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14 July 2010

EC File: 4782 062
NWB File: 3BM-CHE0308

Phyllis Beaulieu
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Nunavut Water Board
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Via email: licensing@nunavutwaterboard.org

RE: Renewal Application for Water License NWB3CHE0308-Hamlet of Chesterfield Inlet

Environment Canada (EC) has reviewed the information submitted with the above-mentioned application to the Nunavut Water Board (NWB). The following specialist advice has been provided pursuant to the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

The Hamlet of Chesterfield Inlet was required, as part of their expired water license, to submit operational and maintenance plans for the sewage and solid waste facilities, as well as a spill contingency plan. On 3 June 2010, Nunami Stantec, on behalf of the proponent, submitted additional information to the NWB to address the outstanding issues. The information includes a Water, Sewage and Solid Waste Operations and Maintenance (O&M) Manual, an Abandonment and Restoration Plan (A&R Plan; Appendix C of the O&M Manual) and a Spill Contingency Plan (Appendix H of the O&M Manual)

EC provides the following comments and recommendations regarding the submitted plans for the NWB's consideration:

Water, Sewage and Solid Waste O&M Manual

- The proponent states that solid waste will be incinerated. 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 household materials.
- EC recommends the use of an approved incinerator for the disposal of combustible camp wastes. The proponent is considering onsite incineration a waste disposal option. EC has developed a Technical Document for Batch Waste Incineration, and is available at the following web link:
  http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=F53EDE13-1
  The technical document provides information on appropriate incineration technologies, best management and operational practices, monitoring and reporting.
- EC recommends that the proponent ensure that bulky scrap materials deposited in the municipal landfill do not result in void spaces in the landfill. Bulky materials should be segregated from the rest of the domestic waste.

- EC recommends that a water quality monitoring program log sheet be included in the operations and maintenance manual.
- The O&M Manual states in Section 4.7 that "Before an appropriate sludge management plan can be developed, the sludge should be sampled to obtain its chemical and physical characteristics". EC looks forward to reviewing this plan once it becomes available.
- 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 started 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 license parameters now, in order to gain some idea of the system's track record over the next four years.

Spill Contingency Plan

- The Plan does not confirm whether tanks are bermed, nor describe berm capacity. Even if tanks are double walled, leakage from a valve could occur and the clean-up would be considerably more extensive if unbermed. EC recommends the use of secondary containment, such as self-supporting insta-berms, for storage of all barreled fuel rather than relying on natural depressions to contain spills.
- The proponent should provide a general list of substances that could potentially be spilled on site. Personnel should be made aware of the properties of the products that they handle and have access to material safety data sheets (MSDS) and other sources of information. This information should be included in the Plan. A copy of the Plan should be posted at any location where these products are stored and at each fuel cache and refuel station.
- Refuelling shall not take place below the high water mark of any water body and shall be done in such a manner as to prevent any hydrocarbons from entering any water body frequented by fish.
- A spill kit, including shovels, barrels, absorbents, etc. should be readily available at all locations where fuel is being stored or transferred and with the ATVs in order to provide immediate response in the event of a spill.
- The Plan should include the following statement, "**all spills** of oil, fuel, or other deleterious materials, **regardless of size**, are to be reported to the NWT-NU 24hr Spill Line (867) 920-8130.
- Environment Canada recommends that the proponent include a provision that drip pans be used when refueling equipment on site in order to help prevent spills from occurring.
- EC recommends that a 24 Hour NWT/NU Spill Response Form be attached to the Plan.

A&R Plan

- The A&R Plan currently does not address the potential need for the reclamation of contaminated soils at the site. Soil and/or water sampling may be required to ensure that no hydrocarbon contamination is present. Landfarming can be done for remediating contaminated soil from spills. The Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils (SAIC, 2006) should be consulted as they contain landfarming specifics including minimum distances from landfarms to surface waters (500 m).

Comments previously submitted by C. Spavor on 15 June 2009 on behalf of EC regarding water license 3BM-CHE0308 would still apply to this project (see attached). If there are any changes in the project EC should be notified as further review may be necessary. Please do not hesitate to contact me with any questions or comments with regards to the foregoing at (867) 975-4631 or by email at Paula.C.Smith@ec.gc.ca.

Yours truly,

Paula C. Smith
Environmental Assessment Coordinator

cc: Carey Ogilvie (Head, Environmental Assessment-North, EPO, EC, Yellowknife, NT)
Ron Bujold (Environmental Assessment Technician, EPO, EC, Yellowknife, NT)
Anne Wilson (Water Pollution Specialist, EPO, EC, Yellowknife, NT)

References

CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Retrieved from: http://www.ccme.ca/publications/.

SAIC. 2006. Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils. Prepared for Environment Canada.

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NWB File: 3BM-CHE0308
Our file: 4782 062

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Re: Renewal Application for Water License 3BM-CHE0308 (NWB3BHE0308)

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 Environment Canada's mandated responsibilities under the *Canadian Environmental Protection Act*, and Section 36(3) of the *Fisheries Act*.

Background

The Hamlet of Chesterfield Inlet (Hamlet) is applying to renew their water license to allow for the municipal use of water and the deposit of waste. The Hamlet's water supply comes from First Lake located approximately 3 km from the Hamlet, and held in a reservoir located approximately 1 km from the Hamlet. Sewage is pumped out of sewage holding tanks by Hamlet trucks and transported to the Sewage Treatment Facility. The sewage treatment system consists of a truck discharge station to a natural depression and then flows into a series of wetland areas, with eventual discharge into the Finger Bay (Hudson Bay). Solid waste is collected by the Hamlet and deposited in the Solid Waste Management Facility located approximately 3.1 km from the Hamlet. Bulky waste is segregated from the solid waste and stored approximately 200 m outside the landfill site.

The Hamlet is proposing several upgrades for the Sewage Treatment Facility and the Solid Waste Facility. The Hamlet would like to construct two holding cells to trap suspended solids to reduce the amount of solids flowing into the wetland system. The cells would either have geotex liner or clay (depending on availability and suitability). The cells would have 10 month storage with release in late summer/fall. There are also plans to add in three diversion berms; one to divert solid waste runoff to the top of the wetland system, and two diversion berms to create a compliance point at the end of the wetland. Additionally, there are plans for improvements for the existing discharge point (addition of blocks at edges and a chute to transfer water from truck to holding cell) and the construction of new discharge point located above the second holding cell. Signs are to be erected to identify the wetland area.

EC supports a shorter licence term for this renewal in order for the Hamlet to fulfill license requirements and address compliance issues. Additionally, Environment Canada commends the Hamlet for proposing upgrades to the existing Facilities and recommends that the following conditions be applied throughout the duration of the license:

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.
- Operation and Maintenance (O&M) manuals have yet to be submitted for the existing Sewage Treatment Facility and the Solid Waste Facility. Any updates to either of these Facilities should be updated in the O&M manuals.

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 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 or 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).

Sewage Treatment Facility

- It is unclear if the new proposed compliance point will have a control structure to impede flow if water quality results are above limits set in the water license. More information regarding the diversion berms is required to properly assess effluent criteria. Appropriate limits should be set at the last point of control, whether this be at the discharge structure at the end of the holding cells, or at the proposed diversion berms at the end of the wetland. Monitoring should include the quality of effluent at various points in the system, in order to determine the performance of the wetland as a secondary treatment system.
- 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 track record over the next five years.
- Environment Canada recommends that a Sludge Management Plan be submitted for approval for the new holding cells. 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 desludging occurring, the proponent submit for approval a Sewage Sludge Management Plan that clearly outlines the chemical composition.

- Environment Canada recommends that proper signage is in place indicating the locations of the Sewage Treatment Facility.

Solid Waste Disposal Facility

- EC recommends that waste oil and/or fuel barrels should be stored within secondary containment, such as self-supporting insta-berms, or in a lined and bermed area. Please note that all hazardous materials should be neutralized (if applicable) and stored in sealed and labelled containers. Effluent that has accumulated within the hazardous waste storage containment area should be treated as hazardous waste and decanting of snow or water from the area of the hazardous waste storage area should proceed only if the appropriate chemical analysis has determined the contents meet the requirements of Section 36(3) of the *Fisheries Act*.
- Open burning of municipal waste is strongly discouraged by EC, as this results in the formation and spread of some extremely toxic compounds due to incomplete combustion of plastics and other household materials, as well as the generation of fine particulate matter.
- Fencing of the whole solid waste site (including the bulky materials area and the waste oil depot) should be installed to facilitate control of access to the landfill and to prevent the spread of debris. Existing scattered debris should be collected from surrounding tundra.

Monitoring

- Appropriate signage should be erected identifying all Surveillance Network Program (SNP) stations.
- No Annual Reports or monitoring data have been provided for the Hamlet's Sewage Treatment Facility. EC recommends that the Hamlet provide a Monitoring Plan and Annual Reports to the Board for review.
- Monitoring frequency performed by the Hamlet should be sufficient to inform how the system can best be managed to optimize treatment. For example, timing of discharge will be a factor in how effectively the wetland can take up nutrients and incorporate solids; discharge should occur gradually over the warmer months to ensure that the effluent has enough treatment time in the wetland system.

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