Environment Canada | Environnement Canada

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NWB File: NWB3PON0409
Our file: 4782 016

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Via Email: *licensingadmin@nunavutwaterboard.org*

Re: NWB – Renewal Application for Water Licence NWB3PON0409 (Pond Inlet)

On behalf of Environment Canada (EC), I have reviewed the information submitted with the above-mentioned application. The following specialist advice has been provided pursuant to the *Canadian Environmental Protection Act*, and Section 36(3) of the *Fisheries Act*.

The Hamlet of Pond Inlet (Hamlet) is applying to renew their water licence to allow for the municipal use of water and the deposit of waste. The Hamlet's water supply comes from Water Lake, located approximately 4.4 km from the airport. In the summer months the water supply is supplemented with water from Salmon River and pumped into the storage reservoir for annual use. The sewage treatment system consists of a lagoon that is discharged into a wetland area which flows into the marine environment. The lagoon is annually decanted once per year in September. Solid waste is collected by the Hamlet and deposited in the Solid Waste Management Facility located approximately 1.6 km from the Hamlet. Bulky waste is segregated from the solid waste and stored next to the landfill, and hazardous wastes are stored in a sealift container. The Hamlet also has a landfarm area for the biological treatment of contaminated soils.

There are plans to decommission the existing sewage lagoon and improve the Solid Waste Facility once funds are available. The Hamlet is also waiting on funding prior to developing their Quality Assurance/Quality Control (QA/QC) plan, Operation and Maintenance (O&M) Manual for the Solid Waste Facility, Monitoring Program, and an Abandonment and Restoration (A&R) plan for the old sewage lagoon. Environment Canada requests that the Nunavut Water Board (Board) extend the Pond Inlet Water License for a term of 18 months so that the Hamlet has the opportunity to address deficiencies or the Hamlet can provide a schedule of when these items will be completed.

Environment Canada recommends that the following conditions be applied throughout the duration of the licence:

General

- The Hamlet must ensure that any effluent discharged must be in compliance with Section 36(3) of the *Fisheries Act*. According to the *Fisheries Act*, Section 36(3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that

results from the deposit of the deleterious substance, may enter any such water, is prohibited.

Sewage Treatment Facility

- As per the INAC Inspection Report, dated December 6, 2007, there was some seepage from the toe of the lagoon as well as erosion of the lower third of the exterior berm wall observed. The 2008 Annual Report states that the water on the outside of the berm was tested and found not to have any sewage properties; however, total coliform was measured to be 53000cts/100ml. EC requests that the Hamlet test the seepage water for fecal streptococci to ensure that this water is not leaking from the lagoon. Additionally, no maintenance has been recorded for the noted erosion of the berm and seepage was noted in the July 13, 2009 INAC Inspection Report. Erosion concerns should be addressed and the berm should be monitored for seepage.
- As per Part H, Item 4, of the Water Licence, the Hamlet is to "measure and record in cubic meters the monthly and annual quantities of raw sewage offloaded from trucks at the Monitoring Program Station PON-3." EC recommends that the Hamlet measure the quantities offloaded from the trucks, rather than using the "quantity of water obtained from all sources" to equal the amount of sewage discharged.
- As per Part H, Item 9, the Hamlet is to "measure and record the annual quantities of sewage solids removed from the Sewage Disposal Facility." Environment Canada recommends that a Sludge Management Plan be submitted for approval. EC recommends the following on sewage sludge disposal:
    - Maintenance should include periodic removal and disposal of sewage sludge. Estimates should be made of the quantities of sludge likely to be produced, the required frequency of extraction from the lagoons; and operational procedures developed for environmentally sound removal and disposal. These procedures should include characterization to ensure disposal options are appropriate. Environment Canada recommends that prior to de-sludging occurring, the proponent submit for approval a Sewage Sludge Management Plan that clearly outlines the chemical composition.
- EC notes that the CCME Strategy for the Management of Municipal Wastewater has been signed, and that northern jurisdictions can expect performance standards for BOD5 and TSS to be regulated following a five year period which starts in 2009. We anticipate that the standards for these parameters may be higher than the 25 mg/L for each that is proposed for the southern jurisdictions and the Yukon. Also, it should be noted that carbonaceous Biological Oxygen Demand (cBOD) will be the regulated parameter, and it would be prudent to add this to the list of licence parameters now, in order to gain some idea of the system's track record over the next five years.

Monitoring

- EC will be conducting intensive sampling in support of the Canada Wide Strategy in the determination of performance standards for the north. Information from this monitoring should be used to inform how the system can best be managed to optimize treatment.
- In the 2008 Annual Report, the Hamlet has provided some monitoring results; however, these monitoring results do not include all the locations nor do they include results of all the parameters required by Part H, Terms 1 and 2 of the Water Licence. EC requests that the Hamlet provide the Board with the results from all of the Monitoring Program Stations.

Solid Waste Disposal Facility

- Drainage management will be needed to minimize leachate generation from the solid waste facility. According to the INAC Inspection Report dated December 6, *2007*, standing water was observed in the hazardous waste and bulky metals waste areas. It is noted that water quality guidelines were exceeded in the bulky metals area for copper (15.7 ug/L) and had a positive result for Hexane extractable material (Oils and Grease). These areas should be graded to minimize pooling and the amount of water leaving the landfill area. The Hamlet should test and dispose of any collected leachate. These issues should be addressed prior to any discharge to ensure the requirements of the *Fisheries Act* will be met.
- The INAC 2009 Inspection Report noted waste oils leaching off site and barrels improperly stored, some of which are leaking. EC recommends that a liner be installed at the hazardous waste area to contain any leaks or spills.
- The proponent shall ensure that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.
- If any contaminated and/or hazardous materials are to be removed from the site, EC recommends that the proponent provide the information regarding disposal and transportation methods.
- Open burning of municipal waste is strongly discouraged by EC, as this results in the formation and spread of some extremely toxic compounds, as well as the generation of fine particulate matter, due to incomplete combustion of plastics and other household materials.

Landfarm Operations & Maintenance Manual

- EC recommends that section 1.3 of the manual be updated to include the capacity of the landfarm facility.
- EC has the following recommendations with respect to the general operation of landfarms. Please note that these recommendations are not intended to serve as a comprehensive set of design and operational specifications.

  Design plans and specifications should incorporate the following requirements:
  - Inspection and maintenance of the landfarm to ensure its effectiveness;
  - Methodology for sampling, treating, and releasing leachate and/or pond water from the landfarm;
  - Procedure for snow removal /treatment prior to spring melt;
  - A means of controlling dust from and precipitation infiltration into the land treatment facility;
  - Access to the site should be restricted through fencing or other suitable means and signs warning of the potential hazard;
  - Prior to the placement of contaminated soil in the land treatment facility, the contaminated soil in question should be characterized with respect to the quality and level of contamination and a treatability study be carried out to determine the feasibility of remediating the contaminated soil to an acceptable level that meets the appropriate criteria as set forth in Canadian Councils of Ministers of the Environment (CCME) Canadian Soils Quality Guidelines (CSQG) (please refer to point 5);
  - A detailed set of operational procedures should be prepared which identifies the recommended frequency and methods of microbial population density, depth of piles/windrows, and the type and application rate of any land treatment

amendments, i.e. water, air, lime, nutrients, or inoculum which may be required; and

- A health and safety plan should be developed which addresses both the site workers and, where applicable, nearby inhabitants.

- The proponent should consider installing geofabric material over the top of the liner material as extra protection from tears and punctures from rocks and equipment. This approach has been undertaken recently in Nunavut at other landfarm operations and would provide extra insurance that no contaminants would seep beneath the liner.
- EC recommends that a condition of the licence be that the soil will only be used for commercial/industrial uses after remediation unless confirmatory sampling indicates that the soil is remediated to residential or parkland criteria.
- The soil to be remediated is contaminated with hydrocarbons, but the proponent is advised that depending on the original source of contamination there may be co-contaminants in the soil which may impact the remediation objective. Hydrocarbon contamination from jet fuels for example can contain lead, and gasoline and diesel fuels may result in other heavy metal contamination. EC recommends analyzing the soil for Total Petroleum Hydrocarbon (TPH), BTEX, the CCME fraction F1-F4 hydrocarbon content, and total heavy metals.

  Table 1 below describes contaminants of potential concern (COPCs) related to contaminant sources/activities.

Table 1: Recommended Analyses Based on Suspected Soil Contamination

Contaminant Source	Parameters Analyzed								
	CWS – PHC Fractions	**BTEX**	**TPH (calculated)**	**Lead**	**Total Heavy Metals**	**Chromium/ Cadmium**	**PCBs**	**Phenols**	**PAHs**
Unleaded Gasoline	■	■	■		■				
Leaded Gasoline, Aviation Gasoline	■	■	■	■	■				
Fuel Oil, Diesel, Kerosene, Jet Fuel, Mineral Oil/Spirits, Motor Oil	■	■	■		■				■
Petroleum Solvents	■		■				■		
Crude Oils, Hydraulic Fluids	■		■	■	■				■
Waste Petroleum Products	■	■	■	■	■	■	■	■	■

- According to Part H, Item 13, "the licensee shall install groundwater monitoring wells at the Solid Waste Disposal Facilities and the Landfarm Facility." It is unclear in this application if these monitoring wells have been installed. EC requests that monitoring results of the groundwater monitoring wells are provided.
- EC recommends that all of the groundwater monitoring wells be sampled no less frequently than twice per year. One sampling should occur during spring freshet, and the other during mid summer (which could coincide with the water retention cell testing). These wells should be analyzed for indicators of TPH, BTEX, the CCME fraction F1-F4 hydrocarbon content, total heavy metals and any COPCs as identified in table 1. Should analytical results indicate groundwater contamination associated with the land treatment facility, corrective action should be taken as soon as possible.
- Accurate records should be maintained by the owner/operator which contain the following information:
    - A detailed description of the size and location of the land treatment facility;
    - Quantitative and qualitative data on the soil treated at the site;
    - Monitoring data as set forth above;
    - The final destination of the treated soil and its intended use.

Fuel Storage and Spill Contingency

- The Hamlet has yet to submit a Spill Contingency Plan. EC recommends that the Board require the submission of a Spill Contingency Plan for all facilities, as a condition of the renewal of the Water License. All spills must be documented and reported to the NWT/NU Spill Line at (867) 920-8130.
- Secondary containment or surface liners (drip pans, fold a tanks, etc.) should be placed under all containers and vehicle fuel tank inlet and outlet points, hose connections and hose ends during fuel or hazardous substance transfers. Secondary containment should be of adequate size and volume to contain and hold fluids for the purpose of preventing spills (the worst-case scenario).
- EC recommends that the appropriate spill response equipment and clean-up materials (absorbents, containment devices, etc.) be on hand during any transfer of fuel or hazardous substances and at vehicle maintenance areas.
- The Spill Contingency Plan should include locations of all hazardous materials, spill response equipment and clean up materials.

If there are any changes in the proposed activities, EC should be notified, as further review may be necessary. If you have any questions regarding the foregoing please contact Carrie Spavor at (867) 975-4631 or via email at carrie.spavor@ec.gc.ca.

Yours truly,

Original signed by

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cc: Carey Ogilvie (Head, EA-North, Environment Canada, Yellowknife, NT)
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