Hamlet of Taloyoak, Nunavut

Solid Waste Facility

Operation and Maintenance (O&M) Plan

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1.0 Introduction

The Solid Facility have been developed in early 1980's on a natural topography of relatively sloping gradient, the metal dump facility on higher gradient and municipal solid waste facility on a lower gradient enclose with fence at the lower end. This manual presents the operation and maintenance procedures associated with metal, household waste and commercial/institutional waste of community of the hamlet. The proper operation and maintenance of the facility is an important component of its waste management system. It is recognized that inappropriate operation and maintenance of a solid waste can cause the facility a source of potential public health hazards and adverse environmental impacts.

The community has a population of approximately 900 (2006), with an approximate 1.5 % projected growth rate. Community infrastructure includes:

- A water treatment plant, which draws water from the Canso Lake, treat it through filters & chlorine and transport it to the community through truck fill to holding tanks in each building.
- A sewage lagoon which receives trucked sewage from holding tanks in each building, hold raw sewage for approximately 360 days and discharge into wetland for natural remediation.
- A Solid waste facility which includes a bulky metals disposal area, hazardous waste oil battery and other materials storage areas within the waste site.

This O&M manual covers information and requirements in managing municipal solid waste:

- Location of the community
- Basic geographical information such as precipitation, permafrost, hydrological information
- Location of sewage lagoon, solid waste facility and other related infrastructure
- Population and projected growth trend – current uses and future demand
- Water distribution, frequency of distribution and quantity return to water body
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- waste generation and composition projections and types
- Solid waste disposal system, storage, reduction and clearance
- History of facility development, time of operation, change and modification
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- Spill – contingency plan for spills and reporting procedure

1.1 Objective of facility O & M manual:

The purpose of O&M manual is to assist community staff doing proper operation and maintenance of their solid waste disposal facility. This document is prepared for the review of Nunavut Water Board (NWB) for community uses in practicing the Water Licence of Hamlet of Taloyoak. The O&M manual include descriptions:

- How facilities are operated and maintained
- How often the activities are performed and who is responsible for the compliance
- Location of facilities and proximity to receiving water body
- Frequency of inspection, segregation, and waste reduction plan
- Removal of wind-blown materials from solid waste facilities
- Runoff and drainage control within and around the facility
- Prevention of windblown debris
- Method and frequency of site maintenance including berm, fence, gate, access way etc.

The following general requirements to minimize public health hazards and environmental impacts are addressed in this manual with the due diligence and operating principles that follows the core importance:

- to minimize environmental nuisances that can interfere with human & aquatic life
- to minimize the possibility of polluting surface water with retention, discharge and treatment as required by the Nunavut Waters and Nunavut Surface Rights Tribunal Acts (NWNSRTA)
- to minimize occurrence of public health impacts through reduction of disease causing organisms.

The purpose is to implementation of "Best Management Practices" for planning and corrective action for good housekeeping, maintenance, inspection, record keeping, security, employee training, incident reporting, emergency responding, risk identification, situation assessment and corrective action.

1.2 Location of the Community and Waste facility:

Hamlet of Taloyoak is located on the Boothia Peninsula within the Kitikmeot region of Nunavut at a geographical location 69^0 32' 0'' N and 93^0 32' 0" W, within a zone of continuous permafrost and situated on sand & gravel raised beaches with flat & rolling terrain with numerous lakes and ponds.

The Solid Waste is located approximately 3.2 km from the community. It appears that the site has been in use for over past 25 years. The facility consists of a Metal Dump site (and a Land fill site (MSW) in one enclosed area with fence.
Approximate GPS locations these specific sites are:

Metal Dump: 69^0 32' 32.7'' N and 93^0 35' 03" W
Solid Waste landfill: 69^0 32' 27.7'' N and 93^0 35' 12.6" W

The Landfill site includes isolated area designated location for diversion of tires, household hazardous waste, bio-hazardous waste and a burn pit. Down the Land fill, is a wide area wetland that receives snow melts water and surface runoff from the solid waste facility. Natural gradient of the area towards the wetland, maintains drainage from the facility. The facility receives solid waste from community and store in respective cell. The meandering wetland about 900 m, enriched with seasonal vegetation, helps the effluent remediation process tremendously before the final ending into Stanner Harbour.

1.3 Geographical and Climate information:

The Hamlet of Taloyoak is situated in a zone of continuous permafrost and situated on sand & gravel raised beaches with flat & rolling terrain with numerous lakes and ponds, with seasonal vegetation (Canadian Arctic Profiles – Indigenous Culture, 2006). The surficial geology immediately surrounding the community is classified as a till veneer, with till deposits being patchy and generally less than 1m.

The bedrock geology of the Taloyoak area comprises sedimentary rocks (carbonates, shale's and sandstones). Bedrock is generally exposed at sporadic locations close to sea level, where exposed, the bedrock comprises layers of dolomite and shale, and is jointed and frost shattered. The reported ground temperature below 3 m depth averages about -10^0 C. The thickness of active layer varies from 0.3 m in poorly drained areas to over 2 m in well drained areas. Excess ice contents of up to 10% have been reported in the subsurface soils.

The climate can be characterized by long cold winters and short cool summers. The average total annual precipitation is 13 cm, with about 85 cm of snowfall and 7 cm of rainfall. The July mean high is 12.3°C and mean low is 4.6°C. The January mean high is -25°C and mean low is -36°C. The prevalent wind direction is to the northwest at an annual average wind speed of 22 km/h

2.0 Waste Collection and Management Policy

The manual demonstrates to the Water Board that the community is capable of operating and managing the metal dump and solid waste sites. The policy covers basic and technical requirements including safety, site control, emergency response, litter & odor control, record keeping and employee training (but not limited) of the main policies for the operation and maintaining the sewage facility in compliance to the standard and in accordance to the northern communities.

2.1 Waste types

Waste generated in Taloyoak community typically consists of household wastes and a few household hazardous wastes such as paints, solvents, waste oil or batteries, etc. Among the types, wastes at the Metal Dump site consisted of un-segregated bulky wastes and waste metals including vehicles, heavy equipment, barrels, burnt steel from community houses, airport and construction debris, white goods,

fuel tanks, and other waste metal. Storing from different sources over the years, wastes are heaping on far side of the Metal Dump and covering the sandy area with ATV, snow mobile, auto body part and empty drums. It is expected also, the types and relative quantities of solid waste & metal wastes will remain relatively consistent over time, especially the next 10 years or so. Some metals are crushed and some are in broken pieces, but covering the area over the years.

Component	% by weight
Food stuff	15.9
Cardboard	9.3
News print and flyers	0.3
Books and other paper products	14
Pop cans	5
Metal bottles	6.5
Rubber, plastic, leather	8.9
Cloths and textile	3.3
Glass, ceramics	1.7
Wood and wood products	20
Personal hygiene, diaper etc.	10.3
Napkins, cleaner, rags etc.	4.8
Total	**100 %**

Source: Guidelines for Planning, Design, Operation & Maintenance of Solid Waste Site in the Northern Community, Heinke & Wong, 1991

2.2 Waste Collection

The Hamlet of Taloyoak provides trucked waste pickup service for residents, business centres and institutions of the community and transports it to the dump site. Refuse collected in a two-man stake truck. Each residence is provided with two 45 gallon barrels. These barrels are used as burning barrels, however garbage collection is carried daily, much of the waste collected is unburned and later burned at the waste site. The characteristic of solid waste generated are domestic and commercial. Domestic wastes are typically household wastes such as food, packing materials, cardboard, household articles and daily uses other materials. Appliances, oil drums, equipment, recreational stuff, computer parts, books, paper all are considered as household waste. Commercial waste may include building materials, paper & crafts waste, drums, auto parts, oil filters, animal residual accessories, grocery box & cartons etc. Table below is showing a typical composition of waste in a northern community.

3.0 Facility Components and Operational Procedure

Waste collects from house hold bin or barrel, picks up manually to the covered vehicle (truck), transport to dump site area indicated in dumping plan and discharge into the appropriate location from where a field segregation can be carried as required before pushing towards sides or designated location.

3.1 Municipal Solid Waste and Landfill:

Built on a sandy natural ground, the municipal solid waste site is the only facility for household waste, auto-metal bulky metals, abandoned housing debris, office/institutional and commercial waste storage. Hamlet operators are only authorised person in accepting, monitoring and managing the facility. Community people and business user are entitled to use the facility under the approved By-Law and with the direction of SAO, Municipal Service Manager or operator Foreman.

3.1.1 Acceptable waste types for solid waste facility are:

- Inert solids – including construction, renovation and demolition debris, food products box etc.
- Municipal solid wastes (MSW) – including plastics, paper, cardboard, wood, scraps, ceramics
- Non-hazardous solid wastes – which may include, but not limited to solid contents of sump wastes, empty containers 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*. In addition, asbestos may be accepted for burial in the landfill, provided that the Asbestos Handling Policy in Appendix C is followed.

- Hydrocarbon contaminated soils/materials that may be remediated with biological treatment may be stored in a container at the facility for shipping out or treatment at a later date – the Hamlet is not currently not included to operate a landfarm facility.

- **Hazardous Waste:** 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 wastes are items that can potentially causes groundwater and air pollution when disposed on site. Two sea cans have been provided for that purpose located adjacent to the metal area. Household hazardous wastes must be separated from other wastes before storing in the bin for operator to pick up-a special effort by residents will be required to prevent household hazardous waste from entering the bin for disposal waste site.

  The landfill area is developed in a manageable size for operation and reduction by diverting waste to burn and storage of plastic, wood product and light wastes. The landfill has to be operated in accordance with a typical approach for operating a landfill cell. Segregation and compaction of waste is essential to minimize space, may be achieved using a large dozer and pushing dirt to the edge of the facility.

Cover to the compacted waste will be required, particularly during summer months to reduce odour, wind blow debris and animal scavenging. Intermediate cover will also be required over areas that will be

exposed for long periods, to reduce odor, and/or the amount of wind-blown debris, minimize leachate production, and provide temporary driving surfaces. Majority of the waste directed to the site originate from the Hamlet's waste collection service. Controlled burning of selected materials will be advised in the burn pit.

3.1.2 Signage:

Identification of dumping cell inside the facility and direction sign at the entrance is available and visible to the facility users. Hamlet operator remains responsible in maintaining these signage and direction information.
Dumping restricted to a manageable quantity on each area at time. More than manageable quantity can be handled with the help of hamlet operators. Users are advised to contact the operator at the available contact numbers at the facility ahead of dumping their wastes. Manageable quantity restricted for the purpose of proper segregation and management of future storage.

3.1.3 Burning on site:

Burning of combustible materials inside the protected burning pit as required for 1-2 times a week depending on weather and volume of generation. Burning is only suggested when hamlet operator is present at work and control the burning amount. Non-aerobic burning facility can be planned on available funding situation and amount of combustible materials generation. In Nunavut, restriction of onsite burning is not yet in effect, but in thought and discussion. Once restriction comes in effect, provision of onsite burning will be no longer for municipal solid waste facility. The solid waste operator should sort and remove burnable items from the waste site on a regular basis and take them to the burn pit. The landfill operator should also remove any non-burnable items that have been placed in the burn pit, and place them in the appropriate cell or storage/disposal area. Materials in the burn pit should be burnt when environmental conditions permit, as indicated in the Clean Burn Policy in Appendix-C

As planned by the Hamlet of Taloyoak to bring a control burn box with waste divertion capability to the Metal dump, would ease the waste reduction process in the Waste site. During such burning, facility operators must be available on site and monitor wind flow and weather.

3.1.4 Bio-hazardous waste:

Waste such as honey bags and animal carcasses must be deposited in the bio-hazardous waste area within the MSW fenced area. No isolated cell available for this specific requirement. Frequent coverage of the waste is required during summer months to reduce odour and prevent animal scavenging. The facility is built on a sandy topography; gravel mixed sand can be used for easy coverage to animal carcass and suitable to push down in a pre-arranged ditch or grave. It is important to fill the ditch or grave area with sufficient cover materials in such a way that no stagnant of runoff water within the graved area of carcass. Unwanted stagnant will increase the leachate and odor to environment, rather a dry carcass will eliminate such issues in time.

3.2 Waste accepted:

The facility operator shall screen the waste and direct the customer to the appropriate cell for disposal. Metal waste includes car bodies, white goods (appliances), oil drums and miscellaneous scrap metal. Metal waste should be crushed when required. A recycling program for MSW can be planned for waste collection at the household level – which will segregate waste from hazardous and recyclable materials.

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 that are resistant to, or preclude, biological treatment
- Untreated biomedical waste as per CCME Guidelines for the Management of Biomedical Waste in Canada
- Radioactive waste and explosives
- Bulk liquids as defined in the Prohibited Waste Policy
- Waste that is smoldering upon delivery (hot loads)

Wastes that are accepted but require special handling include:

- Appliances containing CFC's (i.e. ozone depleting substances)
- Automobile batteries
- Propane tanks and bottles
- Asbestos
- Contaminated rags
- Treated wood
- Empty containers as per the Empty Container Policy

Gasoline Drums:

Full, partially-fill drums of gasoline such as Jet-A, Jet-B, Avgas, kerosene or such types, are accepted on site with temporary storage only. Special requirements for such items placing on site must be on wooden or similar crate/wreak, facing upward and tightly fitted covers (see Pictures in Appendix-B). No leak or open drum not allowed to place onsite even on crate. Hamlet of Taloyoak dump site is holding some numbers of oil and paint drums stored unknowingly and no direction of their management. As the client of the solid waste facility, hamlet remains responsible to manage those abandoned items. Among those, noted drums on site are now in Sea-Can waiting for shipping out.

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3.3 Bulky waste management:

Procedure for bulky waste dumping and storing is in an organized way starting from the back of the specified cell or spot and moving towards the front of the facility. This is required for better management of the facility and safety of the operator. Bulky materials are considered temporarily permanent at the slot until full removal of bulky stuff from site or compaction down to ground. Therefore, suggested procedure is to heap the bulky waste whenever possible like composting and in assurance of safety against falling down.

4.0 Facility Operation & Personnel

The Senior Administrative Officer (SAO) has overall responsibility over all Hamlet Departments including Municipal Services & Public Works Department, which is responsible for managing & operation of MSW and waste disposal facility. Hamlet Foreman or the Public Works Director, who reports to the SAO, is responsible for the operation of the solid Waste Facility and general maintenance as necessary to the waste site and related structures. With the associates to Foreman or Public Works Director, full time operators are engaged for site management and operation of solid waste site including the wetland since all these facilities are mostly related and connected operation. Moreover, additional employment of causal staff as required during summer time to operate garbage collection and disposal can be hired. Administrative and operation Team members name and contacts are as below. The SAO is the main contact and backup for coordination and information with his contact number.

Responsibilities of SAO in relation to the solid waste facility include allocating operating budget, monitor overall operations to confirm compliance with the requirements of the Water License, personnel training, emergency response plans and confirm exercises on a regular basis, coordinate annual audits of the facility, liaise with the NWB, review and submit reports to the NWB, as required by the Water License and respond to public inquiries.

Contact person for any information and action as below:

Operators Name	Title	contact number
Ashoona Irrquit	Forman	867-561-5112
James Ashevak	Operator	867-230-0371
Janice Anderson	SAO	867-561-2302

4.1 Municipal Services Manager (MSM)

The MSM is responsible for management of the Sewage Lagoon and reports to the SAO. A local contractor is also available and in contract for any interim help or emergency response. Duties of the MSM in relation to the sewage lagoon include the following:

- Plan for operators and improvement of the facility operation
- Conduct waste site inspections as required
- Ensure sampling and monitoring occurs as required in the Water Licence and standards.
- Prepare annual operation and maintenance budgets
- Manage maintenance activities with standard landfill system and in this manual
- Organize training of personnel on Environmental awareness and facility operation
- Prepare emergency response plans and schedule regular exercises
- Update the Safety Plan for the facility and environment
- Prepare reports required by the Water License
- Prepare and maintain an operational record of the facility
- Responsible for implementation and monitoring of compliance with the Landfill Operation Policies
- Ensure current and accurate facility signage, warning and contact information for facility users
- Conduct Safety Orientation for visitors and Contractors

4.2 Normal Operations

Access to the solid waste area of the facility should be controlled by a gate which must be closed during the normal operating hours. Video surveillance and attendance is encouraged for control monitoring. The facility operator shall control access at the gate during operating hours and maintain records of each entry items including owner, product description and follow up information for action after the storage. The Waste Operator shall control access during operating hours and direct vehicles to the appropriate area, based on the type of waste.

Hamlet of Taloyoak has a fenced area for Solid waste and metal dump - in one compound, but no gate or watch shade. Also, no specific site record Log Book or operator site attendance. Operator maintains records and site instruction documents in Hamlet Office. Taloyoak Solid Waste is intended for domestic municipal waste only. Be aware of the regular truck operators and look for signs at the truck discharge and in general, that wastes other than municipal are not being discharged into the solid Waste. Litter should be collected on a weekly basis during summer and fall.

The normal operation of the facility includes observation of daily truck load numbers, waste disposal and spills or unwanted situations. Observations should also be made of the surface runoff, wind blow and litters, materials floating on stagnant water and erosion of side berm. An entry should be made every day on the Daily Inspection Record to either indicate that the operation is normal or that

something abnormal was observed and corrective step to be taken. The log shall be maintained with the operator, with a copy to the MSM daily/weekly for recording and reporting purposes.

4.3 Special Considerations:

Depending on situation and in general from previous year weather records, facility operation and cleanup program is necessary for each year and on each specific period of the year. Scope of operation and schedule of operators can be addressed in accordance with the requirement and location specific. Special consideration involves winter snow clean up, summer drainage, wind protection, composting, burning, segregation and shipping out of unwanted hazardous waste.

4.3.1 Spring cleanup:

After snow melts, a spring cleanup program for each year in segregating and collecting loose dumps from heaping stacks, possible burning and burry operation is required. Facility operator is responsible for informing, planning and taking necessary action in cleaning access, discharge area and storage cell of waste types. Unwanted debris on site will increase the water stagnant, mosquito lava development, unhealthy site condition and foul odor to environment.

4.3.2 Windblown protection

The perimeter wire mesh fence to a height of 8 ft. to retain garbage inside and protect the facility from debris coming inside shall be maintained with proper maintenance of fence. Plan and provision of debris collection from inside and close proximity to the fence outside, shall be maintained using manual labour or garbage pick-up and place them either inside burn pit or as allocated pile. Provision of facility surface drainage inside the fence for water runoff to retention sump of the waste site shall be maintained.

4.3.3 Winter operation:

Consideration should be taken for using suitable cover materials and heaping bulky wastes in the fall to protect waste from snow piles during winter. Site compaction to loose materials can be considered as an option in keeping the bulky waste in place. The hamlet uses manual labour each fall in piling the bulky wastes until such scope of pushing down waste into ground and cover with dry cover materials.

4.3.4 Scavenging

Public access is permitted during working hours and as per additional time request. Couple of steps and consideration are being taken to reduce the occurrence of scavenging such as burning in suitable weather day, compressing and water spraying. A dumping plan has been posted at the dump site and community posters placed in public areas for awareness and information in taking right decision in managing waste and public health.

4.3.5 Surface Drainage:

The MSW site is built on a natural topography and on sandy ground. A natural drainage line along the gradient, inside perimeter from the northwest corner to southeast corner maintained to collect surface runoff. The ditches down the MSW outside the fence shall be maintained so they continue to serve their intended purpose. Water collecting in the control ditch can be overflowed onto wetland and sample taken for contamination test.

5.0 Runoff Leachate Guidelines

As set out in the original Licence, runoff from the solid waste must be monitored during the period of natural treatment process. Once runoff come out to wetland, a catchment ditch stores the water and allowed to run onto wetland once overflow. Sample of runoff water should be collected at least once a month when available for contamination testing during the summer and fall.

Monitoring point TAL-3 is located at the down gradient ditch outside the MSW fence.
Runoff water should be tested for contamination parameters and maximum allowable limits.

Parameter	
Alkalinity	Sodium (Na)
Conductivity	Sulphate (S04)
P^H	Aluminium (Al)
Total Suspended Solid (TSS)	Arsenic (As)
Ammonia as N2	Cadmium (Cd)
Biochemical Oxygen Demand (BOD)	Chromium (Cr)
Carbonaceous Oxygen Demand (CBOD)	Cobalt (Co)
Nitrate as N2 (NO3)	Copper (Cu)
Nitrite as N2 (NO2)	Iron (Fe)
Calcium (Ca)	Lead (Pb)
Chloride (Cl)	Manganese (Mn)
Hardness (Total)	Nickel (Ni)
Magnesium (Mg)	Zinc (Zn)
Potassium (k)	Mercury (Hg)

Additional analytical parameters, which could become a requirement of the NWB water license or be requested by an Inspector as defined in the Nunavut Waters and Nunavut Surface Rights Tribunal Act. Other parameters can be added as needed.

5.1 Monitoring stations:

Taloyoak waste facility is about 3.2 km away from the community and to the other side of water body. The wetland connects the Solid Waste facility with the shallow drain which carries effluent from Lagoon in one end and the Ocean on the other end. Monitoring stations are marked with GPS locator on each station point on wetland for grab samples collection best representing the effluent status at that point. These monitoring stations are marked with signage for operation and inspection purposes, visible for inspector and operators. Additional station points can be selected based on requirement and issues on existing location. It is the responsibility of the Hamlet to maintain these station points and signage at all the time. Records to be maintained of these station points and sample results and update with Annual Report to NWB.

Table: Monitoring Stations of sewage and solid waste sample collection points:

Sampling Station	GPS Location		Description	Comments
	Latitude	Longitude		
TAL-1	N 69^0 32′ 39″	W 93^0 32′ 05″	Raw Water supply at Water Lake	Volume of water collected from lake
TAL-2	N 69^0 32′ 38″	W 93^0 35′ 39″	Sewage outfall entry to wetland	Outside the lagoon , onto wetland
TAL-3	N 69^0 32′ 26″	W 93^0 35′ 22″	Solid waste discharge run-off	Outside the fenced area on wetland
TAL-4	N 69^0 32′ 22″	W 93^0 35′ 25″	Effluent Final discharge point before meeting ocean	Combined effluent at the end of wetland
TAL-5	N 69^0 32′ 23″	W 93^0 34′ 34″	Hazardous storage cell retention water	New station. Sample collect only when decanting requires

6.0 Record Keeping

Record keeping is mandatory to have information updated of the status of the lagoon system at a specific time and for keeping track of operation or occurrences. Keeping records of facility operation and monitoring are important for the hamlet and regulatory organization in practicing regulations. Records must be in detail to facilitate evaluation of operation and to track the development of problems. Records also provide list and sequence of completed and list of obligation. Lagoon management must establish and maintain an operating record and prepare annual reports.

Copies of such record shall be kept at the Hamlet office for review and reference. Records shall be contained with information such as:

- Number of trips makes per day and approximate volume of sewage discharged
- Information of any monitoring for the day of a plan for next day(s)
- Results of monitoring program- (Appendix E – Samples test results)
- Any maintenance carried, required or in plan for the day or later the date

7.0 Maintenance

Maintenance includes access road, disposal area, vehicles turn around, berm, signage and sampling station points. Maintenance of the access road should follow winter and summer maintenance with snow clearing in the winter and surface grading debris free in the summer.

The following maintenance procedures will be undertaken by the Hamlet staff to ensure solid waste and metal dump facilities operate efficiently:

- The roadway and truck move around shall be maintained by snow clearing in the winter and surface grading in the summer with any defects repaired as necessary
- Waste containment shall be inspected periodically during the summer and fall.
- Surface drainage route shall be inspected during summer and repaired as necessary
- Facility identity and warning signage that identifies Solid waste facility shall be inspected and repaired or replaced as necessary.
- The dump discharge area shall be cleaned always keeping room for next truck upload facility.
- Any airborne litter shall be removed from the facility periodically and dump at dump site.

7.1 Odour Problems and Weed & Insect Control

Under normal operating conditions, the waste site will not cause any serious odour problems. However, at times, severe odours may occur subject to leachate quality and various environmental factors. The facility is located at a significant distance from the community, therefore, odour is not normally considered to be a problem to the community, unless wind blow towards the community.

The operator of the solid waste has limited control over these conditions. The problem will normally be of short duration during and after the ice breaking. For other periods in summer & fall, the situation should improve once the cloud cover breaks. For situation of floating scum and algae mats on runoff water and leachate, there is a need to be broken up and screened of runoff water. Mid to late summer, normally the facility and runoff catchment dries up and no issue of odor. Hamlet operator need to breakdown any blockage or localised catchment of runoff to help the facility dry up naturally.

7.2 Insect Control

Flies and mosquitoes create the most common insect problems on the open area of solid waste. Most mosquitoes breed in sheltered, calm water containing vegetation and floating materials to waste which the female can attach eggs. The egg clusters are fragile and easily damaged by leachate water and rain water flow by wind. Improper weed control and accumulation of scum layer will make insect problems worse. Regular inspection on surface drainage, peripheral to solid waste piles and metal dumps and truck around route should be carried by the operator. Necessary cleaning up of blockage and filling on localized stagnant spots will be required by the operator specifically during summer and early fall.

8.0 Health and Safety

Health and safety of workers and the public is the first priority while operating the waste facility. The requirements of the Nunavut Safety Act must be followed at all times. All actions and operations must be undertaken with safety as the first priority. The Operator must make sure that all aspects of municipal waste management are conducted safely. Site safety at the facility is coordinated through the operator. All operations are to be conducted with safety as a priority at all times and in accordance with the Safe Work Policy. Possible contamination or infection from pathogenic microorganisms exists with every contact with the waste. General public access to the waste area should be discouraged. Possible contamination or infection from pathogenic organisms exists with every contact with the waste. This area should not be used for recreational activities. Equipment and any other structures should be kept clean. This reduces safety hazards and protects equipment.

Use of proper hand gloves, safety boots, safety vest, jacket, pants, safety eyewear and any primary safety tools are mandatory during waste collection and disposal and operation. After work, before eating, and at other convenient times, the Operator(s) should wash their hands thoroughly. Caution should be used when working with hazardous waste. If an operator is splashed accidentally with waste or runoff water, the effected part should be promptly washed with plenty of water. All cuts and skin abrasions should be treated immediately to prevent any infection.

Operators and personnel should remain attentive and aware of any potential health and safety hazards, such as tripping hazards like debris, gasoline, and soil or runoff water. When possible, hazards should be removed. Care should especially be taken when obtaining samples, gloves (nitrile - not latex) must be worn. All 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 man

8.1 Facility Emergencies, Accidents and Near Misses

All accidents, injuries, or near misses should be reported to the Operator, Municipal Services Manager and the appropriate safety official of the Hamlet. For all accidents, injuries, or near misses, the operator or 1st witness of the scene needs to:

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

During any emergency, the press will likely become aware and cover the story. The MSM or SAO will be the only spokespersons for the Hamlet.

8.2 Accidents:

All accidents at the waste site shall be investigated and an Accident Report Form for the incident shall be completed. Traffic accidents occurring at the site shall be reported to the RCMP if applicable. Complete the Form providing as many facts as possible, provide only the facts and include following information as required on the Form:

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

8.3 Medical Emergencies

All injuries should be considered important and should be reported as a safety incident to the Operator. Possible contamination or infection from pathogenic microorganisms exists with every contact with the operator. 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. A medical doctor should be consulted for all injuries that could result in infections as a result of working with sanitary sewage. This includes injuries such as cuts and scrapes, or skin punctures.

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

9.0 Training to operator and supervisor

Staff training is an important aspect of the operation of a WasteTreatment Facility. Staff must be adequately trained to follow this O&M Plan and operate the facility. GN CGS has arranged several session with the help of MTO and expert consultant in training the operator and program covering ' Training for Trainer' to create more trained people within the community. Hamlet has more responsibility in creating appropriate trained operator of hire a trained operator in the operation of the lagoon. This O&M Plan is dependent on sufficient site specific training to allow staff to operate the facility and helping the hamlet for proactive awareness of Environmental Regulation.

10.0 Spill Contingency Plan and Response

The Spill Contingency Plan is presents in this manual prescribed the action to be taken in the case of unanticipated spills event occurring during the solid waste facility monitoring and waste management program. This plan will enable the Operator to maximize the environmental protection response and meet regulatory requirements, thus minimize the issue before spreading out.

The scope of the plan is to:

- Provide clear statement of procedures to be responded to a spill,
- Minimize potential environmental impact of spill by establishing the action plan
- Ensure safety to personnel and protect health and safe work place
- Ensure site restoration in the eve of spill and after
- Identify role and responsibilities in the spill response activities
- Identify materials, equipment and personnel involve in the spill contingency.

10.1 Potential Spills materials and Safety Hazards:

The most potential spills and safety hazard related location is the area of gasoline drum storage (as seen in Appendix-B) outside the metal dump area, where over 100 drums of Jet B-D1 and Avgas are stored on wooden crate. Hamlet of Taloyoak is need to contact with owners (Nunavut Airport Authority, Wild Life and Kudlik construction) of these drums for shipping out (if not used) or re-purpose of these drums, otherwise the hamlet has to act to manage a risk free solution.

Other spills are from waste oil and unused batteries which are stored inside the waste site. For temporary solution and future shipping out, batteries should be stored inside wooden box with plastic sheet all around, close and tie before putting in sea can as planned by the Hamlet. Leachate water from battery is heavily toxic to environment and final outfall into ocean through leachate runoff. The facility operator need to keep inventory of batteries, auto switches and waste oil and fill out report sheet as seen in Appendix-C. In the event of any spills on ground, a Spill Report has to be made and plan for its remediation.

When reporting a spill, following information shall be included:

- Date and time of spill, Location
- Location of the spill and direction of spill
- Cause of the spill
- Name and contact number of a person close near to the spill
- Description of the existing containment
- Name of owner or person in charge of the spilled materials.

The old land farm facility with a water collection pond is enclosed with fence are holding remediated soil runoff water. The expired Water Licence is not included with the land farm facility, but the hamlet is still maintaining the monitoring of the facility. The facility can be still used for any spill and contaminated soil storage above the water pond inside close container for temporary storage. A land farm pit can be built for contaminated soil remediation for the community. Also, a liner cell can be built for waste paint, oil and gasoline barrels storage at the land farm. To achieve such uses, the hamlet needs to get an amendment Licence of Soil remediation Land Farm.

10.2 Action Plan:

Gasoline drum should be stored in the original barrel in the upright position with label and information and place on wooden crate. A liner cell with lined berm is appropriate for such barrel storage, but the facility is not involved with a cell or liner berm. Therefore, any storage on open area still remains to some risk. Hamlet operator need to monitor and inspect the gasoline storage facility.

10.3 Emergency Response

The waste site emergency response plan sets out appropriate procedures to address foreseeable emergencies. In the event of an emergency, guidance and site emergency response can be obtained from the sources shown in the Table.

- What is the nature and severity of the emergency?
- What is to be done?
- Who does it?

Table: Emergency Contact Information

Emergency Contacts	Contact	Location	Telephone	Fax
CIRNAC	Water/Wastewater Resources Manager	Iqaluit	(867) 975-4550	(867) 979-6445
Hamlet of Taloyoak	SAO	Taloyoak	867-561-2302	867-561-5057
CGS-GN	Regional Engineer	Cambridge Bay	867-983-4156	867-983-4123
Environment Canada	Inspector	Iqaluit	(867) 975-4644	(867) 975-4594
Fire Department		Cambridge Bay	(867) 983-4016	(867) 983-4003

10.4 Emergency Plan Updates

Municipal Services of the Hamlet shall review the emergency plan annually and, following an emergency incident, ensure that:

- Emergency response procedures for the waste site are effective and updated as necessary
- Appropriate individuals are appointed to manage emergency situations
- Regular safety and emergency meetings are held with facility operator and employees
- Safety kits, equipment, communication, posters and public awareness messages should be reviewed and updated.

Form: Monthly Waste Collection and Disposal Log

Community: Hamlet of Taloyoak

Month:---------- Truck #: ----------

Date	Number of Trips	Volume per Trip (m3)	Total Daily Volume (m3)	Comments
1	4	5	20	
2	5	5	25	
3	4	5	20	
4	4	5	20	
5	5	5	20	
6	0			
7	0			
8	6	5	30	
9	5	5	25	
10				
11				
12				
13				
14				
15				

Note: *Data records in column 2, 3 and 4 shows some example of waste collection records on daily collection from the community.*

Sean can for hazardous storage – arranged by Hamlet

Useful for storage of: Boxes of batteries, waste oil, auto-switch. Halogen tube, paint pail and others

Drums of Jet-A, available for community people uses for heating oil, ATV or other purposes

Leachate and runoff collection monitoring station TAL-3, outside the Solid waste fence

HAMLET OF TALOYOAK

Policy No:	
Facility: Taloyoak Municipal Solid Waste Facility	**Effective Date:**
Policy: Administrative Record Keeping	**Page:**

PURPOSE: For administrative record keeping.

POLICY: Records shall be kept of all operational activities including:

- Daily Log
- Waste Screening / Load Records
- Random Load Visual Inspection Reports
- Monthly Site Operations Inspection Record
- Hazardous Material Load Checks
- 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:

The Municipal Services Manager will be responsible for reviewing and updating this policy.

Approved By:	Date:
Approved By:	Date:

HAMLET OF TALOYOAK

Policy No:	
Facility: Taloyoak Municipal Solid Waste Facility	**Effective Date:**
Policy: After hours policy	**Page:**

PURPOSE: For record keeping of solid waste dumping after hours

POLICY: Records shall be kept of all operational activities including:

- Customers requesting access to the waste site after hours shall arrange for the time of access with the Municipal Services Manager.
- The Operator shall be present at all times, when afterhours access is provided
- Customers requesting afterhours access shall pay an hourly rate of $ _____ to the Hamlet, the employee is required at the site, with a minimum charge of 1 hour per entry, and shall pay the tipping fee as set out in the Tipping Fees Policy.
- The customer shall notify the Operator at least **4 hours** in advance of requiring access to the site after the operating hours.

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:

The Municipal Services Manager will be responsible for reviewing and updating this policy.

Approved By:	Date:
Approved By:	Date:

The receiving and handing of asbestos waste shall be carried out in accordance with the following:

- Asbestos waste must be handled in accordance with *Canada's Dangerous Goods Transportation Act and Regulations* (DGTA/R).
- Asbestos waste shall only be accepted upon prior notification of the Municipal Services Manager.
- Asbestos may only be deposited in the area that has been prepared for receiving asbestos wastes.
- Every person directly or indirectly involved in the transportation, handling, or management of asbestos waste should take all precautions to prevent asbestos fibers from becoming airborne. Persons handling asbestos waste must wear protective disposable coveralls while handling the waste.

Asbestos should only be accepted as follows:

(i) Non-Friable Asbestos - Asbestos which is non-friable need not be packaged for disposal

(ii) Friable Asbestos - All friable asbestos must be:

- Placed in a rigid, impermeable, sealed container of sufficient strength to accommodate the weight of the friable asbestos waste; or
- Be double bagged within two six-mil polyethylene bags.

All containers and bags referred to above must be free from punctures, tears, and leaks and should be clearly labeled to identify the contents as asbestos.

Bulk asbestos should be handled according to the following:

(i) Vehicles transporting bulk asbestos should be lined with six-mil polyethylene and covered in such a way as to prevent asbestos fibers and particulate from escaping;

(ii) Bulk friable asbestos should be moistened to prevent the escape of asbestos fibers;

(iii) The polyethylene liner used in the transportation of bulk friable asbestos waste should be disposed of along with the asbestos wastes; and

(iv) Carriers must ensure when discharging a bulk load of asbestos from a vehicle that the polyethylene liner is completely discharged with the asbestos waste and that the liner remains closed so as to not allow any loose asbestos waste material to escape the disposal cell.

- Unloading of friable asbestos should be carried out so that no loose friable asbestos waste or punctured, broken, or leaking containers or bags are landfilled. Any loose asbestos or broken, punctured, or leaking containers or bags should be double bagged in two six-mil bags immediately upon discovery.
- At least 25 cm of cover material, other than garbage, must be placed over the asbestos waste in such a way that direct contact with the compaction equipment or other operating equipment is avoided. A final cover, which may include garbage, of at least 125 cm should be applied.
- The surfaces of vehicles and reusable containers which have been in direct contact with friable asbestos waste should be thoroughly cleaned prior to leaving the disposal site. Only a minimum amount of water, as necessary to wet the asbestos fibers, should be used during cleaning.

HAMLET OF TALOYOAK

Facility: Taloyoak Municipal Solid Waste Facility	**Effective Date:**
Policy: Clean Burn Policy	

PURPOSE: For record keeping of materials that can be burned in the controlled burning area and to establish burning procedures

POLICY: Records shall be kept of all operational activities including:

1. It is permitted only those wastes considered "burnable debris" may be deposited in the controlled burn area to burn when feasible. This generally includes wood products only such as:
    - Untreated wood and lumber
    - Paper product
    - Paperboard packaging
    - Natural fiber textiles

2. Prior to burning, the Operator will inspect the pile and will remove any "non-burnable" debris including, but not limited to:
    - Plastic containers, packets or bags
    - Metal containers or metal sheets or metal objects
    - Treated lumber (fence posts, rail ties, poles, planks)
    - Asphalt shingles
    - Rubber products (tires, hoses, gasket, belt)
    - Manmade fabric textiles
    - Coated wire (copper, steel)
    - Commercial or household garbage.
3. Prior to starting a burn, the Operator will notify the Fire Department and advise Municipal Services / Public Works at 867-561-2300 or SAO at 867-561-2302.

4. Burning will not be allowed during periods of dry weather conditions where a fire hazard exists.
5. Burning will not be allowed during wind speeds above 20 km/hr.
6. Burning will only occur under supervision of the Operator, Service Manager or SAO.

Responsibilities:

The Municipal Services Manager will be responsible for reviewing and updating this policy.

HAMLET OF TALOYOAK

Facility: Taloyoak Municipal Solid Waste Facility	**Effective Date:**
Policy: Empty Container/Drum policy	

PURPOSE: To provide direction to operator to accept and management of empty containers of gasoline, paint or similar hazardous materials.

POLICY: Records shall be kept of all operational activities on site for:

1. Empty containers include:
   - 45 gal drums
   - Grease and oil containers and
   - Other industrial containers.

2. Empty containers will only be accepted if:
   - The top of the container has been removed and
   - The container has not been sealed.

3. Containers will not be accepted that:
   - Are closed and sealed
   - The container holds any liquids.

4. The Operator may refuse acceptance of any container if the previous contents are not known or if the container has not been properly cleaned.

5. Empty containers that are recyclable will be stored in the sea can storage.

6. Empty containers that are not recyclable may be disposed in the landfill.