented in **Appendix C** of this plan, cover a wide range of topics; including safety, emergency response, record keeping, list of waste items not accepted, a list of waste items accepted, handling procedures for hazardous waste, litter control, etc. All personnel involved with the operation of the facility must be fully conversant with these Policies.

The Operation Policies may be amended by the Senior Administration Officer (SAO) as required. In case of discrepancies between the content of the plan and the Operation Policies, the Policies shall govern.

1.4 Location of Tuktoyaktuk and Local Infrastructure

The Hamlet of Tuktoyaktuk (the Hamlet) is situated in the Inuvik Region of the North West Territories (NWT). It is located at 69°27' N latitude and 133°03' W longitude, along the Kugmallit Bay of the Beaufort Sea and west of the Mackenzie River Delta (as shown in **Figure 1-1)**.

Tuktoyaktuk had a population of 935 in 2011 (Northwest Territories Bureau of Statistics, 2011). The population of the Hamlet is concentrated on the small Tuktoyaktuk Peninsula along the eastern shore of Kugmallit Bay.

Tuktoyaktuk's existing MSW facility is located approximately 3 km south of the Hamlet at an elevation of approximately 1 metre (m) above mean sea level (as shown in **Figure 1-2**).

Figure 1-1: Location of Tuktoyaktuk
Modified from original work of Algkalv and Dr. Blofeld, Wikimedia

Figure 1-2: Location of the Hamlet of Tuktoyaktuk Municipal Solid Waste Disposal Facility (AECOM, 2014)

1.5 Geophysical and Climate Information

The Hamlet of Tuktoyaktuk is located approximately 75 km north of the treeline, entirely within the zone of continuous permafrost. The active layer above the permafrost typically begins to thaw once the snow has melted in late May and is generally completely frozen again by the end of November. The active layer varies in thickness from a few centimeters (cm) to a few metres.

The terrain at Tuktoyaktuk is generally covered with an organic mat of peat and tundra vegetation. The landform of the Tuktoyaktuk area is thermokarst topography, which is characterized by an undulated land surface with small depressions and numerous shallow lakes. Most of the Tuktoyaktuk area is below 60 m in elevation. Pingos, massive ground ice, and ice-wedge polygons are common throughout the area.

Soils in the area are mapped as Orthic Turbic Cryosols (ESWG, 1996). Cryosols are permafrost-affected soils which are associated with tundra conditions, and are mineral soils strongly affected by cryoturbation or frost churning that generates various forms of patterned ground.

The climate can be characterized by long cold winters and short cool summers. According to the Environment Canada Climate Normals (ECCCN, 1981-2010) collected from the Tuktoyaktuk Airport's weather station from 1971 to 2010, the annual daily mean temperature was -10.1 degrees Celsius (°C), with a high of -6.4°C and a low of -13.8°C. The average total annual precipitation is 160.7 millimetres (mm); consisting of 103.1 cm of snowfall and 74.9 mm of rainfall. The warmest month on average is July, which has a mean temperature of 11.0°C, a high of 15.1°C and a low of 6.9°C. The coldest month on average is January with a mean temperature of -26.6 °C, a high of -23.0°C and a low of -30.4°C. The coldest temperature on record was -48.9°C on January 13, 1975. The warmest temperature on record was 29.4°C on July 26, 1973 (ECCCN, 1981-2010). The prevailing wind is from the east and northeast with maximum hourly winds recorded during the December to March period (Kiggiak-EBA, 2011).

2. Background

2.1 Facility History

Tuktoyaktuk's landfill site is located approximately 3 km south of the Hamlet along the all-weather road to Reindeer Point. This site has been in operation since the early 1970s. It was developed to replace the original dump located at the end of the community airstrip. The facility covers an area of approximately 20 hectares, although to date only a small portion of the available space has been used. The facility was developed along the shores of a bay of the Beaufort Sea.

Prior to 1984, the MSW disposal area was on the northern side of the current site (now a remediated area); the southern side had limited use as a disposal area. The southwestern side contained a large pile of bulky waste, originally comprising of old cars and metal construction debris. This area was remediated with cover material in 2004.

In 1986 a plan to improve the site conditions was developed, including preparation of an operations and management plan to guide site operations. The plan consisted of filling the site areas prone to tidal action with a layer of compacted debris to an elevation that was above mean sea level and then capping the debris with soil material. Waste was then placed in one area and once a year compacted, covered and graded.

In 1992 the bay was isolated from the ocean by construction of a dyke. Several land masses located offshore from the bay protect the area from storm damage.

Background information on the Tuktoyaktuk community, infrastructure and landfill development was gathered from a variety of locations, and references can be found in **Section 12**.

2.2 Solid Waste Quantification and Composition

Waste generated in Inuvialuit communities typically consists of household wastes and a few household hazardous wastes such as paints, solvents, waste oil or batteries. Tuktoyaktuk is home to the "BAR-3" auxiliary DEW Line site which ceased operations in 1993. Remediation work was completed in 2002, and therefore, no waste (industrial or otherwise) from that site is anticipated. Solid waste is collected by truck under contract to the Hamlet and transported to the current solid waste facility. The service currently involves one truck operating three days per week.

Theoretical waste volumes generated at the Hamlet were provided in the **"Tuktoyaktuk Solid Waste Site Relocation Planning Report" (AECOM, 2013)**. The generated waste volume for each year was calculated based on the equation provided in the **"Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories"** (MACA, 2003), shown below:

$$Volume\ (year) = 365\ V\ P_1\ (1+G) + 0.084\ V\ {P_1}^2 (1+G)^{2n}$$

Where:

V = average residential solid waste volume (m^3/person/day)
= 0.015 m3/person/day (FSC, 2000)
P_1 = population in current year (persons)
G = average community population growth rate (person/year)
n = forecast (n^{th}) year

The 2011 population (**P_1** in equation above) of 935 and annual growth rate (**G** in equation above) from 2001 to 2011 of -0.7% (provided GNWT Bureau of Statistics Census) were used. The predicted annual waste volume in cubic metres (m^3) and mass in tonnes (t) are shown below in **Table 2.1**.

Table 2.1 - Theoretical Annual Waste Generation in the Hamlet of Tuktoyaktuk

Year [1)]	Population [1)] (# persons)	Waste Generation [1)] (m^3/yr)	Waste Generation [1) 2)] (tonnes/yr)
2015	954	6,432	637
2020	978	6,689	662
2025	1,003	6,962	689
2030	1,028	7,252	718
2035	1,054	7,563	749
2040	1,081	7,894	782
2045	1,108	8,248	817
2050	1,136	8,628	854

[1)] Population and waste volume information taken from "Tuktoyaktuk Solid Waste Site Relocation Planning Report (AECOM, 2013)".

[2)] Assumed uncompacted waste density of 0.099 t/m^3 taken from "Guidelines for the Planning, Design, Operation and Maintenance of Modified Solid Waste Sites in NWT" (MACA, 2003).

Waste generation at the Hamlet was also estimated based on the current waste collection schedule and collection truck capacity (information provided by the Hamlet of Tuktoyaktuk and Elias Services). Table 2.2 summarizes the estimate waste generation based on the estimated annual truckloads of waste arriving at the landfill.

Table 2.2 - Estimate waste generation based on waste collection schedule

Item	Value	Units
Number of truckloads per work day [1)]	3	loads/work day
Weekly w**aste** collection schedule [1)]	3	work days/week
Collection t**ruck** c**apacity** [1)]	11.3	m^3/load
Annual generated waste (volume) [2)]	5,301	m^3/yr
Annual generated waste (tonnage) [3)]	525	t/yr

[1)] Information provided during discussion with the Hamlet of Tuktoyaktuk and waste collection contractor (Elias Services).

[2)] Calculated based on 52 operating weeks per year.
Annual generated waste (volume) = (3 loads/day) x (3 days/week) x (11.3 m^3/load) x (52 weeks/yr) = 5,301 m^3/yr

[3)] Assumed uncompacted waste density of 0.099 t/m^3 taken from "Guidelines for the Planning, Design, Operation and Maintenance of Modified Solid Waste Sites in NWT" (MACA, 2003).

The two methods (population/truck loads) used for estimating the volume of waste provide similar volumes for 2015. In the interest of being conservative, as well as being consistent with the Tuktoyaktuk Solid Waste Site Relocation Planning Report (AECOM, 2013), the larger volume of 6,432 m^3/yr should be used.

The generated waste's composition was assumed to be in line with what is typically generated in NWT communities as provided in the **"Guidelines for the Planning, Design, Operation and Maintenance of Modified Solid Waste Sites in Northwest Territories**" (MACA, 2003) and summarized below in Table 2.3.

Table 2.3 - Waste Composition in the Hamlet of Tuktoyaktuk

Waste Type [1)]	Waste Composition[1) 2)] (%, by weight)	2015 Waste Composition[1) 3)] (t/yr)
Food Wastes	20.3	129.3
Cardboard	9.8	62.4
Newsprint	2.4	15.3
Other Paper Products	14.8	94.3
Cans	4.4	28.0
Other Metal Products	6.2	39.5
Plastic, Rubber, Leather	14.0	89.2
Glass, Ceramics	5.7	36.3
Textiles	3.8	24.2
Wood	9.9	63.1
Diapers	3.8	24.2
Dirt	4.9	31.2

1) Information taken from “Table 2.1 - NWT Typical Modified Landfill Waste Compositions (% by weight)” found in the “Guidelines for the Planning, Design, Operation and Maintenance of Modified Solid Waste Sites in NWT (2003)”.

2) Details may not add to totals due to averaging and rounding.

3) Based on the predicted 2015 waste generation of 6,432 m^3/yr provided by **“Tuktoyaktuk Solid Waste Site Relocation Planning Report“** (AECOM, 2013) and the assumed waste density of 0.099 t/m^3 taken from “Guidelines for the Planning, Design, Operation and Maintenance of Modified Solid Waste Sites in NWT” (MACA, 2003). Waste tonnage calculated to be 637 t/yr in 2015.

3. General Overview

The MSW facility provides for the current activities:

- MSW disposal cells
- Sorting and storing pad for potentially recyclable/reusable waste including:
  - Wood area
  - Scrap tire area
  - Construct and demolition (C&D) waste area
  - Metal waste area
  - An exchange area (i.e. Take It or Leave It area) is also provided for people to drop-off and pick-up re-useable items

The Hamlet currently provides a MSW pick-up service and therefore, it is estimated that the majority of the waste at the Landfill will enter the facility via this service. It is assumed that wood, metal, tires, household hazardous waste, and some MSW will be delivered to the facility by residents. No provision has been made at this time for commercial or industrial hazardous waste; if any commercial or industrial entities wish to dispose of their hazardous waste in the Tuktoyaktuk Landfill, they will have to make an application to the Hamlet of Tuktoyaktuk and any appropriate government department before disposal is allowed.

The MSW facility is to provide MSW disposal and storage areas until the new engineered landfill is constructed and operational. This plan provides the operation and maintenance procedures required to properly manage the MSW facility, and to satisfy the requirements of the IWB Water License.

Wastes are deposited at the facility by the Hamlet waste collector in the active area for MSW and bulky waste. Limited diversion of the waste occurs for the appropriate materials. Hazardous waste found at the site is collected by Hamlet personnel and transported for storage at the municipal yard. No burning is allowed at the site.

The Hamlet's collection of MSW is provided by Elias Services of Tuktoyaktuk (867) 977-2153. The service operates three days per week and the waste truck has a capacity of approximately 11.3 m^3. This equates to an estimated annual volume of 5,301 m^3/yr. This estimated annual volume is similar to that which is estimated based on the Hamlet's population (6,432 m^3/yr). Both waste volume calculation methods are summarized in **Section 2.2**. In the interest of being conservative, as well as being consistent with the Tuktoyaktuk Solid Waste Site Relocation Planning Report (AECOM, 2013), the larger volume of 6,432 m^3/yr should be used.

4. Administrative Structure

4.1 Senior Administrative Officer (SAO)

The Senior Administration Officer (SAO) has overall responsibility of all Hamlet Departments, including the Municipal Services/Public Works Department which is responsible for management and operation of the MSW Disposal Facility. The SAO responsibilities in relation to the solid waste facility include:

- Review and allocate operating budget
- Monitor overall operations to confirm compliance with the requirements of the Water License and this plan
- Confirm personnel obtain proper training
- Review emergency response plans and confirm exercises occur on a regular basis
- Coordinate annual audits of the facility
- Liaise with the IWB
- Review and submit reports to the IWB, as required by the Water License
- Respond to public inquiries

4.2 Municipal Services Manager (MSM)

The Municipal Services Manager's (MSM's; also referred to as Municipal Works Manager) responsibilities for the solid waste facility include:

- Prepare annual operation and maintenance budget
- Manage operation and maintenance activities in accordance with the Water License and as indicated in this plan
- Organize training of personnel
- Prepare emergency response plans and schedule regular exercises
- Update the Safety Plan for the facility
- Implement and monitor compliance with the Landfill Operation Policies
- Review and update Landfill Operations Plan and associated policies as required
- Monitor surface water management
- Prepare reports required by the Water License
- Prepare and maintain an operational record of the facility
- Organize Landfill audits
- Monitor operation of the site and confirm regulatory compliance
- Serve as the "**Responsible Person**" for sampling, monitoring, and reporting duties for the Surveillance Network Program
- Serve as the "**Responsible Person**" for site operators training

5. Component Detail and Operation

5.1 Landfill Cells

The following types of waste may be accepted at the Landfill:

- Inert solids – including construction, renovation, and demolition debris
- Municipal solid wastes (MSW) – including plastics; paper; cardboard; wood; kitchen scraps; ceramics; etc.
- Non-hazardous solid wastes – which may include, but not limited to: treated hydrocarbon contaminated soils; solid contents of sump wastes; empty containers (as described in the Empty Container Policy) and other such materials deemed to be non-hazardous as defined by the *Guidelines for the General Management of Hazardous Waste in the Northwest Territories*

The Landfill is to be developed in cells of manageable sizes and compacted using a dozer.

5.2 Metal Waste Diversion Area

An area for the diversion of scrap metal waste is provided at the facility. Metal waste includes, but is not limited to, car bodies, white goods (appliances), metal drums and miscellaneous scrap metal. Metal waste should be crushed and removed from the site on a regular basis when the volume of stored material warrants.

A separate area is allocated for disposal and storage of white goods (i.e. appliances). The “Ozone Depleting Substances Management Policy”, in **Appendix C**, must be followed when receiving refrigerators and other Freon containing appliances. Freon-containing white goods must be segregated until the Freon has been removed. After the Freon has been removed, white goods may be placed in the general metal waste area.

5.3 Tire Diversion Area

Tires are stored here for eventual removal. Access must be provided for fire fighting vehicles. Fire separation must be maintained from other combustible materials.

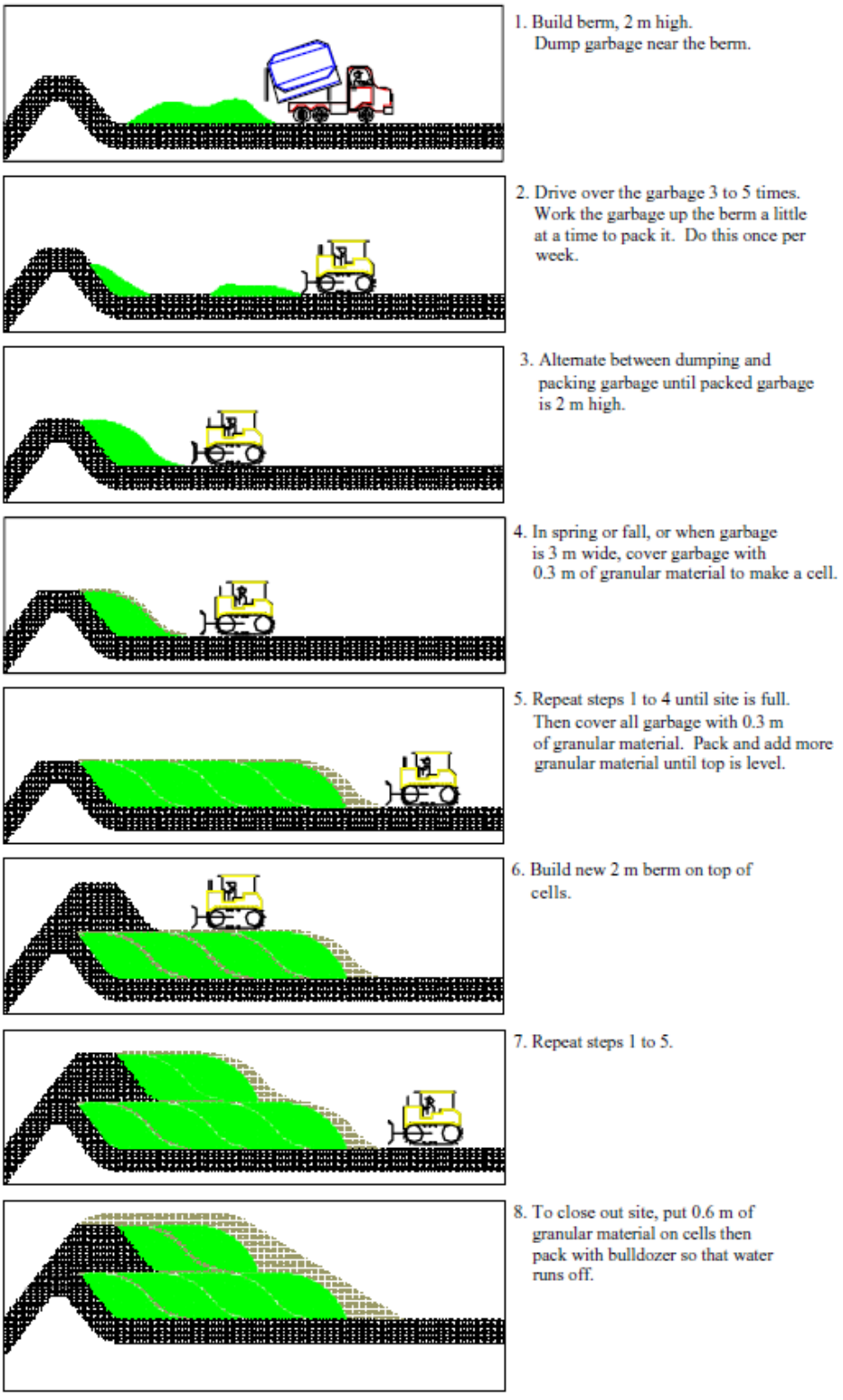

Figure 5-1: Typical Landfill Operation

Taken from *Guidelines for the Planning, Design, Operation and Maintenance of Modified Landfill Sites in the NWT, Government of the Northwest Territories, Municipal and Community Affairs, 2003*

5.4 Household Hazardous Waste (HHW) Temporary Storage

Household Hazardous Waste (HHW) is stored at the municipal yard. The Hamlet of Tuktoyaktuk's hazardous waste program will consist of a series of periodic collections, potentially two per year, during which citizens will bring their household hazardous waste to designated areas for collection and preparation for disposal. A designated drop off spot will be available year round at the facility. After several collection events, over a period of two to four years, the accumulated waste will require ultimate disposal.

Municipal personnel will be trained for hazardous waste handling. Advertising by the Hamlet of the collection event will begin a minimum of 30 days prior to each collection event. The advertisements give the location of the event as well as the dates and the time of day for bringing the wastes to the site. A household hazardous waste collection event will be held in an area, which is easily accessible to the public. The collection event should be organized in such a manner that citizens can drive their vehicles through an area and have the wastes unloaded for them (EarthTech, 2006).

Household hazardous wastes expected to be received at the Municipal Yard include paint, pesticides, batteries, solvents, antifreeze, used motor oil, motor switches, halogen bulbs, etc. Paint drums should be labelled and stored with covers; record types, date, status, etc. It is anticipated that the majority of the HHW will be collected during HHW drop-off events organized by the Hamlet. All hazardous waste accepted at the Municipal Yard shall be properly labeled and identified. Material Safety Data Sheets (MSDS) shall be obtained for all hazardous waste received. MSDS for several products are provided in the *Spill Contingency Plan for the Hamlet of Tuktoyaktuk*.

All personnel responsible for handling hazardous waste shall have Workplace Hazardous Materials Information System (WHMIS) training and shall follow appropriate safety procedures when handling hazardous waste. Personnel working in or around the waste should receive (or have received) and maintain vaccination for Tetanus, Diphtheria (Td) and Hepatitis (A and B). Hamlet personnel shall maintain a record of all hazardous waste on site; such as date of receipt, description, volume, generator, and method of storage.

HHW wastes are stored for eventual removal. Good housekeeping should be maintained and any wastes stored should be segregated by type. For example, batteries should be together, paint cans together, etc.

When hazardous waste is removed from the site the MSM shall maintain a record of the date, description and volume of waste removed, name of carrier, and obtain copies of the Transport of Dangerous Goods forms.

6. Site Management

6.1 Waste Acceptance Procedure

Items that are appropriate for disposal at the Landfill and in the designated cells are identified in **Section 5**. Items that are **not accepted** at the facility are specified in the **Prohibited Waste Policy**. These include:

- Industrial or commercial hazardous waste
- Materials contaminated by hydrocarbons
- Untreated biomedical waste (as per the Canadian Council of Ministers of the Environment Guidelines for the Management of Biomedical Waste in Canada)
- Radioactive waste
- Explosives
- Bulk liquids as defined in the **Prohibited Waste Policy**
- Waste that is smoldering upon delivery (hot loads)
- Asbestos
- Treated wood
- Fuel tanks
- Batteries
- Solvents
- Used oil
- Antifreeze

Wastes that are accepted but require special handling include:

- Animal carcasses (dispose of animal carcasses in designated animal pit and cover with fill material periodically to deter any wildlife and other nuisances)
- Appliances containing chlorofluorocarbons (CFCs; i.e. ozone depleting substances)
- Propane tanks and bottles
- Contaminated rags
- Fuel tanks (cleaned and cut as per policy)
- Contaminated soil and contaminated snow
- Empty containers as per the **Empty Container Policy** (**Appendix C**)

Policies for handling these materials are included in **Appendix C** of this plan.

6.2 Hazardous Waste

The IWB water license requires that hazardous waste be segregated and stored in a manner to prevent deleterious substances from entering the water, until such time as they have been removed for proper disposal at an approved facility. Hazardous waste is currently stored at the municipal yard

Hazardous wastes are items that can potentially cause groundwater and/or air pollution when disposed of in a landfill. HHW should be separated from other wastes before they leave the households, and therefore, a special effort by residents will be required to prevent HHW from entering the Landfill for disposal.

6.3 Litter Control

The MSM is responsible for litter control within the facility, surrounding areas and along access roads. The following procedures are recommended to limit litter:

- Limit the size of operating areas so that waste can be compacted at regular intervals
- Housekeeping around recycle and diversion areas
- Use portable fences to catch debris
- Encourage users to secure their load properly for transportation

The MSM or designates shall regularly collect litter from the site, surrounding areas and along access roads.

6.4 Surface Drainage

The site retains spring runoff and rainwater which must be pumped over the berm into the Beaufort Sea in order to control the water level. The Water Licence provides the following conditions regarding removing water from the site:

- GNWT Environment Protection, Inuvik must be notified at least 30 days prior to any discharge of water
- Water can only be discharged once approval has been granted by the GNWT Environment Protection Inspector
- Unless approved by the GNWT Environment Protection Inspector, water can only be discharged between September 15 and October 31
- Discharge cannot occur at the same time as discharge of effluent from the Sewage Disposal Facility
- Discharge of water from the facility shall not exceed a discharge rate of 350 m^3 per hour (97 litres per second; L/s, or 1,283 Imperial gallons per minute; IGPM)
- Discharge must occur at the mouth of the small bay adjacent to the disposal facility
- Discharge must occur from an anchored floating discharge pipe fitted with a diffuser located at a minimum distance of 10 m from the shoreline; discharge must cease upon observing the discharge of turbid water

Water that is to be discharged from the solid waste facility must be sampled at the Sample Station SNP 0714-3 (located at 69° 25' 18.8" N, 133° 2' 0.1" W; shown in Figure 6-1) prior to discharge and once during discharge. Each sample must be analysed for the following parameters shown in Table 6.1 below.

Table 6.1 – Testing Parameters for Sample Station SNP 0714-3

pH	Total Nickel	Biological Oxygen Demand (BOD_5)	Total Lead
Total Mercury	Total Iron	Polychlorinated Biphenyls	Total Zinc
Total Chromium	Total Cadmium	Total Suspended Solids	Faecal Coliforms
Total Copper	Total Cobalt	Total Manganese	Oil and Grease1

[1] Oil and grease added to analytical list as there is a Licence discharge limit.

All water discharged from the site shall meet the following discharged criteria:

Table 6.2 – Discharge Criteria for Sample Station SNP 0714-3

Sample Parameter	Maximum Average Concentration
Biological Oxygen Demand (BOD_5)	120.0 mg/L
Total Suspended Solids (TSS)	180.0 mg/L
Polychlorinated Biphenyls (PCB)	25.0 µg/L
Oil and Grease	5.0 mg/L

Figure 6-1: Location of Sample Point SNP 0714-3 (Image taken from Google Earth Pro Software™)

6.5 Maintenance

The MSM is responsible for the maintenance of infrastructure and equipment related to the MSW facility as presented below.

6.5.1 Access roads

Access road maintenance includes snow plowing, grading and dust control. Dust control can be achieved by watering or by using a dust suppressant. Occasionally the road will require reshaping and application of granular surfacing material.

6.5.2 Berms and Drainage Courses

Berms and drainage courses shall be inspected monthly during the summer months. Any signs of leachate breakthrough of the containment berm shall be noted and reported immediately to a professional engineer to provide repair recommendations. Drainage courses shall be maintained to ensure that they continue to perform their intended function.

6.5.3 Gates, Signs, Fences

Gates, signs and fences shall be inspected and maintained. Evidence of deterioration or damage shall be noted and reported to the SAO.

6.5.4 Storage Containers, Buildings

Storage containers and buildings shall be inspected regularly. Evidence of deterioration or damage shall be noted and reported to the SAO.

6.5.5 Heavy Equipment

Heavy equipment used for the MSW operations shall be maintained in good operating condition.

7. Record Keeping and Reporting

7.1 Monthly Reports

The Hamlet must estimate the monthly and annual quantity of waste accepted at the MSW facility, and include this information in the annual report to the IWB.

The facility must also keep a monthly summary of all quantities of hazardous waste removed from the site for storage at the Municipal Yard and a record of hazardous waste transported off site for disposal. The summary of monthly quantities is then to be rolled up into the annual report.

7.2 Annual Report

The Hamlet's Water License (N7L3-0714) requires an Annual Report to be submitted to the IWB. A full list of reporting requirements and submission dates can be found in the IWB Water License, in **Appendix A**. Generally the report must contain the following:

- The monthly and annual quantities of each and all wastes discharged
- Summary of the monthly and annual quantities of hazardous waste stored on site and transported off site
- Any problems, modifications or repairs done to the Waste Disposal Facility
- Tabular summary of the analytical results of the surface water monitoring
- A list of any spills and unauthorized discharges

7.3 Corrective Action Report

In the event that conditions of the Water License are not met, corrective action is required. 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 undertaken to correct the problem and results
- A description of the monitoring and effectiveness of the corrective action

7.4 Accident/Incident Reports

Special reports shall be filed for any accident/incidents occurring on site; including vehicle accidents (**Section 11.5**), personal injury (**Section 8.3, 11.3 and 11.4**), spill of deleterious substances (*Spill Contingency Plan for the Hamlet of Tuktoyaktuk*), fires (**Section 11.1 and 11.2**), etc.

7.4.1 Spill of Deleterious Substances and Unauthorized Discharges

In the event of a spill, the MSM shall immediately report to the 24 Hour Spill Report Line (867-920-8130):

- Nature of the spill
- Cause of the spill
- Current actions to contain the spill
- Anticipated time frame to correct the problem

The MSM will report the spill by telephone to the Hamlet of Tuktoyaktuk SAO. The MSM will document the call and keep a record of the call in the operating record.

7.5 Wildlife

The presence of bears or other animals at the site shall be reported to the MSM and to the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources' (DENR) local Tuktoyaktuk office at 867-977-2350. If the local office is unavailable, the GNWT DENR Inuvik regional office can be reached at 867-678-6650.

8. Safety Plan

8.1 General

Site safety is coordinated through the MSM. The MSW facility shall be operated according to the **Safe Work Policy** provided in **Appendix C**.

All operations shall be conducted with safety as a priority at all times. All municipal employees shall:

- Receive the appropriate safety training
- Wear the appropriate personal safety equipment
- Not endanger themselves or others at any time
- Report unsafe practices
- Notify other employees or site users when they are acting in an unsafe manner
- Receive and maintain vaccination for Tetanus, Diphtheria (Td) and Hepatitis (A and B)

All **accidents, injuries,** or **near misses** shall be reported to the Municipal Services Manager and the appropriate safety official at the Hamlet, and the following steps shall be taken:

- Investigate the incident immediately
- Find out the cause
- Make a complete 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

8.2 Traffic Accidents

Traffic accidents occurring at the site shall be reported to the RCMP and investigated by the MSM who shall also complete an **Accident Report Form** (provided in **Appendix D**).

8.3 Medical Emergencies

All injuries, even minor injuries, should be considered important and should be reported as a safety incident to the MSM or Tuktoyaktuk Safety Officer.

First Aid should be applied in a manner that is appropriate to the nature of the injury. If the injury requires medical assistance, the individual should be taken to a medical emergency centre or an ambulance service contacted.

A medical doctor should be consulted for all injuries that may result in infections as a result of working with waste materials. This includes injuries such as cuts and scrapes, skin punctures with sharp items, and fire or chemical burns.

If the person injured on-site is a customer or visitor, the MSM and employees shall provide any assistance necessary and administer appropriate First Aid.

8.4 Personal Decontamination Procedures

In instances where workers accidentally come in contact with unknown substances, the following procedures shall be followed.

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 (use eye wash station with distilled water). See physician, without exception.

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.

9. Fires

All fires shall be considered serious and immediately reported to the MSM. An incident report must be completed for all fire occurrences, with a copy kept on file and one sent to the Hamlet Safety Official.

The MSM may take charge of extinguishing fires that are small and contained. However, fires that are burning out of control or giving off toxic fumes shall be managed by the Fire Department.

9.1 Fire Prevention

The Landfill shall be operated in a manner that minimizes the potential for fires. Fire prevention techniques include:

- Prohibit staff and customers from lighting fires at the facility
- Prohibiting smoking at the Landfill facility outside of designated smoking area(s)
- Thoroughly compact all waste regularly
- Do not authorize the dumping of hot/burning debris, explosives or highly combustible waste
- Provide an area apart from the general tipping area for dumping of ash barrels
- Maintain a reserve of cover material near active working areas for immediate action in case of fire
- Conduct a site inspection at the end of the day looking for evidence of smoke
- Train employees on early fire hazard recognition

9.2 General Fire-Fighting Procedures

- Cover the burning material with soil
- Dig out the burning debris and let it burn in a controlled environment, away from other combustible materials
- Use water

9.3 General Fire Response Procedure

- Secure the area
- In cases of small fires, direct customers to safe areas. In cases of large fires, follow **Emergency Response** procedures and quick reference guides for **Fire at the Landfill** and **Fire in Recycle Area**
- Notify the MSM
- Call the Tuktoyaktuk Fire Department at 867-977-2222
- Do not fight a fire alone, work with other staff members, and ONLY if safe to do so
- Do not place yourself or others in danger while fighting a fire
- Heavy equipment shall only be used to place material to smother a fire, and only when safe to do so

10. Emergency Response

Emergency response may be required in cases of:

- Fire or gaseous release
- Spills
- Accidental Injury or Medical

In all emergencies the MSM shall have complete authority over the site. The MSM's responsibilities in an emergency are:

- Declare the emergency
- Evacuate non-essential personnel or isolate the area – as warranted by the severity of the situation
- Notify the appropriate response agency
- Notify the SAO and other Hamlet personnel
- Establish control and manage the situation prior to arrival of the response agency
- Liaise with the emergency response representatives upon their arrival
- Declare the end of the emergency
- Complete a report documenting the nature of the emergencies and actions undertaken

The MSM will contact the appropriate agency to report incidents related to environmental or health and safety associated with the emergency.

Municipal Services / Works of the Hamlet of Tuktoyaktuk will review the emergency plan annually and following an emergency incident ensure that:

- Emergency response procedures for the Landfill are effective and updated as necessary
- Appropriate individuals are appointed to manage emergency situations
- Regular fire prevention meetings are conducted with all Landfill employees and the Fire Department
- Regular safety and emergency meetings are held with Landfill employees

10.1 Contact Information

Additional contact information is also provided in **Appendix B**.

- Hamlet of Tuktoyaktuk Office: 867-977-2286
- Hamlet of Tuktoyaktuk Works: 867-977-2479
- GNWT Environment and Natural Resources Regional Office - Inuvik: 867-678-6650 or 867-678-6690
- GNWT Environment and Natural Resources Local Office - Tuktoyaktuk: 867-977-2350
- GNWT Environment Protection – Inuvik:867-678-6676
- RCMP - Tuktoyaktuk Detachment: 867-977-1111
- Tuktoyaktuk Fire Department: 867-977-2222
- Tuktoyaktuk Health Centre: 867-977-2321
- Inuvik Regional Hospital: (general) 867-777-8000 or (emergency) 867-777-8160
- Hazardous Waste Spill 24 Hour Hotline: 867-920-8130
- Elias Services of Tuktoyaktuk (Waste Collection Contractor): 867-977-2154

11. Reference Guide

The following tables provide a quick reference guide describing how to prevent and respond to several potential contingency situations that may arise.

11.1 Fire at the Landfill

Prevention

- Staff training and awareness
- Waste acceptance procedures and policies
- Diversion of hot loads, combustible and/or explosive material from working area
- Application of cover soils to minimize size of the active working area

Response Plan

Action	Time Frame	Who?	Resources
Evacuate and secure the area	Immediately	MSM	Municipal Works Personnel
Call: Fire Department IWB MSM Hamlet Safety Official	Immediately	MSM	Municipal Works Personnel
Isolate the burning wastes	Immediately	MSM	Landfill Equipment
Determine the nature and extent of the fire	Immediately	MSM	Municipal Works Personnel
Excavate, remove, and soak the burning waste	As soon as it is determined safe to do so	MSM	Municipal Works Personnel Fire Department Landfill equipment Water truck Water pumps
Cover the burning area	Immediately after the source of burning waste has been excavated and removed, and as soon as it is safe to do so	MSM	Municipal Works Personnel Fire Department Landfill equipment
Appoint staff for fire guard	After fire is extinguished	MSM	Municipal Works Personnel Fire Department
Confirm the fire is extinguished	Immediately	MSM	Fire Department
Review the cause of fire and implement mitigative measures	Within 1 month	MSM Hamlet Safety Official	Municipal Works Personnel Fire Department

11.2 Fire in Recycle Area

Prevention

- Separation of materials according to the Fire Code

Response Plan

Action	Time Frame	Who?	Resources
Evacuate and secure the area	Immediately	MSM	Municipal Works Personnel
Call: Fire Department MSM Hamlet safety official	Immediately	MSM	Municipal Works Personnel
Determine the nature of the burning material and potential for emission of toxic fumes	Immediately	MSM	Fire Department IWB
Isolate the burning material	Immediately, if safe to do so	MSM	Fire Department
Determine the nature and extent of the fire	Immediately	MSM	Municipal Works Personnel
Extinguish the fire as appropriate; according to the nature of the material	As soon as it is safe to do so	MSM	Municipal Works Personnel Fire Department Landfill equipment Water truck Water pumps
Confirm the fire is extinguished	Immediately	MSM	Fire Department
Review cause of fire and prepare appropriate mitigative measures	Within 1 month	MSM Hamlet Safety Official	Municipal Works Personnel Fire Department

11.3 Minor Medical Injuries

Prevention

- Safety plan and procedures
- Employee safety training and awareness
- First Aid training

Response Plan

Action	Time Frame	Who?	Resources
Apply appropriate First Aid	Immediately	First Aider	
Recommend that the injured person consult a physician	Immediately	First Aider	
Take the injured person to a medical emergency centre or contact an ambulance service if deemed appropriate	Immediately	First Aider	
Record injury in the weekly report	By end of the work day	MSM	Municipal Works Personnel
Review cause of the injury and prepare appropriate mitigative measures	Within 1 month	MSM Hamlet Safety Official	Municipal Works Personnel Occupational Health and Safety

11.4 Serious Medical Injury

Prevention

- Safety plan and procedures
- Employee safety training and awareness
- First Aid training

Response Plan

Action	Time Frame	Who?	Resources
Assess site conditions for personal safety and safety of others, and take appropriate actions to secure unsafe areas	Immediately	MSM First Aiders	Municipal Works Personnel
Attend to the injured person and apply First Aid	Immediately when safe to do so	First Aider	
Contact: Ambulance MSM Hamlet Safety Official	Immediately	First Aider MSM	
Stay with the injured person until medical assistance arrives	Duration of medical emergency	First Aider	
Record injury in the weekly report	By the end of the work day	MSM or Designated Alternate	Municipal Works Personnel
Conduct an investigation to determine the cause of injury and prepare appropriate mitigative measures	Investigate immediately following the incident. Complete mitigative measures within 1 month of the incident	MSM Hamlet Safety Official	Municipal Works Personnel Occupational Health and Safety

11.5 Vehicle or Equipment Accidents

All vehicle accidents shall be reported and an investigation as to the cause should be carried out. Following the investigation, appropriate mitigative measure should be implemented to avoid future accidents.

Prevention

- Safety plan and procedures
- Employee safety training and awareness
- Traffic control signs

Response Plan

Action	Time Frame	Who?	Resources
Report the accident to the MSM	Immediately	Municipal Works Personnel	
If damage is minor, have the vehicle driver report the accident to the RCMP	Immediately	MSM	
If the damage is significant, call the RCMP	Immediately	MSM	
If an injury is involved, call the Hamlet of Tuktoyaktuk Municipal Services / Works at 867-977-2286 or 867-977-2479 , and implement medical response actions	Immediately	MSM	
Secure the area for a follow-up investigation	Immediately	MSM	
Record the injury in the weekly report	By the end of the work day	MSM or Designated Alternate	Municipal Works Personnel
Conduct an investigation into the cause of the accident and prepare appropriate mitigative measures	Within 1 month of the accident	MSM RCMP Hamlet Safety Official	Occupational Health and Safety

11.6 Prohibited Wastes Delivered to the Landfill

Prevention

- Waste acceptance policies and procedures
- Employee training and awareness

Response Plan

Action	Time Frame	Who?	Resources
Deny entry of the load	Immediately	MSM	Operation and Maintenance Plan Waste Acceptance Procedures IWB
Determine if load is safe for transport on local roads	Within 1 hour	MSM	Transport Canada Transport of Dangerous Goods Regulations
Inform the waste generator of the infraction	Within 1 hour	MSM	
Document the nature of incident and actions taken	Within 1 hour	MSM	Weekly Activity Log Book Hazardous Material Check Form
Review waste acceptance procedures and implement necessary mitigative measures	Within 1 month	MSM	Hamlet safety official

11.7 Prohibited Waste Discovered at the Landfill

Prevention

- Waste acceptance policies and procedures
- Employee training and awareness

Response Plan

Action	Time Frame	Who?	Resources
Isolate waste and cease operations in the area of the waste	Immediately	MSM	IWB Environmental Consultant
Construct containment around perimeter of the waste if necessary	Immediately	MSM	Landfill equipment 50 Gal Spill Kit
Determine source of waste, and if possible the waste hauler and generator	Within 1 week	MSM	Scale Records Staff observations
If identified, contact the hauler and waste generator to review options	Within 1 to 2 weeks	MSM	
Document nature of incident and actions taken	Within 1 hour	MSM	Weekly Activity Log Book Hazardous Material Check Form
Inform Inuvialuit Water Board (IWB)	When results have been confirmed	MSM	
Review waste acceptance procedures and practices, and implement mitigative measures	Within 1 month	MSM	Hamlet Safety Official

11.8 Hot Loads (Loads with Smoldering Materials) Delivered to the Landfill

Prevention

- Waste acceptance policies and procedures
- Employee training and awareness

Response Plan

Action	Time Frame	Who?	Resources
Designate an area away from the working area	Immediately	MSM	
Contain burning material within soil berms	Immediately	MSM	Municipal Works Personnel
Apply appropriate measures to extinguish the fire: wet, smother with soil, or allow to burn out	Within 1 hour	MSM	Water truck Landfill Equipment Municipal Works Personnel
Monitor fire	For duration of fire	MSM	Municipal Works Personnel
Remove extinguished material and dispose at working area	Within 2 to 3 days after being extinguished	MSM	Landfill Equipment Municipal Works Personnel

11.9 Wind Blown Litter

Prevention

- Ensure the customer or operator is transporting landfill acceptable materials which are properly covered and secured
- Maintain as small a working area as practical
- Maintain portable litter catchment fences around active areas
- Maintain perimeter fencing free of debris, papers and wind-blown substances

Response Plan

Action	Time Frame	Who?	Resources
Review working area and litter catchment fence placement	Immediately	MSM	Environmental Consultant
Implement off-site litter pick-up	Within 1 week	MSM	Temporary staff
Implement on-site litter pick-up	Within 1 month	MSM	Temporary staff
Review litter control program and revise if necessary	Within 2 months	MSM	Environmental Consultant

11.10 Hazardous Material Spill Contingency

Prevention

- Waste acceptance
- Employee training and awareness

Storage

The MSM should develop hazardous spill contingency plans associated with removal of hazardous material in conjunction with Northwest Territories officials when transportation opportunities arise.

Scope

Other than the HHW, which already has secondary containment, the most probable source of a hazardous material spill is petroleum products from vehicles or equipment at the site; which would be a spill limited to the size of the vehicle or equipment tank. For additional information please see the *Spill Contingency Plan for the Hamlet of Tuktoyaktuk*.

Equipment

- 50 Gallon Capacity Universal Sorbent Spill Kit includes:
  - 10 – 3" x 48" socks
  - 4 – 3" x 10' socks
  - 50 – 15" x 17" pads
  - 4 pillows
  - 50 wipers
  - 5 disposal bags and ties
  - 5 tamperproof seals
  - 2 pair nitrile gloves
  - 1 emergency response guidebook

Response Plan

Action	Time Frame	Who?	Resources
Contain and clean spill	Immediately	MSM	50 Gallon Spill Kit
Contact Fire Department for support & additional response	Immediately	MSM	
Call Hazardous Spill Hotline	Immediately	MSM	Environmental Consultant
Review operating procedures and acceptance policies and identify appropriate mitigative measures	Within 1 week	MSM	Environmental Consultant Hamlet Safety Official

12. Reference Information

The preparation of this O&M plan is based upon the following information sources:

AECOM, 2009. *"Hamlet of Tuktoyaktuk - Background Report for Water Licence Renewal"*. AECOM, 2009.

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DMCA GNWT, 1996. "Guidelines for the Preparation of an Operation and Maintenance Plan for Sewage and Solid Waste Disposal Facilities in the Northwest Territories". D. Duong & R. Kent, Department of Municipal and Community Affairs, Government of Northwest Territories, 1996.

DMCA GNWT, 1990. *"Establishing Guidelines for the Separation of Solid Waste Disposal Sites and Airports in the Northwest Territories. Final Report - Phase 1"*. R. M. Soberman, G. W. Heinke, and M. Lovicsek, Department of Municipal and Community Affairs, Government of Northwest Territories, 1990.

DMCA GNWT, 2003. *"Guidelines for the Planning, Design, Operation and Maintenance of Modified Solid Waste Sites in the Northwest Territories"*. R. Kent, P. Marshall, and L. Hawke, Department of Municipal and Community Affairs, Government of Northwest Territories, 2003.

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EarthTech, 2005. *"Hamlet of Tuktoyaktuk Operation and Maintenance Documentation - Sewage Treatment Facility"*. EarthTech, 2005.

EarthTech, 2006. *"Hamlet of Tuktoyaktuk Operation and Maintenance Documentation - Municipal Solid Waste Facility"*. EarthTech, 2006.

ESWG, 1996. *"A National Ecological Framework for Canada".* Ecological Stratification Working Group, 1996.

DEN, 2011. *"Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities"*. Department of Environment, Government of Nunavut, 2011.

INAC, 2007. *"Guidelines for Spill Contingency Planning".* Indian and Northern Affairs Canada, 2007.

IWB, 1992. "Guidelines for the Discharge of Treated Municipal Wastewater in Northwest Territories". Northwest Territories' Inuvialuit Water Board (IWB), 1992.

IWB, 2010. *"Hamlet of Tuktoyaktuk Type B Water License N7L3-0714*". Northwest Territories' Inuvialuit Water Board (IWB), 2010.

IWB, 2014. "Guidance for the Preparation of Waste Management Plans", Inuvialuit Water Board, 2014.

Kiggiak-EBA, 2011. *"Environmental Impact Statement for construction of the Inuvik to Tuktoyaktuk Highway, NWT"*. Kiggiak-EBA. 2011.

Romanovsky, 2010. *"Permafrost Thermal State in the Polar Northern Hemisphere during the International Polar Year 2007–2009: a Synthesis"*. Romanovsky, Smith, and Christiansen, 2010.

Appendix A

Northwest Territories' Inuvialuit Water Board (IWB) Water Licence

NORTHWEST TERRITORIES WATER BOARD

NUNAPPA SIVUNIUKPAIT IMMAKUN

April 23, 2010

Attention: Debbie Raddi
Senior Administrative Officer
Hamlet of Tuktoyaktuk
BOX 120
Tuktoyaktuk, NT
X0E 1C0

File: N7L3-0714

Dear Ms. Raddi:

ISSUANCE OF TYPE B WATER LICENCE RENEWAL

Attached is Water Licence N7L3-0714 granted by the Northwest Territories Water Board (the Board) in accordance with the *Northwest Territories Waters Act*. A copy of this Licence has been filed in the Public Registry at the NWTWB offices. Water Licence N7L3-1525 has been approved for a period of three years commencing April 23rd, 2010 and expiring November 20, 2013. Also attached are the general procedures for the administration of Licences in the Northwest Territories. Please review these carefully and address any questions to the Board's office.

This letter, with attached procedures, all Inspection Reports and correspondence related thereto are part of the Public Registry and are intended to keep all interested parties informed of the manner in which the Licence requirements are being met. All Public Registry material will be considered if an amendment to the Licence is requested.

The full cooperation of Hamlet of Ulukhaktok is anticipated and appreciated. Should you have any further questions or concerns, please telephone the Northwest Territories Water Board at (867) 678-2942 or e-mail at info@nwtwb.com.

Yours sincerely,

Eddie Dillon
Chair

Attachments

Copied to: Carol Mills, Manager, Water Resources, INAC;
Conrad Baetz, North Mackenzie District Office- INAC

NORTHWEST TERRITORIES WATER BOARD

Pursuant to the *Northwest Territories Water Act* and Regulations, the Northwest Territories Water Board, hereinafter referred to as the Board, hereby grants to:

Hamlet of Tuktoyaktuk
(Licensee)

of P.O. Box 120, Tuktoyaktuk, NT, X0E 1C0
(Mailing Address)

Hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number:	N7L3-0714 (RENEWAL)
Licence Type:	"B"
Water Management Area:	NORTHWEST TERRITORIES 07
Location:	Hamlet of TUKTOYAKTUK, Northwest Territories
Purpose:	WATER USE AND WASTE DISPOSAL FOR A MUNICIPAL UNDERTAKING
Quantity of water **not to be exceeded**:	100,000 CUBIC METRES
Effective Date of Licence:	April 23rd, 2010
Expiry Date of Licence:	November 20th, 2013

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

NORTHWEST TERRITORIES WATER BOARD

Witness **Chair**

GENERAL PROCEDURES FOR THE ADMINISTRATION OF LICENCES ISSUED UNDER THE NORTHWEST TERRITORIES WATERS ACT IN THE NORTHWEST TERRITORIES

1. At the time of issuance, a copy of the Licence is placed on the Water Register in the Office of the Northwest Territories Water Board in Yellowknife, and is then available to the public.

2. To enforce the terms and conditions of the Licence, the Minister of Indian Affairs and Northern Development has appointed Inspectors in accordance with Section 35(1) of the *Northwest Territories Waters Act*. The Inspectors coordinate their activities with officials of the Water Resources Division of the Department of Indian Affairs and Northern Development. The Inspector responsible for Licence No. N7L3-0714 is located in the North Mackenzie - Inuvik District Office.

3. To keep the Water Board and members of the public informed of the Licensee's conformity to Licence conditions, the Inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating what action, if any, should be taken. The inspection reports and covering letters are placed on the public Water Register, as are any responses received from the Licensee pertaining to the inspection reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.

4. If the renewal of Licence No. N7L3-0714 is contemplated it is the responsibility of the Licensee to apply to the Water Board for renewal of the Licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any Licence renewal. Please note that if the Licence expires and another has not been issued, then water and waste disposal must cease, or you, the Licensee, would be in contravention of the *Northwest Territories Waters Act*. It is suggested that an application for renewal of Licence No. N7L3-0714 be made at least eight months in advance of the Licence expiry date.

5. If, for some reason, Licence No. N7L3-0714 requires amendment, then a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the Water Board with ample time to go through the amendment process. The process may take up to six (6) months or more depending on the scope of the amendment requested.

.....2

6. Specific clauses of your Licence make reference to the Board, Analyst or Inspector. The contact person, address, phone and fax number of each is:

BOARD:

Executive Director
Northwest Territories Water Board
Box 2531
INUVIK, NT X0E 0T0

Phone No: (867) 678-2942
Fax No: (867) 678-2943

Executive Director
Northwest Territories Water Board
Box 1326
YELLOWKNIFE, NT X1A 2N9

Phone No: (867) 765-0106
Fax No: (867) 765-0114

ANALYST:

Analyst
Water Laboratory
Department of Indian Affairs
and Northern Development
Box 1500, 4601 - 52nd Avenue
YELLOWKNIFE, NT X1A 2R3

Phone No: (867) 669-2780
Fax No: (867) 669-2718

INSPECTOR:

Inspector
North Mackenzie-Inuvik District Office
Department of Indian Affairs
and Northern Development
P.O. Box 2100
INUVIK, NT X0E 0T0

Phone No: (867) 777-3361
Fax No: (867) 777-2090

PART A: SCOPE AND DEFINITIONS

1. Scope

This Licence entitles the Incorporated Hamlet of Tuktoyaktuk to use water and dispose of Waste for municipal undertakings at Tuktoyaktuk, Latitude 69°27' North and Longitude 133°02' West, Northwest Territories.

This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conforming to such Regulations.

Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

This Licence is issued subject to the conditions contained herein with respect to the Use of Waters as prescribed in Section 8 of the Act and the Deposit of Waste to any Waters as prescribed in Section 9 of the Act.

2. Definitions

In this Licence: **N7L3-0714**

"*Act*" means the *Northwest Territories Waters Act;*

"Analyst" means an Analyst designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

"Average Concentration" means the discrete average of up to four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

"Average Concentration for Faecal Coliforms" means the running geometric mean of up to four consecutive analytical results submitted to the Board in

accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

"Bagged Toilet Waste Disposal Facilities" comprises the area and associated structures designed to contain bagged Toilet Waste (honey bags);

"Board" means the Northwest Territories Water Board established under Section 10 of the *Northwest Territories Waters Act*;

"Freeboard" means the vertical distance between water line and the lowest elevation of the effective water containment crest on a dam or dyke's upstream slope;

"Geotechnical Engineer" means a professional engineer registered with the Northern Association of Professional Engineers and Geoscientist and whose principal field of specialization is the design and construction of earthworks in a permafrost environment;

"Greywater" means all liquid Waste from showers, baths, sinks, kitchens and domestic washing facilities, but does not include Toilet Waste;

"Inspector" means an Inspector designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act;*

"Licensee" means the holder of this Licence;

"Minister" means the Minister of Indian Affairs and Northern Development;

"Modification" means an alteration to a physical work that introduces a new structure or replaces an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

"Pump-out Sewage" means all Toilet Wastes and/or Greywater collected by means of a vacuum truck for disposal at an approved facility;

"Regulations" means Regulations proclaimed pursuant to Section 33 of the *Northwest Territories Waters Act;*

"Sewage" means all Toilet Wastes and Greywater;

"Sewage Disposal Facilities" comprises the area and engineered structures designed to contain Sewage;

"Solid Waste Disposal Facilities" comprises the area and associated structures designed to contain solid Waste including structures used to contain surface runoff;

"Toilet Wastes" means all human excreta and associated products but does not include Greywater;

"Waste" means Waste as defined by Section 2 of the *Northwest Territories Waters Act;*

"Waste Disposal Facilities" means all facilities designated for the disposal of Waste and include the Sewage Disposal Facilities, Solid Waste Disposal Facilities, and Bagged Toilet Wastes Disposal Facilities;

"Water Supply Facilities" means all facilities designed to collect, treat and supply water for municipal purposes; and

"Waters" means any Waters as defined by Section 2 of the *Northwest Territories Waters Act;*

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report with the Board and an Inspector no later than April 30th of the year following the calendar year reported that shall contain the following information:

    a. The monthly and annual quantities in cubic metres of fresh water obtained from all sources;

    b. the monthly and annual quantities of each and all Wastes discharged;

    c. a summary of the monthly and annual quantities of hazardous Waste stored on site and transported off site;

    d. the monthly and annual quantities of solid Waste (e.g. sludge) removed from the Sewage Disposal Facilities for disposal;

    e. any problems, Modifications or repairs done to the Water Supply and Waste Disposal Facilities, including all associated structures;

    f. tabular summaries of all data generated under the "Surveillance Network Program";

    g. a list of spills and unauthorized discharges;

    h. an outline of any spill training and/or other operator training carried out;

    i. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

j. a summary of any studies requested by the Board that relate to Waste disposal, water use, or reclamation, and a brief description of any future studies planned;

k. updates and/or revisions to the approved Spill Contingency Plan, Municipal Solid Waste Operations and Maintenance Plan, and Sewage Treatment Plan; and,

l. any other details on Waste disposal or water use requested by the Board by November 1st of the year being reported.

2. The Licensee shall comply with the "Surveillance Network Program" annexed to this Licence, and any amendment to the said "Surveillance Network Program" as may be made from time to time, pursuant to the conditions of this Licence.

3. The "Surveillance Network Program" and compliance dates specified in the Licence may be modified at the discretion of the Board.

4. The Licensee shall, within 60 days of the issuance of this Licence, submit to the Board for approval a map or drawing indicating the location of all Surveillance Network Program sampling stations.

5. The Licensee shall, within 60 days of issuance of the Licence, post signs in the appropriate areas to inform the public of Water Supply, Waste Disposal Facilities and the segregated temporary storage of Hazardous waste areas. All postings shall be located and maintained to the satisfaction of an Inspector.

6. Any meters, devices or other such methods used for measuring the volumes of water used or Waste disposed and discharged shall be installed, operated and maintained to the satisfaction of an Inspector.

7. The Licensee shall immediately report to the 24 Hour Spill Report Line (**867 920-8130**) any spills which are reported to, or observed by, the Licensee within the municipal boundaries, or in the areas of the Water Supply or Waste Disposal Facilities.

8. The Licensee shall ensure a copy of this Licence is maintained at the municipal office at all times.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all water for human consumption from Kudlak Lake using the Water Supply Facilities or as otherwise approved by the Board.

2. The Licensee may obtain water from an alternate water supply for use on an emergency basis upon approval of an Inspector when it is not possible to obtain water from Kudlak Lake as stated in Part C, Item 1.

3. The yearly quantity of water used for all purposes shall not exceed 100,000 cubic metres.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall direct all Pump-out Sewage to the Sewage Disposal Facilities or as otherwise approved by the Board

2. All Sewage effluent discharged from the Sewage Disposal Facilities at "Surveillance Network Program" Station Number 0714-2 shall meet the following effluent quality standards:

Parameter	Maximum Concentration	Average
Faecal Coliforms	1×10^4 CFU/100ml	
Biological Oxygen Demand (BOD_5)	120.0 mg/L	
Oil and Grease	5 mg/L	
Total Suspended Solids (TSS)	180.0 mg/L	

The Waste discharged shall have a pH between six (6) and nine (9) and no visible sheen of oil and grease.

3. The Licensee shall advise an Inspector at least ten (10) days prior to initiating and decant of the Sewage Disposal Facilities.

4. The Licensee shall ensure that the Sewage Disposal Facilities are maintained and operated in such a manner as to prevent structural failure.

5. The Licensee shall maintain the Sewage Disposal Facilities to the satisfaction of an Inspector.

6. A Freeboard limit of 1.0 metres or as recommended by a qualified Geotechnical Engineer and as approved by the Board, shall be maintained at all dykes and earthfill structures associated with the Solid Waste Disposal Facilities.

7. All Bagged Toilet Wastes (honey bags) shall be disposed of at the Bagged Toilet Waste Disposal Facilities to the satisfaction of an Inspector.

8. The Licensee shall dispose of all solid Wastes at the Solid Waste Disposal Facilities or as otherwise approved by the Board.

9. The Licensee shall notify an Inspector at least thirty (30) days prior to any discharge of water from the Solid Waste Disposal Facilities.

10. The Licensee may commence the discharge of water from the Solid Waste Facilities upon receipt of an Inspector's approval.

11. Any discharge of water from the Solid Waste Disposal Facilities shall be conducted between September 15 and October 31. No discharge shall occur at any other time unless approved by the Inspector.

12. Any discharge of water from the Solid Waste Disposal Facilities shall not be conducted at the same time as the discharge of sewage effluent from the Sewage Disposal Facilities.

13. Any discharge of water from the Solid Waste Disposal Facilities shall not exceed a discharge rate of 350 cubic metres per hour.

14. Any discharge of water from the Solid Waste Disposal Facilities shall be discharged to the mouth of the small bay adjacent to the Solid Waste Disposal Facilities.

15. The Solid Waste Disposal Facilities discharge outlet shall be located ten (10) metres from the shoreline, at a minimum.

16. The Solid Waste Disposal Facilities discharge outlet shall be anchored to minimize drifting and shall be fitted with a diffuser.

17. Any discharge of water from the Solid Waste Disposal Facilities shall require the use of a floating intake.

18. The Licensee shall cease discharge of water from the Solid Waste Disposal Facilities immediately upon observing the discharge of turbid water.

19. All water discharged from the Solid Waste Disposal Facilities at "Surveillance Network Program" Station Number 0714-3 shall meet the following effluent quality criteria:

Sample Parameter	Maximum Average Concentration
Biological Oxygen Demand (BOD_5)	120.0 mg/L
Total Suspended Solids (TSS)	180.0 mg/L
Polychlorinated Biphenyls (PCB)	25.0 µg/L
Oil and Grease	5.0 mg/L

20. A Freeboard limit of 0.5 metres or as recommended by a qualified Geotechnical Engineer and as approved by the Board, shall be maintained at all dykes and earthfill structures associated with the Solid Waste Disposal Facilities.

21. The Licensee shall notify an Inspector when any contaminated soil or contaminated snow is deposited at the Solid Waste Disposal Facilities.

22. The Licensee shall contain all contaminated soil or contaminated snow in such a manner as to minimize the potential for migration of contaminants into any Waters, to the satisfaction of an Inspector.

23. The Licensee shall segregate and store hazardous Waste in a temporary storage area, to the satisfaction of an Inspector.

24. The Licensee shall not open burn solid or liquid Waste, with the exception of paper products, paperboard packaging and untreated wood in accordance with, for exemple, the guideline *Municipal Solid Wastes Suitable for Open Burning*, developed by the GNWT Department of Environment and Natural Resources.

25. The Licensee shall ensure that any unauthorized Wastes associated with the municipal undertaking do not enter any Waters.

26. The Licensee shall, by July 31st, 2013, submit an assessment of the effects of the Solid Waste Disposal Facilities on the small bay adjacent to the facilities, including, but not be limited to:

    a. sampling and analysis of water before, during and after decanting from the Solid Waste Disposal Facilities;
    b. sampling and analysis of sediments before and after decanting from the Solid Waste Disposal Facilities; and
    c. sampling and analysis of fish, shellfish and benthic organisms.

PART E: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall submit to the Board for approval by January 31st, 2011 a Spill Contingency Plan in accordance, for exemple, with the *Guidelines for Spill Contingency Planning, April 2007,* developed by INAC-Water Resources Division.

2. The Licensee shall submit to the Board for approval, by January 31st 2012, a Sewage Treatment Plan that includes the following:

    a. specifications of the Sewage Treatment Facility including engineering drawings and design performance standards;
    b. operations, maintenance and monitoring programs for the Sewage Treatment Facility including maintenance schedules (e.g. frequency of inspection of dams, dykes and drainage courses);

c. sludge management program including the disposal of sludge generated at the Sewage Treatment Facility; and
d. operator training standards and plans.

3. The Licensee shall submit to the Board for approval by June 30, 2012 a Municipal Solid Waste Operations and Maintenance Plan in accordance with , for exemple, the *Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest* Territories, *April 2003* developed for The Department of Municipal and Community Affairs, Government of the Northwest Territories.

4. The Licensee shall implement the Spill Contingency Plan, the Sewage Treatment Plan, and the Municipal Solid Waste Operations and Maintenance Plan as and when approved by the Board.

5. The Licensee shall review the Spill Contingency Plan, the Sewage Treatment Plan, and the Municipal Solid Waste Operations and Maintenance Plan annually, and shall modify the plans as necessary to reflect changes in operation and technology or any other changes that may be required by an Inspector. The proposed changes shall be submitted to the Board for approval.

PART F: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out Modifications to the Water Supply Facilities or Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:
    a. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
    b. such Modifications do not place the Licensee in contravention of either the Licence or the *Act*;
    c. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
    d. the Board has not rejected the proposed Modifications.

2. Modifications for which the conditions referred to in Part F, Item 1 have not been met may be carried out only with written approval from the Board.

3. The Licensee shall provide to the Board site plans of the Modifications referred to in Part F, Item 1 within ninety (90) days of completion of the Modifications.

PART G: CONDITIONS APPLYING TO CONSTRUCTION

1. Prior to construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or Waste, other than as contemplated in an approved Spill Contingency Plan, the Licensee shall submit to the Board a rationale and design

drawings.

2. Construction of designed structures as described in Part G, Item 1, shall be carried out as approved by the Board.

3. As-built drawings of the dams, dykes or structures shall be stamped by a qualified engineer registered in the Northwest Territories and submitted to the Board within ninety (90) days of completion of construction.

4. Any fill material used in the construction of any structures as described in Part G, Item 1, shall be clean and free of contaminants.

PART H. CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. The Licensee shall submit to the Board for approval an Abandonment and Restoration Plan at least six (6) months prior to abandoning any Water Supply, Sewage or Solid Waste Disposal Facilities. The Plan shall include, but not be limited to, the following:

    a. contaminated site remediation;

    b. the potential for groundwater contamination (leachate prevention);

    c. consideration of altered drainage patterns;

    d. type and source of cover materials;

    e. future area use;

    f. hazardous waste removal, transportation and disposal;

    g. an implementation schedule; and,

    h. maps delineating all disturbed areas, borrow material locations, and site facilities.

    i. a restoration monitoring plan.

2. The Licensee shall implement the Plan specified in Part H, Item 1 as and when approved by the Board.

NORTHWEST TERRITORIES WATER BOARD

Chair **Witness**

NORTHWEST TERRITORIES WATER BOARD

LICENSEE: Incorporated Hamlet of Tuktoyaktuk

LICENCE NUMBER: N7L3- 0714

EFFECTIVE DATE OF LICENCE: *******

EFFECTIVE DATE OF SURVEILLANCE NETWORK PROGRAM: *******

SURVEILLANCE NETWORK PROGRAM

A. Location of Sampling Stations

Station Number	Description
0714-1	Supply line to reservoir
0714-2	Sewage Disposal Facilities at or near the point of effluent discharge
0714-3	Water contained within the Solid Waste Disposal Facilities at or near the point of effluent discharge

B. Sampling and Analysis Requirements

1. Water at Station Number 0714-2 shall be sampled prior to, and once during each decant and analysed for the following parameters:

   BOD5
   CBOD5
   TSS
   pH
   Faecal Coliforms
   Oil and Grease

2. Water at Station Numbers 0714-2 and 0714-3 shall be inspected monthly during periods of flow for the presence of an oily sheen. If a sheen is detected a sample shall be collected and analysed for the presence of Oil and Grease.

3. Water at Station Number 0714-3 shall be sampled prior to, and once during each discharge of Water from the Solid Waste Disposal Facilities,. Each sample shall be analysed for the following parameters:

pH	Total Suspended Solids
Total Mercury	Total Cadmium
Total Chromium	Total Cobalt
Total Copper	Total Manganese
Total Nickel	Total Lead
Total Iron	Total Zinc
BOD_5	Faecal Coliforms
Polychlorinated Biphenyls	

4. More frequent sample collection may be required at the request of an Inspector.

5. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" or by such other methods approved by an Analyst.

6. All analyses shall be performed in a laboratory approved by an Analyst.

C. Flow Measurement and Recording Requirements

1. The Licensee shall measure and record in cubic metres the monthly and annual quantities of Sewage discharged to the Sewage Disposal Facilities.

2. The Licensee shall measure and record in cubic metres the monthly and annual quantities of water pumped from SNP Station Number 1531-1 for municipal purposes.

3. The Licensee shall measure and record in cubic metres the monthly and annual quantities of water pumped from the Solid Waste Disposal Facilities.

D. Reports

1. The Licensee shall submit all of the information generated by Part B and Part C of the Surveillance Network Program annually as specified in Part B, Item 1 of the Licence.

NORTHWEST TERRITORIES WATER BOARD

Chairman **Witness**

Appendix B

Contact List

Tuktoyaktuk Municipal Solid Waste Contact Information		
Name	**Position**	**Phone Number**
Grant Scott	Senior Administrative Officer	867-977-2286
Davy Krengnektak	Municipal Services Manager	867-977-2479
Grant Scott	Hamlet Safety Official	867-977-2286
Emergency Contact Information		
Fire Department		867-977-2222
Police (RCMP)		867-977-1111
Medical (Tuktoyaktuk Health Centre)		867-977-2321
Medical (Inuvik Regional Hospital)	Emergency Department	867-777-8160
Hazardous Waste Spill (24 hr)		867-920-8130
GNWT Environment Protection		867-678-6676
Other Contact Information		
Taiga Environmental Services	Laboratory Services	867-765-6638
GNWT Environmental & Natural Resources		867-678-6690
GNWT Environmental Protection, Inuvik		867-678-6651
NWT Water Board	Regulator	867-678-2942
Inuvialuit Land Administration		867-977-7100
Irwin Elias (**Elias Services of Tuktoyaktuk**)	Waste Collection Contractor	867-977-2153
AECOM (Yellowknife)	Consultant	867-873-6316

Appendix C

Landfill Policies

Administrative Record Keeping
Automobile Batteries Policy
Empty Container Policy
Environmental Policy
Fire Policy
Litter Control Policy
Ozone Depleting Substances Management Policy
Prohibited Waste Policy
Propane Bottle Policy
Random Load Checking Program Policy
Safe Work Policy
Spill Contingency Policy
Treated Wood Policy
Vehicle Accident Response Policy
Wash Up Policy

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Administrative Record Keeping	**Page:** 1 of 1

PURPOSE:

To outline the requirements for administrative record keeping.

POLICY:

Records shall be kept of all operational activities including:

- Weekly/Monthly Log
- Monthly Site Operations Inspection Record
- All annual reports
- All incident reports
- All sampling reports

Records shall be kept in the Municipal Services Office for at least the current and previous water licence. Digital copies are preferred and will be backed up regularly.

RESPONSIBILITIES:

1. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Automobile Batteries Policy	**Page:** 1 of 1

PURPOSE:

To establish the storage and management of automobile batteries for recycling.

POLICY:

1. Automobile and lead batteries will be accepted at the Municipal Yard from residents for recycling purposes.
2. Batteries will be placed at the hazardous wastes temporary storage area.
3. Batteries will not be accepted from commercial businesses.
4. All efforts will be made to encourage customers to separate batteries from other waste.
5. Batteries accepted for recycling will be stored:
   a. On wooden pallets placed over a lime pad
   b. In a sheltered area; and
   c. Covered with a tarp or plastic or placed in a weather-proof structure.
6. Recycling of automobile batteries will be coordinated by the Municipal Services Manager in accordance with contractual agreements.

RESPONSIBILITIES:

.1 The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Empty Container Policy	**Page:** 1 of 1

PURPOSE:

To provide direction to the Municipal Services Manager (MSM) for acceptance and management of empty containers.

POLICY:

1. Empty containers include:
   a. 45 gallon drums;
   b. Grease and oil drums; and
   c. Other industrial containers.
2. Empty containers will only be accepted if:
   a. The top of the container has been removed; and
   b. The container has been cleaned.
3. Containers will not be accepted that:
   a. Are closed and sealed; and
   b. The container holds any liquids.
4. The waste generator or hauler must provide a description of the previous contents of the container and identify if the container has been properly rinsed in accordance with the Northwest Territories Environmental Guideline for the General Management of Hazardous Waste.
5. The MSM may refuse acceptance of any container if the previous contents are not known or if the container has not been properly cleaned.
6. Empty containers that are recyclable will be stored in appropriate storage areas.
7. Empty containers that are not recyclable may be disposed in the Landfill.

RESPONSIBILITIES:

1. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Environmental Policy	**Page:** 1 of 1

PURPOSE:

To apply “best management” practices with regards to environmental protection.

POLICY:

1. The Senior Administrative Officer will manage the Landfill using due diligence towards development and operations of the Landfill in accordance with regulatory requirements and best management principles.
2. Municipal Works employees and Contractors will endeavour to work according to the operating principles as set out in this policy.
3. “Due diligence” is 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”. This includes: policy development, checking and corrective action, and management review.
4. Best management practices include:
    a. Good housekeeping
    b. Preventative maintenance
    c. Inspections and record keeping
    d. Security
    e. Employee hiring and training
    f. Reporting of incidents
    g. Operations procedures
    h. Emergency response planning
    i. Identification and assessment of risks
    j. Review and corrective action.

RESPONSIBILITIES:

1. The Municipal Services Manager will be responsible to conduct, or arrange for, routine inspections of the Landfill, operating procedures, and records in regards to this policy.
2. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Fire Policy	**Page:** 1 of 1

PURPOSE:

To set out emergency procedures for responding to a fire.

POLICY:

1. Upon discovery of fire at the Landfill, the MSM shall call:
   - The Fire Department at 867-977-2222 immediately to report the fire, its location, and the materials that are burning.
   - The MSM shall call the SAO immediately.
   - Contact adjacent property owners, particularly if it appears the fire will go off-site
2. Remove all operating and non-operating persons to a safe location. All non-operating persons shall be escorted to the gates, and the entrance gates are to be closed.
3. Maintain access to the site for Emergency Vehicles throughout the duration of the emergency.
4. Clear the Fire area of all persons, vehicles, and equipment with due consideration to safety.
5. For small fires (i.e. little or no flame present and capable of being extinguished by a portable fire extinguisher), if safe to do so, isolate the burning material from other waste, then extinguish or otherwise contain the fire to one area.
6. If the fire is isolated from other wastes, the fire may be extinguished by either covering it with sand or other soils, or by dousing it with water and covering it with soils.
7. If safe to do so, move flammable materials and wastes away from the fire **OR** cover these materials with sand or other soils to minimize the potential for the fire to spread to these materials.
8. **Do not bury any fire into the working area under any circumstances.**
9. Upon arrival of emergency response vehicles (Fire Truck, Ambulance) the senior staff members, e.g. Municipal Works Employees, on-site shall identify themselves to the Emergency Commander and offer full assistance as requested. Once the Fire Department arrives, the Fire Commander in is full control and landfill staff takes instructions from the Fire Commander.
10. The Landfill operating staff are to remain at the site unless otherwise evacuated or released by the Fire Commander.
11. Following a fire, an incident report is to be completed and an investigation into the cause of the fire is to be conducted by the Municipal Services Manager.
12. Once the fire is extinguished and it is safe to do so, the waste and debris is to be cleaned up and the site operations returned to normal conditions.

RESPONSIBILITIES:

1. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Litter Control Policy	**Page:** 1 of 1

PURPOSE:

To define litter control methods and responsibilities.

POLICY:

In summary, the following litter control methods are to be followed:

- All delivered loads should be secured;
- Compact waste as soon as practical after being deposited;
- Position wind catchment fences according to the location and configuration of the working area and wind direction;
- Retrieve litter as soon as practical following high wind events;
- Collect litter twice a year, once in the spring and once in the fall;
- Immediately clean up and, if safe to do so, dispose of waste dumped illegally at the site or along access roads; and
- Regularly check ditches along adjacent roads and site access roads and pick up and dispose of spilled or blown litter as required.

RESPONSIBILITIES:

1. The Municipal Services Manager (MSM) is responsible for controlling and litter retrieval of litter escaping from the working area and cleanup of litter on the north side along roads.
2. The MSM is responsible for litter control and cleanup of litter in the recycling compounds.
3. The MSM is responsible for inspecting the Landfill to monitor litter control and cleanup.
4. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Ozone Depleting Substances Management Policy	**Page:** 1 of 1

PURPOSE:

To prevent the uncontrolled release of Ozone Depleting Substances from appliances and equipment stored at the Landfill.

POLICY:

1. In this policy, the term "units" applies to all household and commercial appliances and equipment that may contain Ozone Depleting Substances (i.e. CFC's) and may include refrigerators, freezers, and air conditioning equipment, and may also include automobile air conditioners.
2. All units will be inspected prior to acceptance for storage or disposal at the Landfill, and only those units that are tagged by a qualified technician indicating that the CFC's have been purged, may be accepted for storage and recycling.
3. Units that are NOT tagged by a qualified technician indicating that the ozone depleting substances are not purged, the Municipal Services Manager (MSM) may:
   a) Refer the customer to a qualified technician for purging of the ozone depleting substance and tagging of the unit; or
   b) May accept the unit for storage at the Landfill.
4. All untagged units accepted for storage at the Landfill will be stored in an area separate from tagged units and will not be crushed, recycled, or disposed until they are inspected and purged by a qualified technician in accordance with the Ozone Depleting Substances Regulations and appropriately tagged.
5. Units that have been improperly deposited at the working area or at other locations at the Landfill will be separated and inspected for appropriate tags and moved and stored in the appropriate area. In all cases where an untagged unit is identified, attempts will be made to identify the customer and if identified, the appropriate fee will be assessed.

RESPONSIBILITIES:

1. The MSM will be responsible for inspecting all units delivered to the site.
2. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Prohibited Waste Policy	**Page:** 1 of 1

PURPOSE:

To define waste that is prohibited from disposal at the Landfill.

POLICY:

Prohibited waste is all substances and materials listed below:

- Any household, industrial or commercial hazardous waste;
- Materials contaminated by hydrocarbons that are resistant to, or preclude, biological treatment by Landfill
- Biomedical waste that is not rendered inert
- Asbestos waste
- Radioactive waste
- Combustible waste
- Explosives
- Bulk liquids, defined as any liquid transported in a vehicle tank or body that is not contained in barrels or other such containers, or wastes that do not pass the paint filter test
- Fuel tanks
- Asbestos
- Treated Lumber

1. The Municipal Services Manager reserves the right to determine if a waste is acceptable at the Landfill for storage or disposal. The prohibited waste may include soils or materials containing non-hazardous materials, such as those containing high concentrations of chlorides or other such constituents.

RESPONSIBILITIES:

1. The Municipal Services Manager (MSM) shall be responsible to inspect the site for prohibited debris and to take necessary actions to prevent such waste from entering the Landfill site.
2. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Propane Bottle Policy	**Page:** 1 of 1

PURPOSE:

To provide guidance for the acceptance and handling of propane bottles.

POLICY:

1. Propane bottles will not be accepted at the Landfill unless the container has been purged or emptied of its contents and the operating valve is in an open position, or if it has been removed from the bottle.
2. If the operating valve is closed, the propane bottle will not be accepted.
3. Empty propane bottles will be stored in the metal recycling area.
4. Propane bottles will not be offered, given, or sold to any person for use, unless that person is qualified to refurbish and certify the propane bottle.
5. All valves will be removed from propane bottles for recycling.
6. Empty propane bottles with removed valves will be recycled through scrap metal dealers if possible, but will otherwise be disposed in the Landfill.

RESPONSIBILITIES:

1. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Safe Work Policy	**Page:** 1 of 1

PURPOSE:

To protect employees from flying debris, dust, heat, noise, traffic, and other potential hazards.

POLICY:

1. Employees are to be aware of safe work practices and must know how and when to use personal protective equipment.
2. Employees working at the Landfill shall wear appropriate personal protective equipment for specific duties undertaken and in accordance with specific circumstances such as windy conditions, high dust conditions, or other situations that may arise.
3. Personal Protective Equipment to be worn by employees in accordance with the above includes:
   a. Steel toed safety boots (for all field duties)
   b. Safety vest (in the field when out of vehicles or Landfill equipment)
   a. Hard hat (where appropriate to specific duties)
   b. Eye protection (in high wind or dusty conditions)
   c. Ear protection (when operating or working around equipment)
   d. Long pants and shirts (for all field duties) and
   e. Hat (in hot weather)
4. All near misses and accidents must be reported and documented on the Accident and Incident Report Form.
5. Workers exposed to waste should receive and maintain vaccination for Tetanus, Diphtheria (Td) and Hepatitis
   (A and B).

RESPONSIBILITIES:

1. All employees must take responsibility for their own safety and the safety of other employees, customers, and visiting pubic.
2. The Municipal Services Manager (MSM) shall provide input into the Policy and is responsible for enforcing the Policy.
3. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Spill Contingency Policy	**Page:** 1 of 2

PURPOSE:

To establish appropriate procedures to follow in the event of a spill that occurs on the Landfill site including the active operations area, storage areas, compost facility, or in buildings or parking areas. This Spill Contingency Policy shall be reviewed annually and revised as necessary to reflect changes in regulations, operations, and technology. Any proposed revisions shall be submitted to the Inuvialuit Water Board (IWB) for approval.

POLICY:

1. Immediately close off and isolate (with a barricade if appropriate) the area of the spill to the public and site employees who are not directly involved in the clean-up of the spill.
2. Identify, if possible, the material involved in the spill. If the material cannot be clearly identified, take note of the nature of the material (i.e. liquid or solid, colour, odour, original container, approximate amount, presence of vapours or fumes, or any other distinguishing features).
3. Direct traffic away from the spill area.
4. The Municipal Services Manager (MSM) shall coordinate the clean-up of the spill.
5. Control the source of the spill first then work on containing the spill using earth berms or other appropriate means.
6. For large spills, berm drainage ditches in the vicinity of the spill to prevent release of the material off-site.
7. Recover the spilled material and contaminated soils and deposit into an appropriate container for proper disposal. **DO NOT HANDLE CHEMICALS**.
8. Conduct personal decontamination if a chemical is spilled upon a person:
    - Remove and dispose of contaminated outer coveralls or personal clothing
    - Utilize emergency eye wash and shower station if required
    - Re-dress in cloth coveralls or a change of clothes that is kept on hand; and
    - If contaminated clothing cannot be washed safely, discard it.
9. If uncomfortable or hazardous fumes, bioinfectious, or radioactive materials are involved, follow evacuation procedures immediately and call Municipal Services / Works at 867-977-2286 or 867-977-2479. Explain to the emergency operator the situation, identify the material (if possible) and provide as much information about the substance as possible such as liquid, solid, colour, quantity, or odours, and the location of the material on the site.
10. If outside fuel or oil storage tanks leak, contact a vacuum truck operator to vacuum up the free liquid product and use a spill kit to clean up any residue. Oil or fuel soaked soil should be excavated and properly handled through the biodegradation facility or other proper disposal.
11. Contact the GNWT Environmental Protection, Inuvik location at (867) 678-6676.

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Spill Contingency Policy	**Page:** 2 of 2

RESPONSIBILITIES:

1. The MSM shall be responsible for carrying out spill containment in the active landfill operating area.
2. The MSM shall be responsible for advising Environmental Protection Service, as necessary.
3. The SAO shall be responsible for the review and update of this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Vehicle Accident Response Policy	**Page:** 1 of 1

PURPOSE:

To establish appropriate response in the event of a vehicle accident at the landfill site.

POLICIES:

All vehicle accidents should be reported and an investigation into the cause of the accident should be carried out. In the event of a vehicle accident, the following actions should be taken:

1. Alert the MSM of the accident.
2. If the damage to the vehicle(s) is minor, the MSM may instruct the individual(s) involved in the accident to report to the RCMP station.
3. If the damage is major, the MSM is to call the RCMP.
4. Secure the site for safety and for follow-up investigation.
5. Traffic is to be directed around the scene of the accident.
6. If the vehicle accident results in any injuries, the injured person(s) should be provided with any assistance required as set out in the Medical Emergencies Response Policy.
7. Assist Health and Social Services (HSS) and the Police with any investigation that is undertaken.
8. Complete the Incident Accident Form.

RESPONSIBILITIES:

1. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

HAMLET OF TUKTOYAKTUK

	Policy No.
Facility: Tuktoyaktuk Municipal Solid Waste Facility	**Effective Date:**
Policy: Wash Up Policy	**Page:** 1 of 1

PURPOSE:

To establish appropriate hygiene for operations staff at the Landfill.

POLICY:

Hands **MUST BE** thoroughly washed before handling or consuming **ANY FOOD OR BEVERAGE**. Food and beverage is to be consumed only in the Maintenance Area, another area designated by the Landfill Operator, or **OFF-SITE**.

Hands **MUST BE** thoroughly washed before **SMOKING**.

Hands must be thoroughly washed **BEFORE LEAVING** the landfill site for any reason, except in the case of an emergency when the site must be quickly evacuated.

Exterior clothing worn while working around any special wastes **MUST BE** must be removed prior to leaving the site.

RESPONSIBILITIES:

1. The SAO will be responsible for reviewing and updating this policy.

Approved By:	Date Approved:
Approved By:	Date Approved:

Appendix D

Forms

ACCIDENT/NEAR MISS REPORT

(Page 1 of 2)

Incident Date: _____ Time: _____

Location:

_____

_____

Name and Position of Person Making Report

_____

Name of individual(s) involved:

_____

_____

Driver's License No.(s) if required _____

Individual or Company _____ Phone No. _____

Did the Incident Result in Personal Injury? Yes _____ No _____

Injury report attached Yes _____ No _____
(i.e. Worker's Safety and Compensation Commission form or other applicable form)

Did the incident cause damage to Landfill or other property? Yes _____ No _____

Who investigated the Incident?

Supervisor _____ RCMP _____ Special Committee _____ HS&S _____

Contact Person(s) _____

Details of Equipment/Property Damage if Applicable

Damage was to: ☐ Vehicle ☐ Equipment ☐ Property

Description:

Unit No. _____ Year _____ Make _____ Model _____

Estimated Value of Vehicle/Equipment/Property: _____

Estimated Damage to Vehicle/Equipment/Property: _____

ACCIDENT/NEAR MISS REPORT
(Page 2 of 2)

Description of Incident (use attachment if necessary)

_____

_____

_____

Incident Cause (use attachment if necessary)

_____

_____

_____

Sketch of Incident Where Applicable (use attachment if necessary)

Recommendation to Prevent Re-occurrence (use attachment if necessary)

_____

_____

_____

Comments (use attachment if necessary)

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____ Signature: _____

Report Date _____

Distribution List:

Hamlet of Tuktoyaktuk
Tuktoyaktuk Municipal Solid Waste Facility

OPERATIONS LOG

DATE: Day _____ Month _____ Year _____		
WEATHER: Precipitation _____ mm Temp. _____ °C Wind : _____ km from _____		
DAILY WASTE RECORD:		
Received (in-bound)	_____ m^3	Estimated Volume Reduction by Compaction _____ m^3
Recycled (out-bound)	_____ m^3	
Compost Materials	_____ m^3	
Clean Wood Materials	_____ m^3	
STAFF:		
Landfill Operator	Start: _____	Leave: _____
EQUIPMENT:		
Compactor	Hours: _____	Activity: _____
	Hours: _____	Activity: _____
SITE MAINTENANCE: (i.e. litter, fences, roads, other)	Activities _____	Comments _____
SITE INSPECTIONS:	Observations	Action Taken or Required
Litter	_____	_____
Surface Water	_____	_____
Intermediate Cover	_____	_____
Final Cover	_____	_____
Compaction	_____	_____
MONITORING:		
SITE MAINTENANCE:	_____	
OTHER:	_____ (Use back of form to note other activities.)	

HAZARD ASSESSMENT CHECKLIST

(Page 1 of 4)

Step 1: Fire Hazard Assessment Checklist		
Facility: _____		Date: _____, ____
Priority for Corrective Action	#1 high risk #2 moderate risk #3 low risk #4 no risk #5 not applicable	

Item	Identified Hazard	Status (Priority)	Safety Hazard and Location
Fire Safety			
1	Employee training		
2	Employee knowledge		
3	On-site communications		
4	Off-site communications		
5	Water supply		
6	Site security		
7	Fire safety plan		
8	Fire drills		
Storage of Materials			
1	Compressed Gases		
2	Aerosols		
3	Dangerous goods		
4	30 m clearance of stored materials from brush or forest		
5	6 m clearance of stored materials from uncontrolled grass or weeds		
6	Fire Dept. access		
7	Fencing/Security		
8	Access to water		
9	Lumber storage		
10	Wood chips, hogged materials.		
11	Used Tire Storage		
12	Fire Department Access		
13	Fire breaks		

HAZARD ASSESSMENT CHECKLIST

(Page 2 of 4)

Step 2: Fire Safety Hazard Assessment Corrective Action				
Facility:			Date:	
Assessment Team:			Persons	Position
Item	**Priority**	**Recommended Action**	**Follow-up** **Action taken Date/Time**	**By whom?**
Municipal Systems Manager Signature:			Date:	

HAZARD ASSESSMENT CHECKLIST

(Page 3 of 4)

Step #3: Health and Safety Hazard Assessment Checklist			
Facility:		Date/Time:	
Priority Status	#1 very hazardous, previous accident of high potential #2 hazardous with moderate risk #3 low risk #4 O.K. #5 not applicable (N/A)		
Item #	**Identified Hazards**	**Status/Priority**	**Safety Hazard and Location**
1	Housekeeping		
2	Material Storage		
3	Waste disposal		
4	Lighting		
5	Ventilation		
6	Extreme Temperature		
7	Radiation exposure		
8	Gas (toxic or non-life supporting)		
9	Flammables (Fire/Explosion)		
10	Dangerous Pressure		
11	Chemicals		
12	Hazardous Materials (WHMIS)		
13	High Risk Positioning		
14	Electrical Hazards		
15	Overhead Hazards		
16	Underground Hazards		
17	Confined Space Entry		
18	Excavations		
19	Restricted Access/Egress		
20	Ladders		
21	Work at Heights		

HAZARD ASSESSMENT CHECKLIST

(Page 4 of 4)

Step #3: Health and Safety Hazard Assessment Checklist			
Facility		Date/Time:	
Priority Status	#1 very hazardous, previous accident of high potential #2 hazardous with moderate risk #3 low risk #4 O.K. #5 not applicable (N/A)		
Item #	**Identified Hazards**	**Status/Priority**	**Safety Hazard and Location**
22	Work over water		
23	Major lifts (hoisting)		
24	Vehicles		
25	Mobile equipment		
26	High traffic		
27	Power tools		
28	Permits		
29	Communications		
30	First Aid		
31	Personal Protection Equipment		
32	Other items		
Municipal Systems Manager Signature:			Date:

Hamlet of Tuktoyaktuk
Tuktoyaktuk Municipal Solid Waste Facility

MONTHLY SITE OPERATIONS INSPECTION
(Page 1 of 3)

Date: _____ **Inspector:** _____

A: Acceptable, U: Unacceptable

No	Item	A	U	Comments
1.0	**PERMITS AND APPROVALS**			
1.1	Municipal Development Permit			
1.2	Land Titles, Lease Agreements			
1.3	NWT Water Board Approvals			
1.4	Other			
2.0	**RECORDS**			
2.1	Survey and Site Plans			
2.2	Waste Volumes			
2.3	Special Waste Records			
2.4	Operating Logs			
2.5	Monitoring Reports			
3.0	**PERSONNEL TRAINING AND CERTIFICATION**			
3.1	MSM			
3.2	First Aid			
3.3	Work Place Safety (OH&S)			
3.4	WHMIS			
3.5	Other			
4.0	**DESIGN AND OPERATION AND MAINTENANCE PLAN**			
4.1	Site Development Plan current			
4.2	Operations Procedures & Policies Current			
4.3	Construction/As-built records			
5.0	**PERSONNEL, OPERATING EQUIPMENT AND FACILITIES**			
5.1	MSM			
5.2	Support Personnel			
5.3	Staff Facilities			
5.4	Equipment Facilities			
5.5	Communication equipment			

MONTHLY SITE OPERATIONS INSPECTION
(Page 2 of 3)

No	Item	A	U	Comments
6.0	**ENTRANCE AND ROADWAYS**			
6.1	Site Appearance			
6.2	Entrance Road			
6.3	On-site Access Roads			
6.4	Road Surfacing			
7.0	**SITE DEVELOPMENT**			
7.1	Cell Construction			
7.2	Cell Containment (leachate leaking through berms)			
7.3	Aggregate Stockpiles			
8.0	**ACTIVE WORKING AREA**			
8.1	Vehicle Staging/Safety			
8.2	Working Area			
8.3	Waste Compaction Density			
8.4	Cover Frequency			
8.5	Surface Water Controls			
8.6	Litter Controls			
8.7	Other			
9.0	**INACTIVE SLOPES**			
9.1	Intermediate Cover (300 mm)			
9.2	Drainage and Grading			
9.3	Erosion Controls			
10.0	**COMPLETED AREAS**			
10.1	1000 mm aggregate layer			
11.0	**SURFACE WATER MANAGEMENT**			
11.1	Working area controls			

MONTHLY SITE OPERATIONS INSPECTION
(Page 3 of 3)

No	Item	A	U	Comments
12.0	**ENVIRONMENTAL MONITORING AND CONTROLS**			
12.1	Annual IWB Report on file			
12.2	Litter Management			
12.3	Animal Management			
12.4	Dust Management			
13.0	**RECYCLING FACILITIES**			
13.1	Tires			
13.2	Metals			
13.3	Appliances			
13.4	Batteries			
13.5	Plastics			
14.0	**SAFETY**			
14.1	Employee Safety Practices/Issues			
14.2	Customer Safety Practices/Issues			
14.3	Equipment Backup Alarms			
14.4	Documentation			
15.0	**EMERGENCY RESPONSE**			
15.1	Medical Emergency Response			
15.2	Fire Response			
15.3	Environmental Response			