Government of Nunavut

Igloolik Landfill Site Operation and Maintenance Manual

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1. Introduction

1.1. Purpose

The purpose of the Igloolik Landfill Operations and Maintenance Manual (O&M) is to provide municipal management and operating staff with a guidance document to carry out landfilling operations at the municipal solid waste management site (Site) in a practical and environmentally responsible manner to maintain regulatory compliance of the site. The manual provides the framework for operating procedures and staff decision making for daily activities; staff training; and orientation of new staff.

1.2. Site Description

1.2.1. Location

The municipality of Igloolik is located in the Qikiqtaaluk Region of Nunavut and has a population of approximately 1,682 according to the 2016 census. Figure 1 illustrates the location of the municipality of Igloolik and Figure 2 illustrates the location of the current solid waste management site. The current Site is located north of the Municipality, along the eastern edge of the road. Immediately north of the current Site is the scrap metal waste storage area. Located north of the scrap metal storage area is the sewage lagoon.

Figure 1: Location of Igloolik

Figure 2: Solid Waste Management Site Location

1.3. Solid Waste Generation

Based on the information from the Nunavut Solid Waste Management Plan (EXP Services Inc., 2014) and the results of a solid waste composition study completed Dillon in 2019, it was determined that the current waste generation in Igloolik is approximately 900 kg/year/capita.

1.4. Population Projection

The projected population growth rate for Igloolik is 2.9% according to the Nunavut, Regional and Community Population Projections 2009-2036 (Nunavut Bureau of Statistics, 2010). Based on this information, the future population of the Municipality is presented in Table 1 below.

Table 1: Igloolik Projected Population Growth

Year	**Population**
2021	2,033
2026	2,345
2031	2,706
2036	3,121
2041	3,601

2. Definitions

"BULKY WASTE" means large household items, such as mattresses, couches, and other furniture.

"CAO" means the Chief Administration Officer for the Municipality of Igloolik.

"DOMESTIC SOLID WASTE" means any waste generated by the residential, municipal, or commercial sector for disposal, and that is nonhazardous and not in a liquid form.

"ELV" means End of Life Vehicle which is a motor vehicle or motor vehicle hulk such as a car, truck, snowmobile, or ATV that has been abandoned, or is being managed for the purposes of recycling it.

"GN" means Government of Nunavut.

"HAZARDOUS WASTE" means waste that has substantial or potential threats to public health or the environment, such as used batteries, motor oil, antifreeze, and fuel.

"METAL WASTE" means any metal material left over from consumption, such as parts of vehicles, building supplies, surplus materials, and appliances such as refrigerators, stoves, wash machines, and dryers.

"Municipality" means the Municipality of Igloolik.

"NWB" means Nunavut Water Board.

"SITE" means the Igloolik solid waste management site.

3. Organizational Structure

In the municipality of Igloolik, the Department of Public Works is responsible for managing the solid waste management program which includes collection of residential and commercial waste and the operation and management of the landfill site. The Government of Nunavut is responsible for the planning and construction of new landfill disposal capacity. The responsibilities of Department of Public Works staff for solid waste management include:

- Preparation of operating budgets;
- Collection of solid waste;
- Maintenance of solid waste collection and landfill equipment;
- Landfill site operation and maintenance;
- Preparation and submission of operating records and administrative reports;
- Environmental monitoring.

3.1. Duties and Responsibilities

3.1.1. CAO

The CAO's responsibilities for solid waste management include:

- Review and approve capital and operating budgets;
- Review and submit required monitoring reports;
- Review and submit other landfill required documentation related to Nunavut Water Board License;
- Address public inquiries and complaints;
- Liaison with Government of Nunavut; and
- Work with engineering consulting firms on solid waste management issues.

3.1.2. Foreman

The landfill Foreman reports to the CAO and is responsible for overseeing the daily operations of the landfill. Duties of the Landfill Foreman include:

Planning

- Review the overall operations to ensure development is according to current plans;
- Review plans for reclamation of completed portions of the site;
- Plan daily working face operations;
- Work with landfill operator to plan waste segregation areas; and
- Coordinate supply of soil cover for interim cover and closing landfill cells.

Communications

- Communicate with landfill operators; and
- Report landfill issues to CAO.

Site Maintenance:

- Coordinate winter and summer maintenance of roads and drainage ditches

Regulatory Compliance:

- Coordinate and oversee regulatory requirements;
- Take corrective action for minor issues of non-compliance; and
- Recommend corrective action to the CAO for major items of non-compliance.

Monitoring of surface water and waste disposal including:

- Manage the operations of surface water management to ensure no water is pounding on site and surface water is being diverted away from the landfill site as best as possible; and
- Confirm sampling of hydrocarbon contaminated soils, if contaminated soils are accepted.

Administrative Duties:

- Schedule delivery of fuel, oil, and supplies for landfill equipment and staff; and
- Maintain daily operating records.

Safety:

- Develop, maintain, and administer a Site Safety Plan; and
- Conduct Safety Orientation for staff and Contractors.

3.1.3. Landfill Operator

The landfill operator is responsible for the daily general operation of the site as assigned by the Foreman. This position would complete the general site operation and maintenance requirements. Duties of the landfill operator include:

Waste Disposal Spotting and Waste Inspection:

- Direct site users to appropriate disposal or storage areas;
- Direct vehicles to safe area for unloading; and
- Visually inspect wastes for prohibited material.

Site Maintenance:

- Collect spilled and wind-blown debris and litter.

1. Equipment Operations:
   - Place and compact cover material; and
   - Daily inspection of landfill equipment.

3.1.4. Contact List

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

Table 2: Contact List

Title	Phone Number	Name	
CAO	(867)934-8830	Jean-Marie Ipkangnak	financedirector@igloolik.ca
Foreman	(867)934-8830	Donald Ittusardjut	publicworksdirector@igloolik.ca
Landfill Operator	(867)934-8830		

3.2. Staff Training

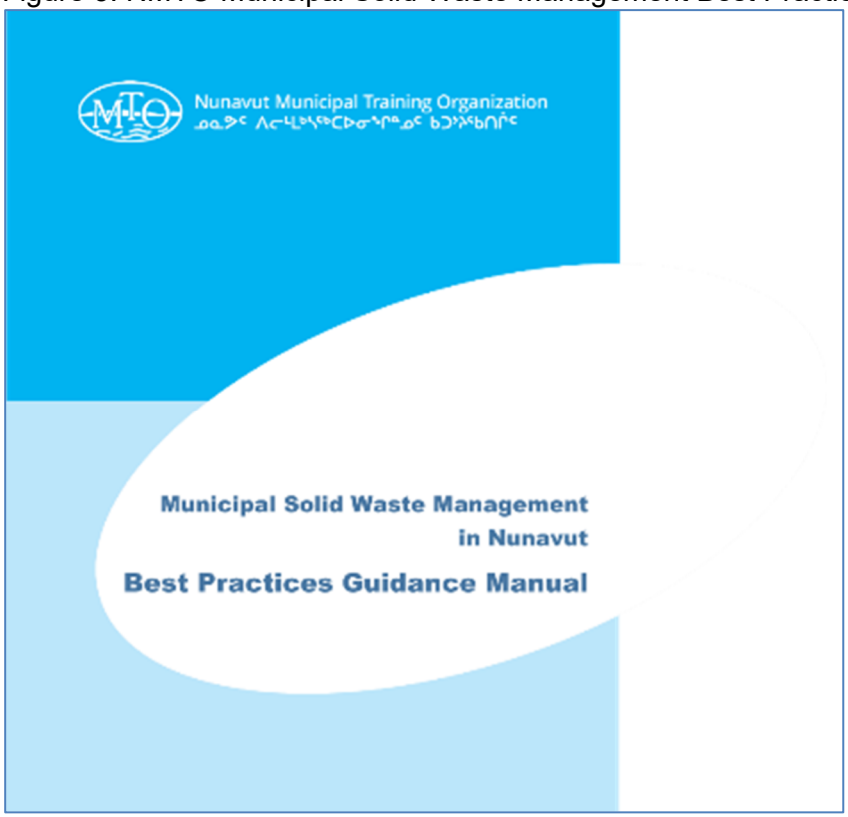
All solid waste management staff are to be trained to perform their job in a safe and environmentally responsible manner, in accordance with applicable regulations. Employees will be kept current with changes in regulations and technology through appropriate ongoing training courses as regulations and the technical aspects of landfill operation require. Specific training topics may include management of hazardous waste, monitoring and sampling, surface water control, spill prevention, special wastes control, heavy equipment, and first aid.

Training will emphasize the best practice operation of the landfill site. A review of this Operations and Maintenance Manual will be a prerequisite for any employee before being declared eligible for work at the Site. All employees will be provided with safety training covering all equipment and systems, with which they will be expected to operate on a daily basis. The use of protective equipment, and the handling and precautions associated with special wastes, will also be included in the safety training.

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

Training resources such as the 2015 Nunavut Municipal Training Organization (NMTO) “Municipal Solid Waste Management in Nunavut, Best Practices Guidance Manual” has been developed to provide solid waste operators with a quick reference to solid waste management best practices. The manual is an extension of training material prepared as part of the NMTO’s solid waste operator training course.

Figure 3: NMTO Municipal Solid Waste Management Best Practices Guidance Manual



4. Governance

4.1. Nunavut Water Board

The main government body dealing with solid waste management in Nunavut is the Nunavut Water Board (NWB), whose primary function is to license uses of water and waste disposal sites (i.e., the water licence). The NWB was established in 1998 under Article 13 of the Nunavut Land Claims Agreement (NCLA), and its powers and responsibilities are further defined in the Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA). The NWB is responsible for the use, management, and regulation of water in the Nunavut Settlement Area. It is required to cooperate with the Nunavut Planning Commission to develop land use plans that affect water and with the Nunavut Impact Review Board to assess environmental and socio-economic impacts of water-related project proposals. The NWB has powers similar to those of the Northwest Territories Water Board under the Northwest Territories Waters Act. The Board is required, in the exercise of that licensing power, to consider any detrimental effects of a potential use of waters or a deposit of waste on other water users, and is to hold, where appropriate, public hearings.

The NWB does not have enforcement powers. Once the licence has been issued, compliance and enforcement of the licence and provisions of the NWNSRTA fall under the jurisdiction of Aboriginal Affairs and Northern Development Canada (AANDC). AANDC appoints inspectors for this purpose.

The Municipality of Igloolik must operate the landfill site according to the conditions set out in the Water Licence No. 3BM-IGL1520 issued by the Nunavut Water Board for the operation of the Igloolik landfill site. This Licence is effective from March 31, 2015 and expires March 30, 2021. Under this licence, the municipality is entitled “to use water and disposal of waste associated for municipal undertakings” (copy of licence in Appendix A).

4.2. Acts, Regulations and Guidelines

4.2.1. Nunavut Environmental Protection Act

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

The EPA provides the Minister with the power to appoint inspectors and designates every member of the RCMP and every Wildlife Officer appointed under the Wildlife Act as an inspector. Under Section 5 (Discharge of Contaminants) of the EPA, no person shall discharge or permit the discharge of a contaminant into the environment except where the discharge is:

- Authorized by the EPA;
- A contaminant used solely for domestic purposes and was discharged from within a dwelling/house;
- From the exhaust system of a vehicle;
- Resulted from the burning of leaves, foliage, wood, crops or stubble for domestic or agricultural

- purposes;
- The result of burning for land clearing or land grading;
- The result from a fire set by a public official for habitat management or silviculture purposes;
- For the purposes of combatting a forest fire;
- A soil particle or grit discharged in the course of agriculture or horticulture; or
- A pesticide classified and labelled as "domestic" under the Pest Control Products Regulations (Canada).

It is important to note that these exceptions do not apply when an inspector has reasonable grounds to believe that the contaminant is not usually associated with the activity.

When a discharge occurs, the person must:

- Report the discharge (or likely discharge) to the appropriate authorities;
- Take all reasonable measures to stop the discharge and repair the environmental damage; and
- Notify any members of the public who may be affected.

An inspector can issue an order to the responsible persons to stop the discharge and to remedy or repair the damage to the environment resulting from the discharge. Any person who contravenes section 5 of the EPA or fails to comply with an order may be fined up to $300,000 and/or imprisoned for up to 6 months for a first offence. Each subsequent offence may include a fine of up to $1,000,000 and/or imprisonment of up to two years.

4.2.2. Nunavut Safety Act and Regulations

The operation of the landfill site must also comply with the Nunavut Safety Act and Regulations to protect landfill operators, visitors, customers, or anyone using the landfill site.

The Nunavut Safety Act (General Safety Regulations) includes:

- Compliance to protect landfill operators, visitors, public
- Workplace environment (hazards, noise, lighting, visibility, etc.)
- Accident prevention, accident reporting
- Worker training
- Use of equipment, safety features on equipment
- Use of Personal Protection Equipment (PPE)
- First-Aid requirements

4.2.3. Government of Nunavut Guidelines

Relevant Government of Nunavut guidelines that may be used as additional reference information in the operation and maintenance of the landfill site are listed below. These documents can be viewed on the Nunavut Department of Environment website

https://gov.nu.ca/environment/documents/environmental-guideline and consist of the following:

- Guideline for Burning and Incineration of Solid Waste (2012).
- Environmental Guideline for Used Oil and Waste Fuel.
- Dust Suppression
- General Management of Hazardous Wastes (2010)
- Waste Antifreeze (2011)
- Waste Asbestos (2011)
- Waste Paint (2010)
- Waste Solvent (2011)
- Waste Batteries (2011)

5. Site Facilities

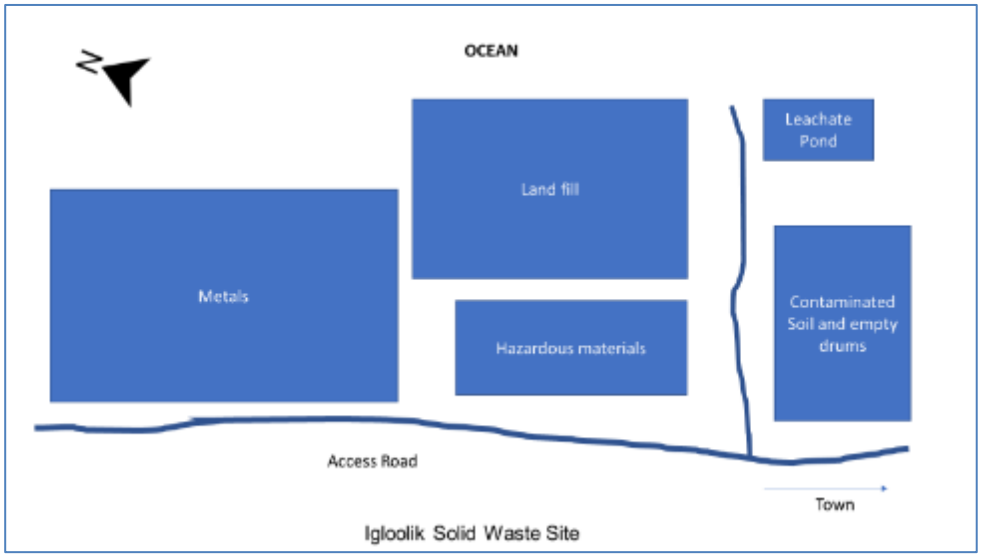
To allow for the efficient and responsible management of solid waste, the landfill site should be segregated to allow for the separation of materials into categories for proper storage and management such as:

- Reusable materials;
- Clean wood and paper (burnable);
- Bulky waste;
- Metal waste;
- Animal waste;
- Hazardous waste;
- End of life vehicles; and
- General waste.

5.1. Material Disposal

The Igloolik landfill site is composed of areas identified for the disposal/storage of domestic garbage, metal waste, hazardous waste, and contaminated soil. A leachate control pond is also located onsite. The existing waste disposal area is operated using the area method (see section 6.2) and functions as a natural attenuation system without a liner. Domestic waste, metal waste, and hazardous waste are to be disposed/stored in the appropriate areas of the landfill. The following diagram illustrates the landfill site layout.

Figure 4: Landfill Site Plan



5.1.1. Domestic Waste

Domestic waste or municipal solid waste, commonly known as garbage is a non-hazardous waste type consisting of everyday items that are discarded by the public to be disposed in the solid waste site and buried, such as paper, plastic, metal, and glass containers, food waste, textiles, etc.

5.1.2. Metal Waste

The Site includes a storage area for recycling of metal materials including:

- Scrap metal;
- Automobile body parts;
- Metal appliances such as refrigerators, stoves, and washer/dryers; and
- Used tires/rims.

5.1.3. End of Life Vehicles

End of Life Vehicles (ELV) should not be disposed in the active area for the disposal of domestic waste. A separate area of the landfill site is to be designated for ELVs where they can be consolidated and managed so that vehicle fluids, including antifreeze, brake fluids, engine oils, transmission fluids, windshield washer fluid, power steering fluid, rear axle housing fluids, etc. can be drained from the vehicles. The vehicle fluids are to be managed as hazardous waste and stored as identified in the GN's guide for the management of hazardous waste.

5.1.4. Hazardous Waste

The site includes a storage area for hazardous waste materials. These wastes include but are not limited to:

- Batteries;

- Paint;
- Antifreeze; and
- Waste oils.

Hazardous waste is to be separated from all other waste material and managed according to the GN's guide for the management of hazardous waste.

5.2. Equipment

Safety protocols should to be established to ensure the safe use of site equipment. Unsafe use of equipment such as dozers and front end loaders can be a risk to staff and the public. Examples of equipment protocols to be followed by waste management staff include:

- Maintaining site vehicles and equipment in good operating condition and equip it with safety essentials (e.g., fire extinguisher, first aid kit, etc.), shovel and spill containment items.
- Equipment should be inspected regularly.
- Those under the influence of alcohol or controlled substances should not be permitted to work on or use the equipment.
- Use spotters when reversing large equipment or trucks.
- No smoking should be allowed at the tip face, exposed landfill surfaces and other areas on the landfill site should be prohibited.
- If reusable material is to be stockpiled for public salvaging, it should occur in an area away from the tipping face area or near active working areas.

The current equipment for the Igloolik solid waste management program consists of one garbage collection vehicle and one dozer.

5.3. Monitoring

Sampling and reporting of surface water run off from the landfill site is required under the Site's Water License. The Municipality is to complete and report the results of the monitoring program in its annual report to the NWB. Staff are to maintain the monitoring program stations at the following locations:

- Landfill Site Leachate
  N69°23.245`
  W081°46.746`
- Wood Waste Area
  N69°23.186`
  W081°46.978`
- Metal Waste Area
  N69°23.287`
  W081°47.124`

The landfill Site leachate monitoring station is to be sampled once at the beginning, middle and near the end of discharge/run-off. . Samples are to be sent to an accredited laboratory to be analyzed for the parameters identified in the Site's Water Licence.

5.4. Signage

Adequate signage is a water license requirement on landfill sites. Signage should properly label different sections of the landfill according to material accepted and should give public warning to incorrect dumping practices. Signs should also be used to advise the public about recycling or "re-use" areas, and emergency numbers. Signs should also be in the local language, English, and French.

Signage is an important safety feature as it helps the public and staff use the SWF safely and highlights important safety precautions. Important safety considerations for signage include:

- Install signage at the landfill site entrance listing accepted and non-accepted waste, and emergency contact information.
- Signs prohibiting smoking and other potential fire ignition sources.
- Signs to direct pubic to where on site to leave material.

Consideration should also be given to the size of the posts used for the signs. While a single post may be adequate for small signs, larger signs may need thicker posts or two posts in order to keep them from twisting in the wind.

Figure 5: Signage Examples

Figure 6: Sign at a Monitoring Station

Image source: Arktis Solutions. Waste Management Best Practice Guide. 2010

5.5. Site Security

The current site is not fenced and therefore also does not have a gate or any means to control access to or secure the site. The Site also does not contain any structures such as a scale or attendant shelter.

6. Site Operations

Solid waste operations at the landfill site include a number of tasks that are to be completed by the Foreman and landfill operator including:

- Collection;
- Record keeping;
- Identifying hazardous materials;
- Segregating materials (waste screening);
- Filling and covering operations;
- Compacting operations;
- Site planning;
- Water flow control;
- Monitoring;
- Signage; and
- Equipment operations.

Municipal staff responsible for the landfill site operations must become familiar with and be properly trained to operate the site in an environmentally responsible manner. While working at the landfill site, staff will be equipped with appropriate personal protective equipment (PPE) for landfill site work which includes the following:

- Approved safety boots;
- Coveralls;
- Gloves;
- Safety goggles;
- Earplugs (when working around loud equipment);
- Safety vest; and
- Dust masks (when working in a dusty environment).

6.1. Hours of Operation

The current landfill site is not staffed, fenced or gated therefore, the hours that the public can access the site cannot be controlled. If the site is to be fenced and gated in the future, operating hours can be established for accepting solid waste at the Site at a frequency that is acceptable to the Municipality and the public.

6.2. Operating Principles

6.2.1. On Site Solid Waste Acceptance and Handling

The types of waste accepted at the landfill site are to be managed in an environmentally safe manner. Staff operating the site shall be trained so that the types of waste accepted at the disposal site are managed to protect the environment, the employees, the users and community while providing an adequate level of service to the public.

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

A list of materials which should not be accepted for disposal as domestic waste at the landfill site include the following:

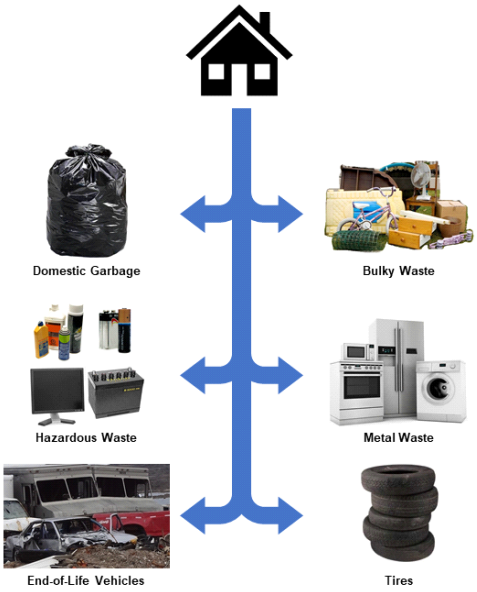
- Contaminated soils;
- Explosives or highly combustible materials of any nature;
- Radioactive materials;
- Mercury;
- Industrial/Commercial Hazardous Waste
- Drums with unidentified contents;
- Large volumes of fuel tank sludges from tank farms;
- Hot ashes;
- Biomedical wastes that are not incinerated or autoclaved prior to disposal;
- Waste pharmaceuticals;
- PCBs or PCB contaminated materials; and

- Any other materials not listed as acceptable or conditionally acceptable with the approval of the Municipality.

Materials accepted at the landfill site that require segregation from general waste include:

- Metal Appliances;
- Scrap Metal;
- Hazardous Waste (such as automobile batteries, oil, fuel, antifreeze, etc.)
- End of Life Vehicles; and
- Propane tanks

Figure 7: Waste Flow Diagram



The site operator will at a minimum wear the following safety clothing:

- Coveralls;
- Safety boots; and
- Gloves.

6.2.1.1. Landfilling Method

There are three types of landfilling methods for managing the disposal of solid waste in northern landfill sites, the Area Method, Depression Method, and Trench Method. Based on the location and type of subsurface of the Igloolik landfill site, solid waste should be managed at the Site using the area landfilling method. In this method, wastes are disposed directly on the ground, at the bottom of a short berm. Waste is built-up, compacted, and covered against a berm of at least 2 metres in height. When compacted waste is 2m high and 3m wide, 0.3m of cover is placed over waste. A new 2 m berm is built on top of the first. Figure 7 below illustrates the area landfilling method.

Figure 7: Area Landfilling Method

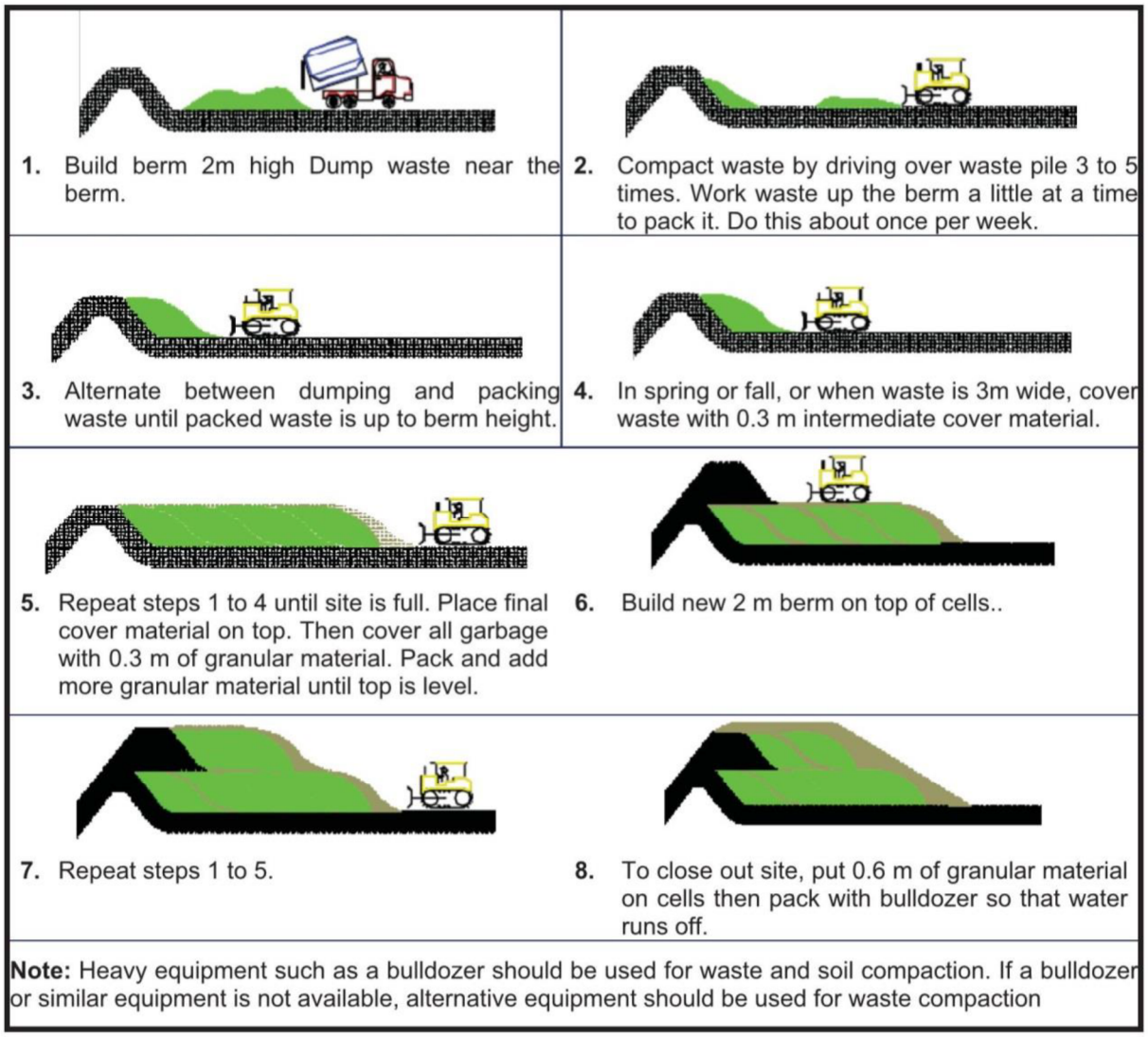


Image source: Arktis Solutions. Generic Solid Waste Facility Operation and Maintenance Manual. 2010

As shown in the diagram above for the area landfilling method, domestic waste is to be managed in small manageable sections. Solid waste should also be regularly compacted. Compacting is when heavy equipment such as a dozer is run back and forth over the waste, three to five times, and the waste is packed into a tight layer. Compacting the waste should be completed once a week. Ideally wastes should be compacted to a ratio of 3:1. For example, a volume of $3m^3$ of waste should be compacted to a volume of $1m^3$. Compacting does not change the weight of material, but it changes the density of solid waste by reducing the volume occupied by a given weight. Compaction has many benefits such as:

- Extending the life of the landfill and therefore reduces costs.
- Reduces the amount of cover material needed.
- Reduces the amount of subsidence (uniform sinking of the soil), settling of wastes and therefore reduces maintenance during operation and post-closure.
- Reduces litter issues.

- Leaves fewer voids for scavenging animals.
- Makes for a manageable and efficient working area.
- Makes it less likely for a fire to spread because there is less oxygen available in the waste.

When using tracked equipment such as a dozer to compact the waste, the direction of the travel should be up and down the slope so that equipment does not roll-over. The maximum optimum slope for the working face is about 3:1. Never operate equipment sideways along the working slope, as it could tip over.

6.2.1.2. Metal Waste

Metal waste includes items such as scrap metal, metal car parts, and metal appliances (e.g. refrigerators, stove, washers, dryers, and water heaters). This material has value as a recyclable material and can be shipped south to be recycled. Metal waste is to be stored separate from other waste material in a designated area within the landfill site. Alternative storage areas may be designated by the landfill operator for temporary storage and should be located where there is available room to unload vehicles and load recycling transport vehicles.

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

6.2.1.3. Tires

Tires should be stored at the landfill site in a designated area separate from other waste material. Tires hauled by individuals may be accepted for storage in the recycling area. Tires are flammable and therefore, should be stored away from potential sources that could cause a fire. Prior to the scrap tire stockpile volume exceeding the storage capacity, the CAO should coordinate with the GN to have the tire stockpile removed and shipped south for recycling.

6.2.1.4. Hazardous Waste

Hazardous waste are wastes which have a chemical characteristic and is potentially hazardous to human health and/or the environment and therefore, requires special handling and disposal techniques to eliminate the hazard. A hazardous waste includes products and substances which meet the requirements of being a dangerous good as defined in the Federal Transportation of Dangerous Goods Act.

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

Class 1 - Explosives
Class 2 - Compressed gases
Class 3 - Flammable and combustible liquids
Class 4 - Flammable solids
Class 5 - Oxidizing substances
Class 6 - Poisonous, toxic and infectious substances
Class 7 - Nuclear substances
Class 8 – Corrosives

Class 9 - Miscellaneous products, substances or organisms that may pose a risk to life, health, property or the environment

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

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

Hazardous waste must be separated from all other waste and should be securely stored onsite in a fenced area or preferably in a Seacan container or other enclosed structure. It is important that an inventory is kept of the quantity and volume of all of the hazardous waste stored in the community. The inventory should be completed either by the Foreman or landfill operator. A typical form could have the following headings illustrated in Table 3 below.

Table 3: Example of Hazardous Waste Inventory List

Type	**Quantity**	**Date stored**	**Date Removed**	**Staff Initials**
Oil	2 barrels	July 5/19		JS
Fuel	2 litres	July 5/19		JS
Vehicle Batteries	4	July 5/19	April 12/20	JS

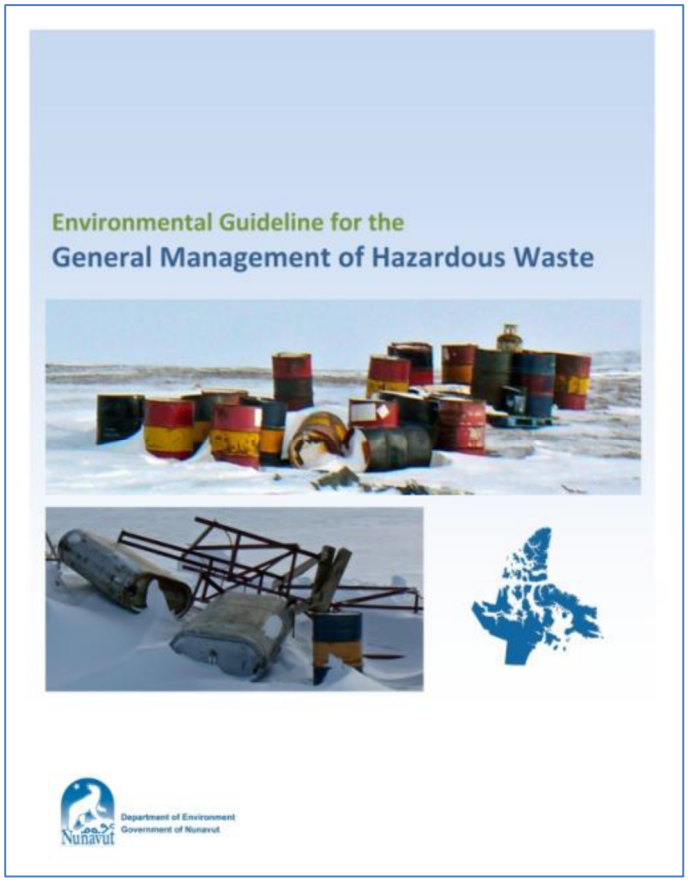
Once the designated hazardous waste area is full, the CAO should coordinate with the GN to remove the hazardous waste to ship south for proper disposal.

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

Drainage into and from the hazardous waste storage area should be controlled to prevent spills or leaks from leaving the site.

Further information for the proper management of hazardous waste in Nunavut can be found in the Government of Nunavut's document titled "Environmental Guideline for the General Management o Hazardous Waste".

Figure 8: GN Hazardous Waste Guideline


Environmental Guideline for the
General Management of Hazardous Waste
Nunavut
Department of Environment
Government of Nunavut

6.2.1.5. End of Life Vehicles

An end of life vehicle is considered to be a motor vehicle or a motor vehicle hulk if,

- It is abandoned; or
- It is being managed for the purpose of,
  I. recycling it,
  II. reusing it other than as an operable motor vehicle, or
  III. disposing of it.

End of life vehicles should be stored in a separate area of the landfill site where they can be readily available for processing and eventually shipped south for recycling. Fluids should be drained from end of life vehicles as soon as possible to avoid accidental discharge into the environment.

6.2.1.6. Animal Carcasses

Dead animal carcasses disposed at the landfill site should be covered and buried immediately and scavenging discouraged.

6.2.2. Snow Management

The disposal and storage of waste at the landfill site should consider the direction of the prevailing winds and its effect on snowfall. The Site layout should ensure that it limits the potential for snow drifts within the disposal/storage areas and that adequate space is available for snow clearing and storage without impacting daily operations. The operator should clear snow from the cells at least prior to the spring snow melt to reduce surface water run off which could adversely cause erosion and the quantity of leachate.

6.2.3. Waste Material Cover Management

To minimize public health and environmental hazards, a solid waste landfill is used for land disposal of refuse. This is done by periodically spreading the refuse into thin layers, compacting the refuse by driving over it a few times, and then applying a granular cover material. The design and operation of a landfill is intended to ensure that the final landfill is graded to promote the rapid runoff of surface water.
Cover material serves many important purposes:

- Reduces the amount of water entering the waste by keeping precipitation out of the waste
- Reduces odours
- Controls insects, birds, and bears
- Helps control/prevent fires
- Controls litter
- Prevents waste from being scattered by wind; and
- Gives the site a neat appearance

Since it can be difficult to maintain an adequate supply of cover material, and the community should to stockpile material at the site for future use. Waste soil from building construction sites or from other sources should be stockpiled at the solid waste site for later use as cover material.

6.2.4. Water Control

Flowing water should be prevented from entering the disposal area of the landfill site. Cut-off berms, swales, and trenching are effective diversion methods. Water should not be allowed to pool on site. The site should be sloped at a degree to allow surface water to drain away quickly without causing erosion. Surface water from snow melt and rain must be directed away from important water areas, such as drinking water sources or recreational areas. Also, prevent water from entering the site by constructing control berms. Control berms are built out of packed soils to form a barrier to steer or re-direct the water path. These control berms could be temporary structures as needed, once their purpose has been completed, they could be moved to another part of the site. Drainage from the Site should be monitored to ensure that the water runoff is not causing erosion or infiltration problems.

If water happens to pool in an area, despite the preventative measures mentioned above, drain the water to improve access and prevent it from contributing to leachate production.

6.2.5. Monitoring

The monitoring and reporting water quality is a requirement of the Water Licence, which will describe what monitoring is required. SWF operators should do a vigilant inspection of the facility perimeter to see if there are any seepages present. If so, they should be sampled and tested. Leachate management considerations at a SWF include[1]:

- Estimate leachate composition with consideration given to refuse type/composition, SWF operations, measured data from existing site, and/or measured data from another location with similar refuse type and operations.
- Estimate monthly leachate generation by completing a water balance with consideration given to waste moisture content, net infiltration (during active SWF operations and post-closure), active landfill footprint area, climatic conditions, etc.
- Estimate volume of leachate discharged from the facility on a monthly and yearly basis.
- Consideration given to leachate sump design and collection method.
- Consideration given to operation plans for leachate collection and appropriate disposal/treatment during active SWF operation and post-closure.
- Develop appropriate sampling procedures and protocols for monitoring leachate volume generated and leachate composition with consideration given to standard methods and regulatory requirements.

6.2.6. Nuisance Management

6.2.6.1. Litter

The landfill operator is responsible for patrolling and clearing litter from:

[1] Arktis Solutions. Solid Waste Management Best Practice Guide. 2010

- The access road and road leading to the site;
- The landfill property; and
- Adjacent lands around the perimeter of the landfill.

This task should be performed on a regular basis.

6.2.6.2. Dust

Dust is generated by:

- Traffic dust on access roads;
- Unloaded powdery or fine grained wastes; and
- Soil blowing from stockpiles of soil cover material.

Dust blowing from wastes may be controlled by:

- Unloading in a sheltered area away from the public disposal areas;
- Covering the waste with other waste or cover material as soon as possible after unloading.

Traffic dust may be minimized by:

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

Soil stockpiles for cover material should also be maintained to prevent blowing soil leaving the Site.

6.2.6.3. Odours

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

Odours are caused by:

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

Odours may be controlled through:

- Applying intermediate soil cover over the garbage;
- Working with waste generators to reduce odours at the source; and
- Immediately correcting any runoff seepage that may flow through or stagnate in the landfill area.

6.2.6.4. Fires

Fires at the landfill are problematic because of issues with safety, air quality, property damage, and general nuisances to site employees and the community. Fires can be caused by:

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

Should a fire occur at the landfill site, follow the procedures outlined in Section 6.4.1.1 – Fire Management, should be implemented.

6.2.7. Landfill Closure

A landfill closure plan must be completed at least six (6) months prior to closure of the current landfill site or the submission of the final design drawings for construction of a new facility to replace existing site. The landfill site will be decommissioned in accordance with the closure plan. While the current landfill site is still open, the final decommissioning plan should be considered as the landfill is developed. As each area of the site is decommissioned the perimeter slopes and surfaces are reclaimed. In this way the landfill is closed and reclaimed progressively to correspond with the opening of the new solid waste management facility.

At a minimum the closure plan is to describe:

- The waste disposal site and facilities;
- Hazardous waste storage areas;
- Any site affected by waste spills;
- Leachate prevention;
- An implementation schedule;
- Maps delineating all disturbed areas, and site facilities;
- Consideration of altered drainage patterns;
- The type and source of cover materials;
- The future use of the area.

6.3. Record Keeping and Reporting

Record keeping and reporting is an important part of landfill operations. Landfill site staff must establish and maintain an operating record and prepare the reports required for planning purposes and for the site NWB water licence.

6.3.1. Daily Operator Log

The landfill operator will maintain a record of daily operating activities. The log will be maintained and submitted to the Landfill Site Foreman at the end of the month. Daily records should include, but are not limited to:

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

6.3.2. Load Records

The waste collection staff, or the site operator are responsible to maintain a record of the amount an type of loads delivered to the landfill site each day. The record is to be kept on file at the Landfill Foreman's Office.

Daily load records generally include:

- Date of delivery to the site;
- Type of waste if possible e.g. residential or commercial; and
- Estimated volume of waste e.g. ¼, ½, or full load.

6.3.3. Annual Report

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

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

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

6.3.4. Spill Reporting

In the event there is a spill of a hazardous substance at the landfill site , the Landfill Foreman shall immediately notify the CAO and contain the spill. Once the spill is contained and clean-up has been completed, the Foreman will complete the Spill Report Form (See Appendix B) and submit to the spill report email address located on the Spill Report Form.

6.3.5. Water License Reporting requirements

The Igloolik solid waste management site operates under the NWB Licence No. 3BMIGL1520. The monitoring of conditions onsite and the reporting of water quality is a requirement of the Landfill Site Water Licence, which describes the level of monitoring is required. For the solid waste operator, onsite monitoring includes collecting water samples for analysis and regularly checking the conditions of the landfill site, including:

- Checking the perimeter of the landfill site for evidence of leachate seepages;
- Eroding berms;
- Damaged fencing; and
- Any other site maintenance issues.

The figure below depicts examples of conditions that should be observed and reported such as spills and leaks from stored hazardous waste (left), contaminated surface water runoff and erosion (centre), and leachate seepage (right).

Figure 9: Examples for Monitoring

Image source: Government Nunavut

Monitoring and reporting water quality is a requirement of the water licence. On a regular basis (weekly or monthly), the Foreman or Landfill Operator will check the perimeter of the landfill site for leachate seepages, damage to berms, litter and other site maintenance issues. On a monthly basis, when is observed, the Foreman or Landfill Operator will take a water sample at Monitoring Program Station IGL-2 at the beginning, middle, and near the end of the observed discharge/run-off. If no discharge/run-off is observed, the Foreman or Landfill Operator will record the observation and that no sample was taken. Sampling methodology will comply with the *Standard Methods for the Examination of Water and Wastewater* manual. Samples are to be sent to an accredited laboratory for analysis for parameters required by the water licence.

6.4. Landfill Emergency Response Plan

6.4.1. Overview

The landfill emergency response plan sets out appropriate procedures to address foreseeable emergencies. The CAO and Foreman will review the emergency procedures annually or following an emergency incident to 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; and
- Regular safety and emergency meetings are held with landfill employees.

6.4.1.1. Fire Management

Should a fire occur at the landfill site, emergency services, the landfill Foreman, and CAO are to be notified immediately. If a fire occurs, landfill staff will take the following actions:

Table 4: Fire Management

Action	Time Frame	Who?	Resources
Evacuate and secure the area	Immediately	Landfill Foreman	Site Operator
Call: • Emergency Services • CAO	Immediately	Landfill Foreman	Site Operator
Isolate the burning wastes	As soon as it is determined safe to do so	Landfill Foreman Emergency Services	Site Operator; Landfill Equipment
Determine the nature and extent of the fire	Immediately	Landfill Foreman Emergency Services	Site Operator
Excavate, remove, and soak the burning waste	As soon as it is determined safe to do so	Landfill Foreman and Emergency Services	Site staff Fire Department Water Truck Water pumps
Cover the burning area	Immediately after the source of burning waste has been extinguished, and as soon as it is safe to do so	Landfill Foreman and Emergency Services	Site staff Fire Department Landfill equipment
Appoint staff for fire guard	After fire is extinguished	Landfill Foreman	Site Operator Fire Department
Confirm the fire is extinguished	Immediately	Landfill Foreman	Fire Department
Review the cause of fire and prepare appropriate mitigative measures	Within 1 month	Landfill Foreman CAO Director of Emergency and Protective Services	Site staff Fire Department

If possible, it is best to control the fire with the use of a bulldozer and soil. If it is safe to do so, dig out to the source and isolate the burning waste. Then either let it burn out or cover with soil. Lots of water will not necessarily extinguish the fire and can cause more issues. The following points should be followed when fighting a landfill fire:

- Most landfill fires can be controlled with a relatively small amount of water. In most cases, soil is more effective than water to smother the fire;

- If two or more water trucks are being used, try to use shifts so that at least one water truck is at the fire at all times;
- Do not attempt to fight a large fire with a fire extinguisher;
- Do not use a rubber tired loader or backhoe to approach the fire, rubber tires are flammable;
- Do not approach any fire with a dozer unless a water truck is close by for backup;
- Never risk personal injury attempting to save a machine.

6.4.1.2. Evacuation Procedures

In the event that an area or structure at the landfill site must be evacuated due to a fire, gaseous, or other emergency situation at the landfill site, landfill site staff, customers, and site visitors will be evacuated via the closest exit and will proceed to a designated marshalling area.

In the event of a fire or gaseous release from active areas of the landfill, the Landfill Foreman will direct all staff and site visitors to immediately leave the area and proceed to the designated marshalling area. Visitors will be requested to remain at the marshalling area until otherwise notified.

The marshalling area is to be designated for each emergency situation according to the nature of the emergency, the location of the emergency, and the location of a safe exit route. A marshalling area must not be used when it is unsafe or is downwind of a fire or gaseous release.

Marshalling areas are:

1. Primary: The road outside the main site entrance; and
2. An alternate area designated by the Landfill Foreman.

When the evacuation is complete, the Landfill Foreman will proceed to the marshalling area.

The prime consideration for the Landfill Foreman is to ensure that all employees and site visitors are safely evacuated. The Landfill Foreman will:

- Await appropriate emergency response personnel; and
- As required, establish perimeter security, conduct searches, and/or take other actions that may be warranted by specific circumstances.

6.4.1.3. Medical Emergencies

All injuries, even minor ones, should be considered important and should be reported as a safety incident to the Landfill Foreman. 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 the medical centre.

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

Table 5: Response to Minor Medical Injury

Action	Time Frame	Who?	Resources
Apply appropriate First Aid	Immediately	Trained First Air Personnel	
Recommend that the injured person consult a physician	Immediately	Trained First Personnel	
Take the injured person to a medical emergency centre	Immediately	Trained First Personnel	
Contact Safety Officer	Immediately	Landfill Foreman	
Record injury in the daily report	End of the workday	Landfill Foreman	Landfill Foreman
Review cause of the injury and prepare appropriate mitigative measures	Within 1 month	Landfill Foreman, CAO	Landfill Foreman Occupational Health and Safety Committee

Table 6: Response to Serious Medical Injury/Emergency

Action	Time Frame	Who?	Resources
Assess site conditions for personal safety and safety of others, and take appropriate actions to secure unsafe areas	Immediately	Landfill Foreman Trained First Aid Personnel	Landfill Foreman
Attend to the injured person and apply First Aid as applicable	Immediately when safe to do so	Trained First Aid Personnel	
Contact: • Emergency Services • Foreman • CAO • Safety Officer	Immediately	Trained First Aid Personnel Landfill Foreman	
Stay with the injured person until medical assistance arrives	Duration of medical emergency	Trained First Aid Personnel	
Record injury in the daily report	No later than end of the workday	Landfill Foreman	Landfill Foreman
Conduct 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	Landfill Foreman CAO Emergency Services	Site Personnel Occupational Health and Safety

6.4.1.4. Environmental and Operational Contingencies

Environmental and Operational contingencies for issues arising at the landfill site may vary in nature and degree of seriousness therefore, each situation will dictate the appropriate actions and responses that should be undertaken. Generally, the environmental and operational contingencies include the following steps:

- Contain the problem;
- Verify and validate the problem;
- Investigate the cause and potential risk;
- Assess appropriate corrective actions;
- Implement the corrective action; and
- Review operation procedures and preventative measures.

6.4.1.4.1. Spills

In the event a spill of hazardous material occurs at the landfill site, the Landfill Foreman is to be notified immediately. The CAO should also be notified of the nature of the release as well as the activities and corrective actions being taken.

A spill report must be completed and sent to the Spill Line once the spill is contained and clean up has started. The Appendix B: Forms, contains a copy of the Spill Report Form that also

includes contact information. All landfill staff must review and familiarize themselves with the Spill Contingency Plan, Municipality of Igloolik, Nunavut.

6.4.1.4.2. Prohibited Waste

Prohibited waste is any material that is not allowed to be disposed in the landfill site according to the Municipal By-law or policies. If prohibited waste material is found in the landfill site, landfill staff will take the following actions:

Table 7: Prohibited Waste Management

Action	Time Frame	Who?	Resources
Isolate waste and cease operations in the area of the waste	Immediately	Landfill Foreman	Safety Officer Environmental Consultant
If in a liquid state, construct containment around perimeter of the waste	Immediately	Landfill Foreman	Landfill equipment
Determine how to safely manage the waste	Immediately	Landfill Foreman	Safety Officer
Determine source of waste, and if possible, the waste generator	Within 1 week	Landfill Foreman	Daily Activity Logbook Staff observations
If identified, contact the generator to review options	Within 1 to 2 weeks	Landfill Foreman	CAO
Document nature of incident and actions taken	Within 1 hour	Landfill Foreman	Daily Activity Logbook
Inform Nunavut Water Board	When results have been confirmed	Landfill Foreman	
Review waste acceptance procedures and practices, and implement mitigative measures	Within 1 month	Landfill Foreman Site Operator	Safety Officer

6.4.1.4.3. Leachate Impacts

If through general observation or Site monitoring by landfill site staff that leachate from the Site could be impacting the natural environment, waste management staff are to take the following actions:

Table 8: Leachate Impact Management

Action	Time Frame	Who?	Resources
Re-sample leachate to verify or validate	Within 1 month	Landfill Foreman Environmental Consultant	Environmental Consultant Laboratory
Assess the nature and risk of the problem	Following re-sampling	Landfill Foreman Environmental Consultant	Environmental Consultant AANDC Water Inspector NWB
Investigate corrective measures	Following assessment of the problem	CAO Landfill Foreman	Environmental Consultant AANDC Water Inspector NWB
Isolate the area and implement containment to prevent leachate from impacting non controlled areas.	Immediately	Landfill Foreman	Environmental Consultant AANDC Water Inspector NWB
Investigate the cause of the seep	Within 2 days	Landfill Foreman	Environmental Consultant
Implement corrective measures	Following assessment of the problem	CAO	Environmental Consultant AANDC Water Inspector NWB

Appendix A
Igloolik Water Board Licence

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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: 3BM-IGL1520/Renewal

March 31, 2015

Brian Flemming
Senior Administrative Officer
Hamlet of Igloolik
P.O.Box 30
Igloolik, NU XOA 0A0

E-mail: igloolik@magma.ca

Bhabesh Roy, P. Eng.
Municipal Planning Engineer, Baffin Region
Government of Nunavut
Dept. Community and Government Services
P.O Box 379, Pond Inlet, NU X0A 0S0

E-mail: broy@gov.nu.ca

RE: NWB Renewal Licence No. 3BM-IGL1520

Dear Mr. Flemming and Mr. Roy;

Please find attached Licence No. **3BM-IGL1520** issued to Hamlet of Igloolik by the Nunavut Water Board (NWB) pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* (*Nunavut Land Claims Agreement or NLCA*). The terms and conditions of the attached Licence related to water use and waste disposal are an integral part of this approval.

If the Licensee contemplates the renewal of this Licence, it is the responsibility of the Licensee to apply to the NWB for its renewal. The past performance of the Licensee, new documentation and information, and issues raised during a public hearing, if the NWB is required to hold one, will be used to determine the terms and conditions of the Licence renewal. Note that if the Licence expires before the NWB issues a new one, then water use and waste disposal must cease, or the Licensee may be in contravention of the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. However, the expiry or cancellation of a licence does not relieve the holder from any obligations imposed by the licence. The NWB recommends that an application for the renewal of this Licence be filed at least three (3) months prior to the Licence expiry date.

If the Licensee contemplates or requires an amendment to this licence, the NWB may decide, in the public's interest, to hold a public hearing. The Licensee should submit applications for amendment as soon as possible to give the NWB sufficient time to go through the amendment process. The process and timing may vary depending on the scope of the amendment; however, a minimum of sixty (60) days is required from time of acceptance by the NWB. It is the responsibility of the Licensee to ensure that all application materials have been received and are

acknowledged by the Manager of Licensing.

The NWB strongly recommends that the Licensee consult the comments received by interested persons on issues identified. This information is attached for your consideration.[1]

Sincerely,

Thomas Kabloona
Nunavut Water Board
Chair

TK/ce/ri

Enclosure: Licence No. **3BM-IGL1520**
Comments – AANDC

Cc: Qikiqtani Distribution List

[1] Aboriginal Affairs and Northern Development Canada (AANDC), September 11, 2014;

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DECISION

LICENCE NUMBER: 3BM-IGL1520

This is the decision of the Nunavut Water Board (NWB) with respect to an application for a Licence renewal received on March 13, 2014, made by:

HAMLET OF IGLOOLIK

to allow for the use of water and deposit of waste during municipal activities by the Hamlet of Igloolik, located within the Qikiqtani Region of Nunavut at geographical coordinates as follows:

Latitude: 69°23'N and Longitude: 81°46'W

DECISION

After having been satisfied that the application was for a location that falls outside of an area with an approved Land Use Plan[2] as determined by the Nunavut Planning Commission (NPC) and exempt from the requirement for screening as described within Schedule 12-1 by the Nunavut Impact Review Board[3] in accordance with Article 12 of the *Nunavut Land Claims Agreement* (*NLCA*), the NWB decided that the application could proceed through the regulatory process. In accordance with S.55.1 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (*Act*) and Article 13 of the *NLCA*, public notice of the application was given and interested persons were invited to make representations to the NWB.

After reviewing the submission of the Applicant and considering the representations made by interested persons, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the *NLCA* and of the *Act*, waived the requirement to hold a public hearing, and determined that:

Licence No. 3BM-IGL0911 be renewed as Licence No. 3BM-IGL1520 subject to the terms and conditions contained therein. (Motion #: 2014-B1-045)

Signed this 31st day of March, 2015 at Gjoa Haven, NU.

Thomas Kabloona
Nunavut Water Board, Chair

TK/ce/ri

[2] Nunavut Planning Commission (NPC) Conformity Determination, August 13, 2014.
[3] Nunavut Impact Review Board (NIRB) Screen Exemption from Screening Decision, August 20, 2014

I. BACKGROUND

The Hamlet of Igloolik (Hamlet or Igloolik) is located on Igloolik Island in the northwest region of the Foxe Basin within the Qikiqtani Region of Nunavut, at the following coordinates: Latitude: 69°23'N and Longitude: 81°46'W. Igloolik is located within a zone of continuous permafrost and the island is composed of dolomitic conglomerates, with sandstone, dolostone and siltstone. The island is at a very low elevation with numerous ponds and an extensive tidal foreshore.

In 2014, the Hamlet of Igloolik has an estimated population of approximately 1,780. Existing Water Use and Waste Disposal Facilities include a freshwater intake pump, reservoir, truck fill station, a three cell sewage exfiltration lagoon system with a wetland, an older fourth sewage cell constructed prior to the three cell lagoon system, domestic landfill, and metallic waste landfill.

The Water Supply, Waste Water treatment by lagoon process and Waste Management systems within this Water Licence are at different stages with system upgrades and design/construction activities. The following is an update provided by the Licensee for each system:

Water Supply: This system consists of a Water Truck Fill Station, Water Storage Reservoir and an intake pipe from South Lake to the Water Storage Reservoir. The Licensee has indicated that the design and construction plans to expand the Water Storage Reservoir are currently on hold, pending capital fund approvals. The Board advises that an amendment application with construction drawings shall be submitted prior to the commencement of construction for the Water Supply system.

Wastewater Treatment by Lagoon: A three cell exfiltration lagoon is used to treat the entire wastewater produced annually in the Community. The older cell constructed prior to these three cells is still there and sometimes is used in case of emergency. The design for rehabilitation and improvement of the sewage lagoons is complete. The Licensee has expressed that the project is on hold. The Board advises that an amendment application with construction drawings shall be submitted prior to the commencement of construction for the Wastewater Treatment Facility.

Solid Waste Management: The solid waste management for the Hamlet is comprised of a domestic waste site and a metal waste site. The Licensee has expressed that the rehabilitation plans for the Waste Management Facilities is currently on hold due to funding. The Board advises that an amendment application with construction drawings shall be submitted prior to the commencement of construction or upgrades for the new Waste Management System.

II. FILE HISTORY

Information contained on the NWB's FTP site indicates that the Nunavut Water Board (NWB) has issued two licences to the Hamlet of Igloolik in past years.

Licences issued by the NWB to the Hamlet of Igloolik are the followings:

- ***Licence NWB3IGL0308***
  This licence was issued on February 5, 2003 with an expiry date of August 31, 2008. The licence allowed for the use of 70,000 cubic metres of water annually and deposit of waste in support of a Municipal undertaking.

- ***Licence 3BM-IGL0911***
  This licence was issued on July 10, 2009 with an expiry date of July 31, 2011. The licence allowed for the use of 70,000 cubic metres of water annually and deposit of waste in support of a Municipal undertaking.

III. PROCEDUAL HISTORY

The NWB received from the Government of Nunavut – Community Government Services (GN-CGS), on behalf of the Hamlet of Igloolik, the following application documents (Application) for the ten (10) year renewal of Licence 3BM-IGL0911, from March 13, 2014 to May 16, 2014:

- Hamlet Annual Reports 2009, 2010, 2011, 2012 and 2013
- Renewal Application Cover Letter, May 16 2014
- Hazardous Materials Spill Database, Baffin Spills in 2013
- Igloolik Bathymetic Survey, Arktis Solutions Incorporated, August 2011
- Igloolik Cover Letter to NWB Application March 2014
- Igloolik Water Licence Application March 2014
- Location of South Lake 2014
- Hamlet of Igloolik, Plan for Compliance Igloolik
- Technical Summary of Environmental Facilities under the Water License # 3BM-IGL 0911 (Part B:1.a) of the Hamlet of Igloolik, Baffin Region, Nunavut (in English & Inuktitut) March 2014
- Igloolik Water Supply Design Development ARKTIS March 2014
- CGS Letter to NWB for Igloolik May 2014
- Department of Community and Government Services Letter to NWB, May 16, 2014
- Igloolik Chemical Analysis of raw water 2008
- Igloolik Lab Final Report, Taiga Environmental Laboratory, September 04 2008
- Igloolik Operations and Maintenance Manual Water Truck Fill Station, 1980 (Chapter 1- 10)
- Design Development Report – Improvement of Water Supply System, Igloolik, Nunavut, 15 October2011

Following receipt and an internal review, NWB distributed the Application for a thirty (30)-day comment period on August 12, 2014. On September 11, 2014, submission was received from Aboriginal Affairs and Northern Development Canada (AANDC).

The NWB has placed in its Public Registry copies of the Application and all comments received from interveners. This information can be accessed on the NWB's File Transfer Protocol (FTP) site using the following link (Username: **public**; Password: **registr***y*):

ftp://ftp.nwb-oen.ca/1%20PRUC%20PUBLIC%20REGISTRY/3%20MUNICIPAL/3B/3BM%20-%20Municipality/3BM-IGL0911/

Based upon the results of the detailed assessment, including consideration of any potential accidents, malfunctions, or impacts to water that the overall project might have in the area, the Board approved the application and has renewed the Licence 3BM-IGL0911 as Licence 3BM-IGL1520.

IV. ISSUES

The following sections provide background information relevant to the terms and conditions included in this Licence, in the context of submissions received and/or the Board's rationale. Where appropriate, the Board has removed or modified terms and conditions associated with the previous licence, which are no longer applicable under this renewal Licence.

Term of the Licence

In accordance with s. 45 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA or the Act), the NWB may issue a licence for a term not exceeding twenty-five (25) years. In determining an appropriate term for a renewal licence, the Board generally takes into consideration several factors including intervener's comments, the Licensee's compliance history, as well as the rationale contained in the Application.

The Licensee requested in its Application a ten (10) year term for the licence. The intervening party, AANDC, in their submissions recommended a renewal term of not more than five (5) years. The Board in examining the compliance history of the Licensee and the comments received from AANDC has granted a term of five (5) years to the Licence. In so doing, the Board believes and expects that the five-year terms will provide the Licensee with significant opportunities to prove that it can consistently abide by the terms and conditions in the licence overtime.

Moreover, it is noted that the Hamlet's actual daily water use may be higher than 300 cubic metres per day when filling the Water Storage Reservoir which could trigger a change of the Licence Type "B" to Type 'A". The five (5) year term shall allow the Licensee to measure the daily water use during two (2) full years and help the Board to accurately determine the Type of Licence for the future renewal

Annual Report

Under the reporting section of the Licence, Part B, Item 1, the Licensee is required to submit, on an annual basis, a report pertaining to water use and waste deposit activities. Although the 2011-2013 reports submitted include useful information, the AANDC noted that the reporting requirements specified in Part B, Item 1 of the Licence were not being fully satisfied. The NWB concurs with AANDC's recommendations and requests that the Licensee supplement the standard NWB reporting forms with additional documentation in order to ensure that all monitoring requirements are satisfied. The Licensee is encouraged to develop its own annual reporting template. This template should include tabular summaries of monitoring data pursuant of Part B, Item 1 (a) of the Licence. The Licensee is encouraged to contact AANDC, the NWB, or the GN-CGS to discuss its licensed monitoring program. This reporting information will be kept in the NWB's public registry

and made available to interested persons upon request. Further, the NWB maintains annual reporting information on its FTP site, which can be accessed using the following link (username: **public** and password: **registry**): ftp://ftp.nwb-oen.ca/1%20PRUC%20PUBLIC%20REGISTRY/.

Water Supply Facilities

The Hamlet of Igloolik currently obtains its potable water from South Lake to annually supply an existing reservoir with a capacity of 65,000 cubic metres. The Licensee has indicated that the Hamlet's plans to expand the existing reservoir are currently on hold, pending capital fund approvals. Water is currently withdrawn during the months of August and September with a maximum authorized water use quantity of 70,000 cubic metres annually.

No concerns were raised by the parties in their written submissions as to the amount of water required by the Hamlet, the manner in which it is obtained or in the manner in which this water will be used.

In review of the application, the NWB relied on the new Nunavut Waters Regulations (Regulations) issued on April 18, 2013 and the definition of "Use" provided by the Act. All water taken from the South Lake, main water source to fill the reservoir would qualify under the definition as "use of water". Therefore, having given due consideration to the information presented during the review, the NWB has determined that water extracted from the source water supply, for any purposes, is considered as a Use of water and that the Licensee is requested to daily measure directly, on the source at the Freshwater Intake Pump, all freshwater used for all purposes. The Licensee shall also measure and on a daily, monthly and annual basis all freshwater used for all purposes at the Truck-fill Station.

The Licensee is also advised that according to the Schedule 2 of Regulations any use of 300 cubic metres or more per day and any use of waters related to the storage of 60,000 cubic metres or more water would require a Type "A" Water Licence. The Board has, therefore, set the maximum water usage for all purposes specified in this Licence at 81,208 cubic metres per year or up to 299 cubic metres per day for filling of the reservoir. Lastly, please note that the NWB has renewed the terms and conditions associated with water use by the Hamlet accordingly.

Sewage Disposal Facilities

The Hamlet of Igloolik currently provides trucked sewage services for the Community residents, businesses and institutions. No concerns were raised by the parties in their written submissions as to the manner in which the sewage is treated and disposed of. The NWB has renewed the terms and conditions associated with Sewage Disposal Facility accordingly. The NWB requests that the Licensee install flow-meters on the waste discharge pipelines by May 31, 2015 in order to accurately measure the sewage disposal volumes (of the year following the calendar year being reported) and comply with Part B, Item 1 and 4 of the current Licence. The NWB has also added a requirement that all inspection of engineered facilities related to the management of water and waste shall be carried by an Engineer (Civil, Municipal or Geotechnical) annually, in order to comply with Part F, item 3, the Licensee must ensure that it will provide annual Engineer reports within 60 days of inspections, including a cover letter outlining an implementation plan

addressing each of the Engineer's recommendations. The Board acknowledges that though no reports or cover letters have been provided to date, the Licensee has set forth, in the Igloolik Compliance Plan, a plan to comply with this condition in the future.

Finally, as part of the Sewage Disposal Facility Operation and Maintenance (O&M) Plan, the NWB requires that the Licensee include procedures and frequencies of inspections to be carried out to verify whether or not/when there is flow from the Sewage Disposal Facility. Visual inspections to verify flow from the Sewage Disposal Facility are required to ensure that the monitoring program under Part D, Item 2 of the Licence is initiated at the appropriate time and that the Inspector is notified upon its commencement.

Solid Waste Disposal Facilities

In the recently submitted *Technical Summary of the Environmental Facilities* document, the Hamlet expressed plans in 2014 to segregate hazardous wastes like batteries etc. The Board requests that the Hamlet submit an Operation and Maintenance (O&M) Plan for the Solid Waste Disposal Facilities that include procedures for the segregation, storage and eventual removal/disposal of hazardous wastes, including waste oil, and runoff management. The Licensee should note that a condition has been included in the licence for the submission of O &M Plan for the Solid Waste Disposal Facilities within ninety (90) days of issuance of this Licence under Part F, Item 1.

Operation & Maintenance Plans

In accordance with Part F, Item 1, of the expired licence, the Licensee was required to submit a Sewage Disposal Facility Operation and Maintenance (O&M) Plan (including the Sewage Sludge Management Plan, a Solid Waste Disposal Facility Operation and Maintenance (O&M) Plan, and a Spill Contingency Plan. These Plans need to be developed to the satisfaction of the NWB for the operation and maintenance of the facilities, the protection of the environment with regard to potential spills through day-to-day operations, and abandonment and restoration of various sites.

The Licensee has submitted a document entitled: Igloolik Operations and Maintenance Plan Water Truck Fill Station that needs to be updated to include an Abandonment & Restoration Planning, and Spill Contingency Planning. The renewed Licence has therefore continued to include the requirement to provide separate updated O&M Manuals for Water Supply and Waste Disposal Facilities, to the NWB within a set timeframe of issuance of the Licence. The NWB reviewed and deemed the short-term goals of the submitted Compliance Plan dated March 13 2014, as satisfactory. The NWB also reviewed the Department of Community and Government Services' Letter to NWB, dated May 16 2014, clarifying and answering the questions put forward by the Board on the submitted Compliance Plan by the Licensee.

The only comments received from interested parties were from the AANDC. AANDC indicated that the NWB should either require the Licensee to submit any outstanding Operational Plans before renewing the licence, or require the submissions within 90 days of renewing the licence. This includes plans for Operation and Maintenance of the Solid Waste Management and Sewage Disposal Areas, Abandonment and Restoration and Spill Contingency.

Taking into account the review of the application and comments received, the O&M

Manuals to be submitted are as follows, in accordance with Part F, Item 1 of the Licence:

a. *Updates to the Water Storage and Distribution Facility Operation and Maintenance (O&M) Plan*; *Amendments required include:*
    i. *An improved description of the technology and process;*
    ii. *A detailed breakdown of maintenance work and schedule of work required for the system equipment (including the submersible pumps, intake screens, and valves);*
    iii. *Revisions to the faded Intake Screen and Reservoir Fill Line Drawings (Drawing No. 78-IB7-101 to 106); and*
    iv. *Submitted O &M details 1979 Service Contracts for the operating pumps, if these Service Contracts are still required please renew and update the submitted information.*
b. *Sewage Disposal Facility Operation and Maintenance (O&M) Plan* (including the *Sewage Sludge Management Plan)*;
c. *Solid Waste Disposal Facility Operation and Maintenance (O&M) Plan*; and
d. *Spill Contingency Plan;*

The purpose of the O&M Manuals noted above is to assist Hamlet staff in carrying out the procedures relating to their water distribution and waste disposal facilities. The O&M Manuals should demonstrate to the NWB that the Hamlet is capable of operating and maintaining the infrastructure related to water use and waste disposal to meet the requirements of the Licence. The O&M Manuals should be based, at a minimum on the various guidelines available (i.e. *Guidelines for the Preparation of an Operations and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories,* Duong and Kent, 1996) acceptable by NWB, and other regulatory guidelines as deemed appropriate.

Abandonment and Restoration Plan

General terms and conditions under Part G, Item 1 in the licence require the Licensee to submit an Abandonment and Restoration (A&R) Plan at least six (6) months prior to abandoning any facility under the scope of this renewal Licence. It should be noted that the Board is aware that the Licensee is contemplating abandoning the old water intake structure and pump house associated with the potable water treatment facilities. The Board expects that an appropriate A&R plan will be submitted in accordance with the terms and conditions in this licence.

Monitoring Plan

Although the 2011-2013 reports submitted include some of the required information, however, the reporting requirements specified in Part B, Item 1 of the Licence are not being fully satisfied. The Licensee needs to submit a relevant Monitoring and Quality Assurance / Quality Control (QA/QC) Plan for its operations, more detailed requirements for the QA/QC Plan are included in Part H, Item 9 and 10 of this Licence.

Engineered Drawings and Designs

The Licensee has stated that it will construct a new sewage lagoon, waste disposal facility, and expand its water reservoir once it secures the necessary capital funding. The Licensee shall refer to Part E of this Licence for the conditions applying to modifications and construction of the facilities included in this Licence. Part E Item 1 states that the Licensee

shall submit to the Board for approval in writing, for construction design drawings stamped by a qualified Engineer, sixty (60) days prior to the construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or wastes. Part E, Item 4 of this Licence requires the Licensee to provide to the Board, for review, as-built plans and drawings, for facilities included under the scope of that licence, within ninety (90) days of completion of construction or, if already constructed, within ninety (90) days of issuance of the Licence.

Licence No. 3BM-IGL1520

Pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

HAMLET OF IGLOOLIK
(Licensee)

P.O. BOX 30 IGLOOLIK NUNAVUT X0A 0L0
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water or dispose of waste for a period subject to restrictions and conditions contained within this Licence renewal:

Licence Number/Type:	3BM-IGL1520 TYPE "B"
Water Management Area:	KINGORA WATERSHED - 20
Location:	HAMLET OF IGLOOLIK QIKIQTANI REGION, NUNAVUT
Classification:	MUNICIPAL UNDERTAKING
Purpose:	DIRECT WATER USE AND DEPOSIT OF WASTE
Quantity of Water use not to Exceed:	81,208 CUBIC METRES *PER* ANNUM OR MAXIMUM OF 299 CUBIC METRES *PER* DAY
Date of Licence Issuance:	MARCH 31, 2015
Expiry of Licence:	MARCH 30, 2020

This Licence renewal, issued and recorded at Gjoa Haven, Nunavut, includes and is subject to the annexed conditions.

Thomas Kabloona,
Nunavut Water Board, Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the use of water and the deposit of waste for a Municipal undertakings at the Hamlet of Igloolik, located within the Qikiqtani Region, Nunavut(Latitude: 69°23'N and Longitude: 81°46'W).

a. 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 *Nunavut Waters and Nunavut Surface Rights Tribunal 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 subject to such requirements; and

b. 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.

2. Definitions

"**Act**" means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*

"**Addendum**" means the supplemental text that is added to a full plan or report usually included at the end of the document and is not intended to require a full resubmission of the revised report;

"**Amendment**" means a change to original terms and conditions of this Licence requiring correction, addition or deletion of specific terms and conditions of the Licence; modifications inconsistent with the terms of the set terms and conditions of the Licence;

"**Appurtenant Undertaking**" means an undertaking in relation to which a use of water or a deposit of waste is permitted by a licence issued by the Board;

"**Board**" means the Nunavut Water Board established under the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*

"**Effluent**" means treated or untreated liquid waste material that is discharged into the environment from a structure such as a settling pond, landfarm or a treatment plant;

"**Engineer**" means a professional engineer registered to practice in Nunavut in accordance with the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2*

and the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

"**Existing Sewage Disposal Facilities**" refers to the pre-upgraded Sewage Disposal Facilities under Licence 3BM-IGL1520 that comprised numerous ponds as identified in the Technical Summary Environmental Facilities Report March 2014;

"**Existing Solid Waste Disposal Facilities**" refers to the pre-upgraded Solid Waste Disposal Facilities under Licence 3BM-IGL1520 designated for the disposal of solid waste, as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Final Discharge Point**" in respect of an effluent means an identifiable discharge point of a facility beyond which the operator of the facility no longer exercises control over the quality of the effluent;

"**Freeboard**" means the vertical distance between water line and the designed maximum operating height on the crest of a dam or dyke's upstream slope;

"**Geotechnical Engineer**" means a professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments;

"**Grab Sample**" means an undiluted single water or wastewater sample, collected at a particular time and place that may be representative of the total substance being sampled, at the time and place it was collected.

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

"**High Water Mark**" means the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land (ref. Department of Fisheries and Oceans Canada, Operational Statement: Mineral Exploration Activities);

"**Inspector**" means an Inspector designated by the Minister under Section 85 (1) of the *Act*;

"**Licensee**" means the holder of this Licence;

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

"**Modified Sewage Disposal Facility**" refers to the upgrade Sewage Disposal Facilities that comprises the Primary Sewage Lagoon and Retention Sewage Lagoon as identified on Drawing No. C-O1, C-02 and C-04, Government of Nunavut Igloolik Waste Facilities, October 3, 2008, also as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Modified Solid Waste Disposal Facilities**" referred to the up-graded Solid Waste Disposal Facilities designated for the disposal of solid waste, as identified on Drawing No. C-O1, C-02 and C-04, Government of Nunavut Igloolik Waste Facilities, October 3, 2008 and modified as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Monitoring Program**" means a monitoring program established to collect data on surface water and groundwater quality, to assess impacts of an appurtenant undertaking to the freshwater aquatic environment.

"**Nunavut Land Claims Agreement *(NLCA)***" means the "*Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*", including its preamble and schedules, and any amendments to that agreement made pursuant to it;

"**Regulations**" means the *Nunavut Waters Regulations* SOR/2013-69 18th April, 2013;

"**Retention Sewage Lagoon**" is the secondary cell of the Modified Sewage Disposal Facilities and is identified within the drawings submission dated October 3, 2008, "Igloolik Sewage and Solid Waste Facilities", specifically on Drawing No. C-01, Process Summary and drawing C-04, Sewage Lagoon Improvement Plan as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Sewage**" means all toilet wastes and greywater;

"**Sewage Wetland**" compromises of the 'Sewage Wetland' Area Drawing No. C-O1, 'Wetland' Drawing No. C-02 and 'Proposed Wetland' Drawing No.C-04, Government of Nunavut Igloolik Waste Facilities, October 3, 2008 as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Spill Contingency Plan**" means a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during the operations conducted under the Licence;

"**Sump or Sumps**" A structure or depression that collects, controls, and filters liquid waste before it is released to the environment. This structure should be designed to prevent erosion while allowing percolation of liquid waste;

"**Toilet Wastes**" means all human excreta and associated products, but does not include greywater;

"**Waste**" means, as defined in S.4 of the *Act*, any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of any water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any water that would have that effect because of the quantity or concentration of the substances contained in it or because it has been treated or changed, by heat or other means.

"**Waste Disposal Facilities**" consist of the Modified Sewage Disposal Facilities and the Modified Solid Waste Disposal Facilities as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Water Supply Facilities**" comprises the area and associated intake infrastructure at Water Lake, the Intake Pump House and back-up truck fill station, the Water Treatment Plant, the Storage Tanks adjacent to the Water Treatment Plant and the Water Supply Pipe as described in the renewal application dated March 13, 2014 and supplementary documents submitted with the application;

"**Water" or "Waters**" means waters as defined in section 4 of the Act.

3. Enforcement

a. Failure to comply with this Licence will be a violation of the *Act*, subjecting the Licensee to the enforcement measures and the penalties provided for in the *Act*;

b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and

c. For the purpose of enforcing this Licence and with respect to the use of water and deposit or discharge of waste by the Licensee, Inspectors appointed under the *Act*, hold all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31 of the year following the calendar year being reported, containing the following information:

   a. an executive summary as required by Part B, Item 8;
   b. tabular summaries of all data generated under the "Monitoring Program";
   c. the daily, monthly and annual quantities in cubic metres of fresh water obtained at the Water Supply Facilities;
   d. the daily, monthly and annual quantities in cubic metres of all waste discharged;
   e. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

f. a list of unauthorized discharges and summary of follow-up action taken;
g. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
h. any Addendum with updates or revisions for manuals and plans (i.e., *Operations and Maintenance Manuals/Plans*) as required by changes in operation and/or technology;
i. a summary of any studies or reports requested by the Board that relate to water use and waste disposal or restoration, and a brief description of any future studies planned; and
j. any other details on water use or waste disposal requested by the Board by November 1 of the year being reported;

2. The Licensee shall comply with the "Monitoring Program" described in this Licence, and any amendments to the "Monitoring Program" as may be made from time to time, pursuant to the conditions of this Licence.

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

4. Meters, devices or other such methods as approved by the Board in writing, used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee.

5. The Licensee shall, within ninety (90) days following the first visit by the Inspector, following issuance of this Licence, post the necessary signs to identify the stations of the "Monitoring Program," in the Official Languages of Nunavut.

6. The Licensee shall immediately report to the 24-Hour Spill Report Line (867-920-8130), any spills of Waste 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.

7. The Licensee shall ensure a copy of this Licence is maintained at the Municipal Office at all times. Any communication with respect to this Licence and any notice provided to an Inspector, shall be made in writing to the attention of:

(a) Manager of Licensing:
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369
Email: licensing@nwb-oen.ca

(b) Inspector Contact:
Manager of Field Operations, AANDC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0

Telephone: (867) 975-4295
Fax: (867) 979-6445

8. The Licensee shall submit one paper copy and one electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.

9. The Licensee shall ensure that all document(s) and correspondence submitted by the Licensee to the Board are received and acknowledged by the Manager of Licensing.

10. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.

11. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.

12. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and condition imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.

13. This Licence is not assignable except as provided in Section 44 of the Act.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all fresh water from South Lake using the Water Supply Facilities, to be stored in the Hamlet Reservoir, or as otherwise approved by the Board in writing.

2. The annual quantity of water used for all purposes shall not exceed 81,208 cubic metres annually or a daily quantity of water for all purposes shall not exceed 299 cubic metres.

3. The Licensee shall equip all water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.

4. The Licensee shall not remove any material from below the ordinary High Water Mark of any water body unless otherwise approved by the Board in writing.

5. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.

6. Sediment and erosion control measures shall be implemented prior to and maintained during the operation to prevent entry of sediment into water.

7. The Licensee shall submit to the Board for approval in writing, at least thirty (30) days prior to the use of water in sufficient volume that the source water body may be drawn down, the following information: volume required, hydrological overview of the water body, details of impacts, and proposed mitigation measures.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall direct all Sewage to the Modified Sewage Disposal Facilities included under the scope of this licence.

2. The Licensee shall provide a minimum of ten (10) days' notice annually to an Inspector of the intent to discharge effluent from either the Modified Sewage Disposal Facilities.

3. All Effluent discharged from the Sewage Disposal Facility at Monitoring Program Station IGL-4, and IGL-5 shall meet the following Effluent quality standards:

Parameter	**Maximum Concentration of Any Grab Sample**
BOD_5	100 mg/L
Total Suspended Solids	120 mg/L
Fecal Coliforms	1×10^6 CFU/100mL
Oil and grease	No visible sheen
pH	between 6 and 9

4. The Licensee shall maintain at all times, a freeboard of at least 1.0 metre, or as recommended by a qualified engineer and as approved by the Board in writing, for all dams, dykes or other structures intended to contain, withhold, divert or retain water or wastes.

5. The Modified Sewage Disposal Facilities shall be maintained and operated in such a manner as to prevent structural failure.

6. The Licensee shall dispose of and permanently contain all solid wastes at the Modified Solid Waste Disposal Facilities, or as otherwise approved by the Board in writing.

7. The Licensee shall segregate and store all hazardous materials and/or hazardous waste within the Modified Solid Waste Disposal Facilities in such a manner as to prevent the

deposit of deleterious substances into any water, until such a time that the materials have been removed for proper disposal at an approved facility.

PART E: CONDITIONS APPLYING TO MODIFICATION AND CONSTRUCTION

1. The Licensee shall submit to the Board for approval in writing, for construction design drawings stamped by a qualified Engineer, sixty (60) days prior to the construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or wastes.

2. The Licensee may, without written approval from the Board, carry out modifications to the Water Supply and 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. these modifications do not place the Licensee in contravention of 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.

3. Modifications for which all of the conditions referred to in Part E, Item 2, have not been met may be carried out only with written approval from the Board. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

4. The Licensee shall provide to the NWB for review, as-built plans and drawings, stamped and signed by an Engineer, within ninety (90) days of completion of construction.

5. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage.

6. The Licensee shall implement and maintain sediment and erosion control measures prior to and during activities carried out under this Part, to prevent the release of sediment and minimize erosion.

PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall submit to the Board for approval, within ninety (90) days of issuance of the Licence, Operations and Maintenance Manuals prepared where

appropriate, in accordance with the "Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories; 1996". The following Manuals and Plans shall take into consideration the comments received during the application review process:

a. Sewage Disposal Facility Operation and Maintenance (O&M) Plan (including the Sewage Sludge Management Plan;
b. Solid Waste Disposal Facility Operation and Maintenance (O&M) Plan; and
c. Spill Contingency Plan;

2. The Licensee shall review the Water Distribution Facility Operation and Maintenance (O&M) Plan. Changes in operation and technology should be modified accordingly. Revisions are to be submitted in the form of an Addendum to be included with the Annual Report. Additionally, the following specific amendments are required for the O&M:
    a. An improved description of the technology and process;
    b. A detailed breakdown of maintenance work and schedule of work required for the system equipment (including the submersible pumps, intake screens, and valves);
    c. Revisions to the faded Intake Screen and Reservoir Fill Line Drawings (Drawing No. 78-IB7-101 to 106); and
    d. Submitted O &M details 1979 Service Contracts for the operating pumps, if these Service Contracts are still required please renew and update the submitted information.

3. An inspection of all engineered facilities related to the management of water and waste shall be conducted by an Engineer (Civil, Municipal or Geotechnical) annually and before commissioning any facility. The Engineer's report shall be submitted to the Board within sixty (60) days of the inspection, including a Cover Letter from the Licensee outlining an implementation plan addressing each of the Engineer's recommendations.

4. The Licensee shall perform more frequent inspections of the engineered facilities at the request of an Inspector.

5. If, during the period of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:

    a. employ the appropriate contingency measures as approved under the Operation and Maintenance Manuals for the Hamlet of Igloolik;
    b. report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
    c. submit to the Inspector, a detailed report on each occurrence, not later than thirty (30) days after initially reporting the event, that provides the necessary information on the location (including the GPS coordinates), initial response action, remediation/clean-up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and preventative measures to be implemented.

PART G: CONDITIONS APPLYING TO ABANDONMENT, RESTORATION AND CLOSURE

1. The Licensee shall submit to the Board for approval an *Abandonment, Restoration and Closure Plan* at least six (6) months prior to abandoning any facilities or upon submission of the final design drawings for the construction of new facilities to replace existing ones. Where applicable, the Plan shall include information on the following:

   a. water intake facilities;
   b. the water treatment and waste disposal sites and facilities;
   c. petroleum and chemical storage areas;
   d. any site affected by waste spills;
   e. leachate prevention;
   f. an implementation schedule;
   g. maps delineating all disturbed areas, and site facilities;
   h. consideration of altered drainage patterns;
   i. type and source of cover materials;
   j. future area use;
   k. hazardous wastes; and
   l. proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.

2. The Licensee shall complete the restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.

3. All disturbed areas shall be stabilized and re-vegetated as required, upon completion of work, and restored as practically as possible to a pre-disturbed state.

PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall maintain Monitoring Program Stations at the following locations:

Monitoring Program Station Number	Description	Status
IGL-1	Raw water supply intake at South Lake	Active (Volume)
IGL-2	Runoff from Solid Waste Disposal Facility	Active (Water Quality)
IGL-3	Raw Sewage at Discharge point into the Sewage Disposal Facility	**Not** Active
IGL-4	Final control point from Sewage Disposal Facility	Active (Water Quality)
IGL-5	Final Effluent Discharge Point prior entering Foxe Basin	New (Water Quality)

2. The Licensee shall measure and record, in cubic metres, the monthly and annual quantities of water pumped at Monitoring Program Station IGL-1, for all purposes.

3. The Licensee shall sample at Monitoring Program Stations IGL-4 and IGL-5, monthly during periods of observed flow. Samples shall be analyzed for the following parameters:

Biochemical Oxygen Demand (BOD_5)	Fecal Coliforms
Total Suspended Solids	pH
Conductivity	Nitrate-Nitrite
Oil and Grease (visual)	Total Phenols
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Total Hardness	Total Alkalinity
Ammonia Nitrogen	Total Zinc
Total Cadmium	Total Iron
Total Cobalt	Total Manganese
Total Chromium	Total Nickel
Total Copper	Total Lead
Total Aluminum	Total Arsenic
Total Mercury	Total Organic Carbon (TOC)
Carbonaceous Biochemical Oxygen Demand (cBOD5)	

4. The Licensee shall sample at Monitoring Program Station IGL-2 once at the beginning, middle and near the end of discharge/run-off observed. . Samples shall be analyzed for the parameters under Part H, Item 3.

   The Licensee shall measure and record the annual quantities of sewage solids removed from the Waste Water Treatment Plant along with the treatment/storage/disposal provided.

5. If additional Final Discharge Points are identified during the term of this Licence, the Licensee shall submit, along with the Annual Report, the following information:

   a. Plans, specifications, geographic coordinates and a general description of each Final Discharge Point; and
   b. A description of how each Final Discharge Point is designed and maintained, if required.

6. 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 the Board in writing.

7. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.

8. The Licensee shall submit to the Board for review, within ninety (90) days of issuance of the Licence, a Quality Assurance/Quality Control Plan that conforms to the guidance document *Quality Assurance (QA) and Quality Control (QC) Guidelines For Use by Class "B" Licensees in Collecting Representative Water Samples in the Field*

and for Submission of a QAQC Plan INAC (1996). The Plan shall be acceptable to an accredited laboratory and include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under the Licence.

9. The Licensee shall annually review the Quality Assurance/Quality Control Plan as required in Part H, Item 8 and modify the Plan as necessary. Proposed modifications shall be submitted to the accredited laboratory for approval.

10. Additional monitoring stations, sampling and analyses may be requested by an Inspector.

11. The Licensee shall include all of the data and information required by the "Monitoring Program" in the Licensee's Annual Report, as required per Part B, Item 1, or as requested by an Inspector.

12. Modifications to the Monitoring Program may be made only upon written approval from the Board. Requests for changes to the Monitoring Program should be forwarded to the NWB in writing, and should include the justification and appropriate evidence to support the change.

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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: 3BM-IGL1520/Amendment No. 1

February 16, 2016

Brian Flemming
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Bhabesh Roy, P. Eng.
Municipal Planning Engineer, Baffin Region
Government of Nunavut
Dept. Community and Government Services
P.O Box 379, Pond Inlet, NU X0A 0S0

E-mail: broy@gov.nu.ca

RE: Licence No. 3BM-IGL1520, Type "B" – Amendment No. 1 – Expansion and Rehabilitation of the Sewage Lagoon Facility

Dear Mr. Flemming and Mr. Roy:

Please find attached, Amendment No. 1 to Licence No. **3BM-IGL1520** issued to Hamlet of Igloolik by the Nunavut Water Board (NWB) under Motion 2015-27-56, pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* (*Nunavut Land Claims Agreement or NLCA*). The terms and conditions of the original Licence related to the use of Water and the deposit of Waste remain an integral part of this approval.

The Licensee is advised that this Amendment is for an undertaking that falls outside of an area with an approved Land Use Plan[1] as determined by the Nunavut Planning Commission (NPC) and subject to a 12.4.4(a) Screening Decision as described within Schedule 12-1 by the Nunavut Impact Review Board[2] in accordance with Article 12 of the *Nunavut Land Claims Agreement* (NLCA).

The NWB strongly recommends that the Licensee consult the comments received by interested persons on issues identified. This information is attached for your consideration.[3, 4]

[1] Nunavut Planning Commission (NPC) Conformity Determination, June 9, 2015.
[2] Nunavut Impact Review Board (NIRB), Screening Decision, dated December 8, 2015.
[3] Aboriginal Affairs and Northern Development Canada (AANDC), June 26, 2015;
[4] Fisheries and Oceans Canada (DFO), May 28, 2015;

Sincerely,

Thomas Kabloona
Nunavut Water Board
Chair

TK/ce/kk

Enclosure: **Licence No. 3BM-IGL1520 – Amendment No. 1**
Comments – AANDC, DFO

Cc: Qikiqtani Distribution List

LICENCE AMENDMENT No. 1

Licensee:	**Hamlet of Igloolik**
Licence No:	**3BM-IGL1520 – Type "B"**
Licence Issued:	**March 31, 2015**
Expiry Date:	**March 30, 2020**
Effective Date:	**February 16, 2016**

DECISION

Licence No. 3BM-IGL1520, issued on March 31, 2015 and set to expire on March 30, 2020, shall be amended to allow for the construction of a new lagoon cell and the rehabilitation of the Modified Sewage Lagoon Facility, as described in the Application received by the Board on April 20, 2015, for use as required in the deposit and management of Sewage Waste, operated by the Hamlet of Igloolik (the Hamlet or the Licensee), which is located within the Qikiqtani Region of Nunavut.

The NWB received from the Government of Nunavut – Community Government Services (GN-CGS), on behalf of the Hamlet of Igloolik, from March 16, 2015 to December 14, 2015, the following application documents (Application) for the amendment of Licence 3BM-IGL1520:

Water Licence Amendment Application, April 20, 2015

- Completed Amendment Application form and Cover Letter, April 20, 2015
- Hamlet Authorization letter by SAO, April 20, 2015
- Technical Summary of the Wastewater Treatment Facility, in English and Inuktitut, April 20, 2015
- Wastewater Treatment Facility, Hamlet of Igloolik (IGL-1 to IGL-8), dated March 27, 2015, April 20, 2015
- Operation and Maintenance Plan, Wastewater Treatment Plant, originally developed in 1979, April 20, 2015
- Operation and Maintenance Plan, additional amendments for the Wastewater Treatment Plant, August 17, 2015
- Preliminary Spill Contingency Plan, August 17, 2015
- Hamlet Annual Report 2014, March 16, 2015
- Design Brief, Optimization of the Wastewater Facility, Igloolik, Nunavut developed by exp Services Inc., dated November 2014, submitted April 20, 2015
- Vegetated Filterstrip Wetland Assessment for the Treatment of Pre-treated Sewage, Hamlet of Igloolik (Final), MTE, October 8, 2014. Prepared for the Government of Nunavut, CGS,
- Specifications Document, Government of Nunavut, Igloolik Sewage Lagoon (OTCD-00019838A); Stamped and Signed by exp Services Inc., November 13, 2015
- Stamped and Signed Tender Drawings, Rev.5, issued for NWB review, drawings IGL1 through IGL8
- Additional Geotechnical Investigation, developed by exp Services Inc., dated September 29, 2014, April 20, 2015

- Additional Geotechnical Investigation Results, developed by exp Services Inc., dated October and November, 2009, April 20, 2015
- Geothermal Analysis of Proposed Sewage Lagoon, developed by Naviq Consulting Inc, dated June 2010, April 20, 2015
- Geotechnical Investigation-attached results, developed by exp Services Inc., dated March 16, 2010, April 20, 2015
- Sewage Lagoon Upgrade Project Schedule, dated November, 2014, April 20, 2015
- Environmental Assessment Screening (Draft), Construction of New Sewage Lagoon and Rehabilitation of Existing Lagoons, developed by Global Tox, dated November, 2009, April 20, 2015
- Geotechnical Investigation, developed by Trow Associates Inc., dated March 16, 2010, July 30, 2015
- Geotechnical Report Letter, by exp Services Inc., dated November 5, 2014, December 14, 2015
- Email Correspondence for Amendment Application, July 20, 2015, August 5, 2015, and December 14, 2015

Following receipt and an internal preliminary review, NWB distributed the Application for a thirty (30)-day comment period on May 26, 2014. On May 28, 2015 a submission was received from Fisheries and Oceans Canada (DFO). On June 26, 2015, a submission was received from Aboriginal Affairs and Northern Development Canada (AANDC).

In their submission, the DFO requested clarification on whether any planned dewatering activities that are required for the new pipe installation, would have any impact on fish or fish habitat. Clarification was provided that areas of dewatering involved surface runoff areas that had no record of fish habitation.

AANDC, in their submission, requested additional information on the handling and storage of sewage sludge and confirmation that the storage of sludge has been considered in the design of the new and rehabilitated sewage lagoons. In addition, a description on how the Licensee planned to store excavated sludge during the rehabilitation of the existing sewage lagoon cells was requested.

Following the receipt of the comments, the applicant confirmed in its email correspondence of December 15, 2015 the use of the older cell for sludge storage and emergency use. It was also confirmed that the new construction would include design for 0.5m depth for sludge accumulation and that there are no plans to dispose of any sludge in a landfill.

Other concerns noted in AANDC's submission were the references to documents not submitted with the Application and the absence during the review. These supporting documents were either located in the NWB files or provided by the Applicant and subsequently placed in the Public Registry for future reference.

With respect to operational plans, AANDC submitted that all outstanding plans should be provided, including those for the Operation and Maintenance of the Solid Waste Management and Sewage Disposal Areas, Abandonment and Restoration and the Spill Contingency Plan.

Although the Licensee, with this amendment application, submitted two additional O&M documents[5,6] with respect to plans, further updates are required and have been addressed through the amendment of Part F, Item 1 of this amendment.

In addition to the intervener's comments received, the NWB received pre-licensing requirements in the form of the Nunavut Planning Commission's (NPC) Land Use Conformity Determination for the file, on June 9, 2015 and the Nunavut Impact Review Board's (NIRB) Screening Report on December 8, 2015.

The NWB has placed in its Public Registry copies of the Application documents, including all comments received from interveners. This information is maintained in the NWB's public registry and is available to interested persons upon request. In addition, the NWB maintains reporting information on its FTP site, which can be accessed using the following link: ftp.nwb-oen.ca

The NWB, having considered the information provided in support of the Application and the comments received from parties during the review process, and pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* and the *Nunavut Waters* and the *Nunavut Surface Rights Tribunal Act*, hereby grants Amendment No.1 to Licence No. 3BM-IGL1520. The amendment is subject to the following terms and conditions that are based on the comments received, and standard conditions imposed by the NWB for similar undertakings:

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Definitions

Insert

> **"Upgraded Sewage Disposal Facilty"** consists of the new and rehabilitated Modified Sewage Disposal Facility, used for treating the waste water collected by the Hamlet of Igloolik, as described in the amendment application dated April 20, 2015 and supplementary documents submitted with the Application;
>
> **"Vegetative Filter Strip Wetland"** means the combination of treatment wetlands and vegetated filter strip areas and process as described in the document '*Vegetated Filter Strip Assessment for the Treatment of Pre-treated Sewage, Hamlet of Igloolik'*, prepared for the Government of Nunavut, CGS by MTE, dated October 8, 2014 (through exp Services Inc.);
>
> "**Waste Disposal Facilities**" consists of the Modified Solid Waste Disposal Facilities and the Modified Sewage Disposal Facilities (or upon completion, the Upgraded

[5]Operation and Maintenance Plan, additional amendments for the Wastewater Treatment Plant, August 17, 2015;
[6]Supplemental Spill Contingency information, August 17, 2015

Sewage Disposal Facility) as described in the renewal application dated March 13, 2014 and the amendment application dated April 20, 2015, as well as the supplementary documents associated with each application.

PART B: GENERAL CONDITIONS

Insert Item 1(k)

Provide an updated/revised Plan for Compliance, taking into account works achieved during the year, noting areas of (new) compliance and the anticipated goals and timelines for the next and future years.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

Amend Item 1

The Licensee shall direct all Sewage to the Modified Sewage Disposal Facility, or upon commissioning, to the Upgraded Sewage Disposal Facility, or as otherwise approved by the Board in writing.

Amend Item 2

The Licensee shall provide a minimum of ten (10) days' notice to an Inspector, of the intent to discharge Effluent from the Modified Sewage Disposal Facility, or upon commissioning, the Upgraded Sewage Disposal Facility.

Amend Item 3

All Effluent discharged from the Modified Sewage Disposal Facility, or upon commissioning, the Upgraded Sewage Disposal Facility, at Monitoring Program Stations IGL-4, and IGL-5 shall not exceed the following Effluent quality limits: (See Licence table).

Amend Item 5

The Modified Sewage Disposal Facilities, or upon commissioning, the Upgraded Sewage Disposal Facility, shall be maintained and operated in such a manner as to prevent structural failure.

Insert Item 8

The Licensee shall locate areas designated for waste disposal at a minimum distance of thirty-one (31) metres from the ordinary High Water Mark of any water body such that the quality, quantity or flow of Water is not impaired, unless otherwise approved by the Board in writing.

Insert Item 9

The Licensee shall dispose of and permanently contain all solid wastes at the Waste Disposal Facilities, or as otherwise approved by the Board in writing.

Insert Item 10

The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of Waste materials of incomplete combustion and/or leachate from contaminated ash residual,

from impacting any surrounding waters, unless otherwise approved by the Board in writing.

Insert Item 11

The Licensee shall segregate and store all hazardous materials and hazardous Waste including waste oil, within the Waste Disposal Facilities in a manner to prevent the deposit of deleterious substances into any Water, until such a time that the materials are to be removed for proper disposal at licensed facility.

Insert Item 12

The Licensee shall implement measures to ensure leachate from the Waste Disposal Facilities do not enter Water.

Insert Item 13

The Licensee shall remove and treat hydrocarbon contaminated soils on site or transport them to an approved disposal site for treatment.

PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

Amend Item 1(a)(i), (ii) and (iii)

a. Sewage Disposal Facility Operation and Maintenance (O&M) Plan (including the Sewage Sludge Management Plan), to include the following information:
   i. a summary of how the sludge management lagoon will be rehabilitated (e.g., re-enforced berms, lining, etc.);
   ii. how Effluent that accumulates within the sludge management lagoon will be managed;
   iii. design drawings of the sludge management lagoon including drawings that reference the sludge management cell relative to the planned new sewage lagoon and rehabilitated sewage lagoons;
   iv. the testing requirements that will be applied to sewage sludge and the criteria required prior to any plans for landfill disposal;
   v. a description of how sludge will be disposed in the landfill.

Insert Item 6

The Licensee shall conduct any equipment maintenance and servicing in designated areas and shall implement special procedures (such as the use of drip pans and liners) to manage motor fluids and other waste and contain potential spills.

Insert Item 7

The Licensee shall maintain appropriate spill response equipment and clean-up materials (e.g., shovels, pumps, barrels, drip pans, and absorbents) and be readily available during any transfer of fuel or hazardous substances.

PART H: CONDITIONS APPLYING TO MONITORING

Amend Item 1

The Licensee shall maintain Monitoring Program Stations at the following locations:

Monitoring Program Station Number	Description	Status
IGL-1	Raw Water supply intake at South Lake	Active (Volume)
IGL-2	Runoff from Modified Solid Waste Disposal Facilities	Active (Water Quality)
IGL-3	Raw Sewage at Discharge point into the Modified Sewage Disposal Facility	**Not** Active
IGL-4	Final control point from the Modified Sewage Disposal Facility or upon commissioning, the Upgraded Sewage Disposal Facility	Active (Water Quality)
IGL-5	Final Effluent discharge point prior entering Foxe Basin	New (Water Quality)

Amend Item 4

Delete second paragraph "The Licensee shall measure and record…"

All remaining terms and conditions of Licence No. 3BM-IGL1520, Type 'B", issued March 31, 2015, are still applicable.

This Licence Amendment issued and recorded at Gjoa Haven, NU on February 16, 2016.

Approved by,

Thomas Kabloona
Nunavut Water Board, Chair

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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File: 3BM-IGL1520 / Amendment No. 2

September 1, 2016

Shawn Stuckey
Senior Administrative Officer
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Bhabesh Roy, P. Eng.
Municipal Planning Engineer, Baffin Region
GN -Community and Government Services
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Pond Inlet, NU X0A 0S0

Email: broy@gov.nu.ca

RE: Licence No. 3BM-IGL1520, Type "B" – Amendment No. 2

Dear Mr. Stuckey and Mr. Roy:

Please find attached **Amendment No. 2** to Type "B" Water **Licence No. 3BM-IGL1520**, issued to the Hamlet of Igloolik by the Nunavut Water Board (NWB) under **Motion 2016-B1-011** pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. The terms and conditions of the original Licence as they related to Waste deposit and Water use, remain an integral part of this approval.

The Licensee is advised that this Amendment is for an undertaking that falls outside of an area with an approved Land Use Plan as determined by the Nunavut Planning Commission (NPC)[1] and does not require a review pursuant to section 92(1)(a) of the Nunavut Planning and Project Assessment Act (NuPPAA) as indicated in the Nunavut Impact Review Board's (NIRB) Screening Decision Report.[2]

The NWB strongly recommends that the Licensee consult the comments and/or recommendations provided by intervener(s). This information is attached for your consideration.[3]

[1] Nunavut Planning Commission (NPC) Determination, March 1, 2016.
[2] Nunavut Impact Review Board (NIRB) Screening Decision Report, May 13, 20.16.
[3] Indigenous and Northern Affairs Canada (INAC) Comment Submission, August 22, 2016.

Sincerely,

Thomas Kabloona
Nunavut Water Board, Chair

TK/sj/vk

Enclosure: **Licence No. 3BM-IGL1520 – <u>Amendment No. 2</u>**
Comments – INAC

Cc: Qikiqtani Distribution List

Background

On June 2, 2016, the Government of Nunavut – Community and Government Services (the "GN-CGS"), on behalf of the Hamlet of Igloolik, submitted to the Nunavut Water Board ("NWB" or "Board") for consideration, an application and supporting information (the "Application") to amend Type "B" Water Licence No. 3BM – IGL1520 (the "Existing Licence") to allow for the expansion of an existing potable water supply reservoir, replacement of an intake line that transmits water from the South Lake source to the Hamlet's water supply reservoir, the construction of a new truck-fill station, and the inclusion of Fish Lake as an alternative water source to the scope of the Existing Licence.

Details included in the Application to amend the Existing Licence indicate that in 2015 the Hamlet experienced a shortage in the reservoir's over-winter water storage due to anoxic conditions at the South Lake water source. To protect the public's safety, the Government of Nunavut – Department of Health (GN-DOH) advised that use of the South Lake water source should be temporarily discontinued. The Hamlet accepted the GN-DOH advise, and it decided to use Fish Lake as its water supply source until the integrity of the South Lake source was restored.

The Hamlet indicated in its Application that to minimize the possibility of similar shortages in the future, it is proposing, as stated above, to expand the reservoir's annual over-winter storage capacity from 79,000 m^3 to 102,800 m^3 as well as upgrade some of the other structures/equipment associated with the Water Supply Facilities.

The Application submitted to amend Licence No. 3BM-IGL1520 included the following documents:

- Igloolik Approval Letter
- Reservoir Expansion Letter
- Amendment 2 Letter
- 012500 Special Provisions rev April 11, 2016
- Certificate of Analysis B1515523 R
- February 2, 2016 Final Design Brief
- Iglolik Amendment 2 Letter
- Igloolik Bathymetric Survey ARKTIS
- Igloolik Fish Lake Hydrology study August 12, 2015
- Igloolik Reservoir Expansion Sketch
- Igloolik Water Supply Design Development ARKTIS
- Inspectors Direction
- May 27, 2016 INAC Letter to Igloolik Reservoir Expansion Request
- NIRB Project Proposal of Igloolik Water Reservoir Expansion Project, February 18, 2016
- NIRB Project Proposal of Igloolik Water Reservoir Expansion Project, March 3, 2016
- October 27, 2015 Risk Assessment Report Final
- Signature Water Licence Amendment 2 Application
- Water Licence Amendment 2 Application

Following an internal preliminary review and receipt of additional information as well as confirmation from the respective regulators regarding pre-licensing issues related to the Application, the NWB distributed the Application on July 22, 2016 for a thirty (30) day comment and review period with the deadline for submissions set for August 22, 2016. Before

the deadline for comments elapsed, a submission was received from Indigenous and Northern Affairs Canada (INAC) in which INAC provided several comments and recommendations, which are summarized below:

- The Operation and Maintenance Plan associated with the undertaking should be updated to included the water supply system's two pump houses. The updated plan should be submitted to the NWB for review and approval;
- A spill contingency plan should be submitted to the NWB for review and approval;
- Spill involving fuel or hazardous material that occur adjacent to or into a water body regardless of quantity or size should be reported immediately to the NWT, 24-hour spill report line and to INAC's Manager of Field Operations; and
- In accordance with the *Consolidation of Spill Contingency Planning and Reporting Regulations* (R-068-93), any person storing contaminants in an above-ground storage facility, with capacity equal to or greater than 20,000 litres/kilograms, is required to file a spill contingency plan.

With respect to pre-licensing matters, the Nunavut Planning Commission (NPC) issued its determination[4] for the Application on March 1, 2016, stating that the project falls outside of the area in which an approved Land Use Plan is in place and that the proposal was forwarded to the Nunavut Impact Review Board (NIRB) for screening as it did not belong to the class of exempt works or activities. On May 13, 2016, the NIRB issue its Screening Determination[5] for the project.

Issues Considered by the Board

The following sections provide an overview of some of the main issues that the Board considered in its decision on whether or not to grant Amendment No. 2 to Licence No. 3BM-IGL1520:

Inspector's Direction

On June 2, 2016, Indigenous and Northern Affairs Canada (INAC) issued an Inspector's Direction[6] regarding the shortage of over-winter water storage for the Hamlet of Igloolik. The Inspector directed that the issue(s) that created the shortage be addressed immediately to prevent any potential threat to public health and safety. Further, the Inspector requested that a plan be provided prior to any work occurring, including the timelines and details of work required to address public health and safety concerns pertaining to the water shortage and that a final summary of work completed be provided on or prior to October 31, 2016.

In keeping with the Inspector's Direction and as part of the Licensee's strategy to prevent future shortages, the Licensee, as mentioned above, is proposing to expand the water storage facility and associated infrastructure. Written letters of support[7] for the proposed expansion were provided by the Nunavut's Deputy Chief Medical Officer of Health and the Mayor of the Hamlet of Igloolik.

Water Use/Type of Licence

[4] Nunavut Planning Commission (NPC), Land Use Determination, March 1, 2016.
[5] Nunavut Impact Review Board (NIRB) Screening Decision, May 13, 2016.
[6] J. Hack, Water Resource Officer, INAC, to D. Flynn, Assistant Deputy Minister, Local Government – GN-CGS; CC'd: E. Allain, INAC, Licensing, NWB; T. Toonoo, CGS; Dr. K. Barker and M. LeBlanc Havard, Department of Health; SAO, Hamlet of Igloolik; Re: Nunavut Waters and Nunavut Surface Rights Tribunal Act Inspector's Direction, June 2, 2116.
[7] Letter from P. Ivalu, Mayor, Municipality of Igloolik, to B. Roy, Municipal Planning Engineer, Re: Igloolik Water Reservoir Expansion, February 26, 2016; and letter from, M. Kaikie, Deputy Chief Medical Officer of Health, to M. Heath, Director of Community Infrastructure Division, GN- CGS, Re: Igloolik Water Reservoir Expansion, February 25. 20165.

Details included in the Application to amend the Licence indicate that while the Licensee is proposing to increase the storage capacity of the reservoir from 79,000 m^3 to 102,800 m^3, the actual water consumption rate for the Hamlet in the short-term will remain at the current volume allowed in Existing Licence. The Existing Licence authorizes the use of up to 81,208 cubic metres of water annually not exceeding 299 cubic metres per day directly from the water source authorized under the Existing Licence; however, the Licensee's 2013, 2014, and 2015 Annual Reports suggest that the Hamlet's annual water usage was on average 54,000 cubic metres during the aforementioned periods and that the rate of usage is unlikely to change in the short-term.

It should be noted that in the decision section of the Existing Licence, which was issued on March 31, 2015, it was mentioned that Schedule 2 of the *Nunavut Waters Regulations* (the "Regulations"), which came into effect on April 18, 2013, states that a Type "A" water licence is required for activities involving the storage of more than 60,000 cubic metres of water and/or the used of at least 300 cubic metres of water per day. It should be noted that the Board did not apply this requirement at the time the Existing Licence was issued due to a number of factors including the nature of the storage facility involved (the Regulations are based on storage utilizing dams or dikes – Column 2, Item 3 of Schedule 2) and the fact that the Hamlet's direct water usage from the source or its reservoir did not exceed the threshold outlined in Schedule 2 of the Regulations. The Licensee is advised, however, that if there is any proposed increase in direct source water use related to the Existing Licence in future, the associated renewal or amendment application for this potential increase in use may potentially be treated as a Type "A" application and processed in accordance with the relevant thresholds established in the Regulations.

Water Sources

Conditions included in the Existing Licence allow for the use of South Lake as the Hamlet's primary and only source of water supply. However, due to the over-winter shortage experienced in 2015 as a result of poor water quality that temporarily effected the South Lake source, the Hamlet was obliged to use Fish Lake as an alternative water source during that period. As part of its Application (Amendment No. 2 Application), the Licensee requested the inclusion of Fish Lake as a secondary water supply source. The memorandum entitled *Fish Lake Hydrology Study: Igloolik*, included as part of the Application, the yield to Fish Lake is estimated at 302,000 cubic metres, excluding evaporation and some other factors, while the annual community demand is expected reach approximately 165,000 cubic metres by the year 2045. Although the assessment did not examine the suitability of Fish Lake as an over-winter source, based on the information presented, Fish Lake may be considered capable of meeting the Hamlet's water supply needs as a secondary source, to some extent.

A bathymetric survey conducted by Arktis Solutions Incorporated for the South Lake water supply source estimates its volume at 491,956 cubic metres, suggesting, with the consideration of other factors, that the Hamlet's current and future water demand (20-year projection) could continue to be met by this source assuming that its integrity and yield are maintained over time.

The Board has considered the Licensee's request in the context of previous and potential risk(s) that may be inherent in using the South Lake water source as well as the potential implications for the Hamlet should such risk come to fruition, in deciding to grant the Licensee's request under Part C, Item 1 of this Amendment. The Licensee should note that in granting the use of Fish Lake as an alternative water source, the Board included requirements to inform the NWB

and the Inspector at least ten (10) days prior to withdrawing water from Fish Lake for any purpose under the Licence.

Management Plans
In accordance with the terms and conditions included in the Existing Licence, the Licensee is required to submit to the Board for review and/or approval, the following management plans:

a. An Operation and Maintenance Manual for the Sewage and Solid Waste Disposal Facilities, within ninety (90) days of issuance of the Existing Licence (Part F, Item 1). The Licensee submitted on August 17, 2015, a one-page document entitled *Operation and Maintenance Procedure of Wastewater Treatment by Lagoons of the Hamlet of Igloolik*, which the Board determined as being insufficient for meeting the requirements in the Licence. Therefore, the Licensee should note that the conditions in the Existing Licence as well as any added requirements imposed by Amendment No. 1 to the Existing Licence remain applicable and in effect.

   The Licensee should also be advised that the requirements under Part F, Item 1, which include the submission of a Spill Contingency Plan (SCP), remain outstanding. INAC in its submission related to this Application, requested that a SCP be submitted to the Board for approval, which the Board is in agreement with. As there is no SCP currently approved under the Existing Licence or submitted for approval at the time of the Application, the Board has included the condition under Part E, Item 8 of this Amendment for the submission of a separate spill contingency plan for the proposed construction activities.

b. Changes to the Operation and Maintenance Manual for the Water Distribution Facility, as an addendum within the annual report submitted for the Existing Licence (Part F, Item 2). The Licensee submitted on August 8, 2015 a document to satisfy this requirement; however, the Board determined shortly following submission that the document needed to be revised as it was inadequate. Consequently, this requirement remains outstanding and must be addressed as stipulated in the Exiting Licence and/or Amendment No. 1 to the Existing Licence.

   Apart from the aforementioned item, the Board has included terms and condition under Part F, Item 8 of this Amendment for the submission, within sixty (60) days of completion of the Water Supply Facilities expansion, an O&M manual that captures the upgraded facilities authorized under this amendment (Amendment No. 2). The Licensee should note that the requirement in the Existing Licence for submission of an O&M Manual for the current Water Supply Facilities remains in effect and outstanding. However, condition has been added to this Amendment for the submission of an O&M manual for the expanded facility once completed and commissioned that should take into consideration INAC's relevant comments and recommendations.

c. Submission of a Quality Assurance/Quality Control (QA/QC) Plan, within ninety (90) days of issuance of the Existing Licence (Part H, Item 8). The Licensee has indicated that it intends to submit a QA/QC Plan within ninety (90) days of issuance of Amendment No. 2. No changes have been made to this requirement in this Amendment or in Amendment No. 1; therefore, the requirement as included in the Existing Licence remains in effect and outstanding.

Closure and Reclamation

As the pertinent requirements in the Existing Licence are quite general and adequate enough to address closure and reclamation procedures for the current Water Supply Facilities once construction of the expanded facilities is completed and the facility is commissioned, the Board has not included any additional conditions regarding closure and reclamation activities. Licensee should note that the Water Supply Facilities and infrastructure that are no longer in use will require closure and reclamation in accordance with Part G, Item 1 of the Existing Licence.

Compliance

As mentioned above, the Board notes that some of the management plans associated with the Existing Licence remain outstanding and that an Inspector's direction, dated June 2, 2016, has been issued and remains in effect. Further, the Board notes that the Plan for Compliance required under Part B, Item 1(k) of Amendment No. 1 to the Existing Licence remains outstanding. The Board advises that it is the obligation of the Licensee to ensure that all requirements associated with its Existing Licence and related Amendment(s) are accordingly addressed.

Design Drawings

As part of the Application to amend the Existing Licence, the Licensee submitted a report prepared by exp Services Inc. that contained design parameters and drawings pertaining to the reservoir expansion, Figures 1 and 2. Further, a design development report for the water supply system improvement, prepared by Arktis Piusitippaa Inc., contained in addition to relevant design parameters, design drawings for the truck-fill station and pump house, Figures 5-12. The Licensee should note that as the drawings provided in both documents were not signed and stamped by an engineer, and it is inconclusive as to whether they are for-construction or for tendering purposes. Conditions have been included under Part E, Item 9 in this Amendment, requiring the submission of for-construction drawings for the Board's review at least two (2) weeks prior to the commencement of construction activities.

Project Execution

Based on details included in the Application, the proposed expansion of the reservoir will be undertaken in two phases:

- Phase 1 – Mobilization, dewatering of existing reservoir, drill and blasting, excavation, temporary water truck filling facility, and recharging of reservoir. Phase 1 is schedule to commence September 30, 2016 or prior to the freeze-up period.
- Phase 2 – Mobilization, dewatering of existing reservoir, drill and blasting excavation, temporary water truck filling facility, and recharging of reservoir. Phase 2 is schedule to commence September 30, 2017 or prior to the freeze-up period.

Decision

Considering that above-mentioned issues and the Licensee proposed investment in infrastructure improvements to enhance its ability to adequately address the community's potable water supply needs, the Board has decided to approve the issuance of Amendment No. 2 to Licence No. 3BM-IGL1520.

LICENCE AMENDMENT No. 2

Licensee:	**Hamlet of Igloolik**
Licence No:	**3BM-IGL1520, Type "B"**
Licence Issued:	**March 31, 2015**
Amendment No.1	**February 16, 2016**
Amendment Effective Date:	**September 1, 2016**
Expiry Date:	**March 30, 2020**

Pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* and the *Nunavut Waters and the Nunavut Surface Rights Tribunal Act*, with respect to the Application for Amendment No. 2 to Licence No. 3BM-IGL1520, dated April 29, 2016, made by the Government of Nunavut – Community and Government Services (GN-CGS) on behalf of the Hamlet of Igloolik, the Nunavut Water Board hereby grants the following Licence Amendment.

The Licence issued on March 31, 2015 with an expiry date of March 30, 2020, shall be further amended to include the following terms and conditions, with respect to the use of Water and the deposit of Waste for a Municipal undertaking within the boundaries of the Hamlet of Igloolik, in the Qikiqtani Region, Nunavut, at the following geographical coordinates: Latitude: 69º 23' N and Longitude 81º 46' W.

The Licence shall be amended as follows:

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

Item 1 – Scope

Amended to read:

> This Licence allows for the deposit of Waste use and use of Water, including the expansion of the Hamlet's water supply reservoir, construction of a new truck-fill station, replacement of the transmission main that supplies water from the South Lake water source, and the use of Fish Lake as an alternative water source; for a Municipal undertaking at the Hamlet of Igloolik, located within the Qikiqtani Region, Nunavut (Latitude: 69°23'N and Longitude: 81°46'W).

Item 2 –Definitions

Amended to read

> "**Water Supply Facilities**" – Consists of pre-expanded and/or expanded facilities and associated infrastructure including the South Lake water source, intake infrastructure, and transmission line to the Hamlet's water supply reservoir and the reservoir, as well as the

Fish Lake Water source, a secondary and alternative source, as described in the Application dated March 13, 2015 and/or Amendment No. 2 Application dated June 2, 2016.

PART C: CONDITIONS APPLYING TO WATER USE

Item 1 Amended to read:

The Licensee is authorized to withdraw freshwater using the Water Supply Facilities for the purposes allowed under the Licence and associated amendments, from either South Lake, as a primary source, or Fish Lake, as a secondary source.

Insert Item 8

The Licensee shall provide to the Board and an Inspector, at least (10) days written notice, prior to withdrawing and using fresh water from Fish Lake, the secondary water source authorized under this Amendment.

PART E: CONDITIONS APPLYING TO MODIFICTAION AND CONSTRUCTION

Insert Item 7

The Licensee shall, within ninety (90) days of completion of construction of the reservoir expansion and related infrastructure, submit to the Board for review a Construction Summary Report that includes stamped, as-built plans and drawings, explanations for deviations from the construction specifications and drawings, and consideration of construction and field decisions and their effects on the performance of engineered facilities.

Insert Item 8

The Licensee shall submit to the Board for Approval, within thirty (30) days prior to commencing construction activities, a Spill Contingency Plan to assist the Licensee in preventing and/or minimizing spills during construction works and activities.

Insert Item 9

The Licensee shall submit to the Board for review, at least two (2) weeks prior to commencing construction activities, for-construction drawings and plans, signed and stamped by Engineer.

Insert Item 10

The Licensee shall ensure that surface runoff or discharges impacted by construction activities associated with the undertaking, not exceed the following Effluent Quality Limits, where flow may directly or indirectly enter Water:

Parameter	**Maximum Average Concentration**	**Maximum Concentration of Any Grab Sample (mg/L)**
Total Suspended Solids	50	100
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	Between 6.0 and 9.5	Between 6.0 and 9.5

PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

Insert Item 8

The Licensee shall submit, to the Board for approval, an Operation and Maintenance Manual for the updated or expanded Water Supply Facilities authorized under the scope of Amendment No. 2, at least sixty (60) days prior to commissioning the facility.

PART H: CONDITIONS APPLYING TO MONITORING PROGRAM

Item 1 Amended to read:

The Licensee shall maintain Monitoring Program Stations at the following locations:

Monitoring Station ID	**Description**	**Status**
IGL-1	Raw Water Supply Intake at South Lake	Active (Volume)
IGL-1a (New)	Raw Water Supply Intake at Fish Lake	Active (Volume)
IGL-2	Runoff from the Modified Solid Waste Disposal Facility	Active (Water Quality)
IGL-3	Raw Sewage at Discharge point into the Modified Sewage Disposal Facility	Not Active
IGL-4	Final control point from the Modified Sewage Disposal Facility or upon commissioning, the Upgraded Sewage Disposal Facility	Active (Water Quality)
IGL-5	Final Effluent Discharge Point prior entering Foxe Basin	Active (Water Quality)

Item 2 Amended to read:

> The Licensee shall measure and record, in cubic metres, the monthly and annual quantities of water pumped at Monitoring Program Stations IGL-1, and IGL-1a for all purposes under the Existing Licence associated Amendments.

All remaining terms and conditions of Licence No. 3BM-IGL1520, Type 'B", dated March 31, 2015, and Amendment No.1 dated February 16, 2016 still apply.

This Amendment, Amendment No. 2 to Licence No. 3BM-IGL1520, is issued and recorded at Gjoa Haven, NU on September 1, 2016.

Approved by,

Thomas Kabloona
Nunavut Water Board, Chair

Appendix B
Landfill Spill Report

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER ____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS

F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION	
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION	
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS		

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC

SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			