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Your file - Votre référence
3MB-QIK

Our file - Notre référence
9545-3-3QIK / CIDMS #106484

September 25, 2006

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*Sent via email*

**Re: 3BM-QIK - Hamlet of Qikiqtarjuaq - licence renewal application**

On behalf of Indian and Northern Affairs Canada (INAC) I have reviewed the above-mentioned application. The following specialist advice has been provided pursuant to INAC's mandated responsibilities for the enforcement of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NW&NSRT), *Arctic Waters Pollution Prevention Act* (AWPPA), and the *Department of Indian Affairs and Northern Development Act* (DIAND Act).

Background Information

The Hamlet of Qikiqtarjuaq is applying for a five-year renewal of its current licence which permits the use of water and disposal of waste into water for municipal undertakings. This municipality is situated on the northwest portion of Broughton Island and has a general coordinate of 67˚33'N, 64˚02'W. The Hamlet of Qikiqtarjuaq seeks to expand and upgrade its water storage infrastructure, waste water treatment infrastructure, and solid waste disposal site to satisfy its forecasted 20-year service demands. Based on population data acquired from the 2001 Census, the Hamlet of Qikiqtarjuaq had a population of 519 people in 2001. With the assistance of the Nunavut Bureau of Statistics, the Hamlet anticipates having a population of 937 people in 2027.

The Government of Nunavut's department of Community and Government Services has contracted Nuna Burnside Engineering and Environmental Ltd. (Nuna Burnside) to submit a licence renewal application on behalf of the Hamlet of Qikiqtarjuaq. Nuna Burnside has submitted a detailed design report which communicates proposed improvements to the municipal infrastructure previously identified.

INAC Comments

Indian and Northern Affairs Canada presents the following comments for the Nunavut Water Board (Board) to consider when reviewing this licence application. Comments are organized according to documents and their corresponding sections provided in the Nuna Burnside's submission.

**Detailed Design Report for the Improvements to the Water Reservoir, Sewage Lagoon, and Solid Waste Disposal Facility**

4.0 Sewage Storage and Treatment Facility

- Nuna Burnside states that the only treatment provided for determining compliance with the Water Board guidelines takes place within the lagoon itself. Therefore, the base of the lagoon's downstream berm is considered to be the point of discharge under the operating licence. However, Nuna Burnside later claims that having a wetland area of 22 hectares (ha) is an essential component of its proposed treatment system [please refer to subsection 4.7.3 - Sewage Storage and Treatment System Detailed Design: Wetland Treatment Area and Exfiltration Berm]. INAC recommends that the Board confirm that the Hamlet intends to meet water quality guidelines set by the Board through the use of a wetland treatment component.
- INAC recommends that the proponent provide the Board with detailed designs for any stream diversion measures that will be installed in the vicinity of the sewage lagoon.

4.7 Sewage Storage and Treatment System Detailed Design

- INAC recommends that the Board request further information concerning the retention capacity of the proposed upgraded sewage lagoon facility. The proponent intends to have an unlined lagoon base and has not presented any supporting information which argues that effluent will not seep from this facility into the underlying ground. The submitted Geotechnical Evaluation document states that the surficial geology of the area consists of tightly spaced cobbles and boulders armoring the surface underlain by mixed medium to coarse sand and gravel with varying amounts and sizes of cobbles and boulders. Furthermore, bedrock was not encountered in the proponent's test pitting program and an increasing amount of silt was noted near the permafrost contact area at approximately 2.0 m depths (refer to Section 4.0 - Geotechnical Evaluation). INAC suggests that the proponent determine the area of talik anticipated to form below the expanded sewage lagoon by the year 2027 and its effect on the integrity of the lagoon facility, taking into account the influence of surrounding permafrost. Conducting a detailed analysis of the current lagoon's water retention capacity and a review of any other geotechnical evaluations of sewage lagoon designs in arctic conditions is strongly advised (e.g., AMEC's Geotechnical Investigation for P-Lake Sewage Lagoon for Cape Dorset, 05-10-13 and the Dillon Consulting response to an NWB letter dated June 21, 2006).
- INAC recommends that the proponent describe the types of earth materials that will be used to constructed retention berms and the reason why such materials have been selected (i.e., will the berms contain water?).

4.4 Lagoon Storage Volumes Required

- INAC recommends that the proponent clearly communicate to the Board, in writing, how it calculated its annual precipitation volume value for the sewage lagoon area and why the average annual precipitation for Qikiqtarjuak was determined to be 262 millimeters (mm).
- INAC recommends that the proponent ensure that the sewage lagoon is designed to accommodate the total amount of precipitation received in a given year.

5.0 Solid Waste Disposal Facility

- INAC recommends that the surface area of the solid waste disposal facility and the retention capacity of its effluent retention area be made known. The retention area should be designed to accommodate the total volume of precipitation received in the solid waste disposal facility (including snowfall) on an annual basis and ensure that the quality of effluent released from the area will not be detrimental to its receiving environment.
- INAC recommends that the proponent determine whether the release of water from the current effluent retention area can be controlled and report its findings to the Board. Furthermore, the proponent should communicate if the facility's upgraded effluent retention area will be designed to control water release and treat effluent to an acceptable level prior to being released into its receiving environment.

- INAC recommends that the proponent describe the types of earth materials that will be used to constructed retention berms and the reason why such materials have been selected (i.e., will the berms contain water?).
- INAC recommends that the design of all surface water diversion measures be provided to the Board for review. Their dimensions and the construction materials that will be used should be identified.

5.4 - Recyclable Storage Area
- INAC recommends that the proponent determine the quality of effluent which originates from the recyclable storage area. Based on a detailed site analysis, the proponent should indicate whether surface water diversion measures and effluent treatment procedures will be needed and if so, how they will be implemented.

5.5 - Bulky Waste Disposal Area
- INAC recommends that the proponent determine the quality of effluent which originates from the recyclable storage area. Based on a detailed site analysis, the proponent should indicate whether surface water diversion measures and effluent treatment procedures will be needed and if so, how they will be implemented.
- INAC recommends that the Spill Contingency Plan be revised to include the name(s), job title(s), and 24-hour telephone contact numbers of those responsible for activating spill response measures. This information will ensure that the employee(s) who discovers a hazardous material spill can activate a timely response and provides a 24-hour point of contact for the authority investigating the spill.

**Solid Waste Facility - Operation and Maintenance (O&M) Plan**
- INAC recommends that the proponent submit a stand-alone O&M Plan.

3.0 - Operation and Maintenance of the Solid Waste Disposal Facility
- The INAC contact is the Water Resources Officer based in Iqaluit who is accessible by telephone at (867) 975-4289 and fax at (867) 979-6445.
- INAC recommends that the contact information of the Solid Waste Disposal Facility operator be provided in the O&M Plan.

**Water Storage and Treatment Facility - Operation and Maintenance (O&M) Plan**
- INAC recommends that the proponent submit a stand-alone O&M Plan.

3.0 - Operation and Maintenance of the Water Treatment Facility
- The INAC contact is the Water Resources Officer based in Iqaluit who is accessible by telephone at (867) 975-4289 and fax at (867) 979-6445.
- INAC recommends that the contact information for the Water Treatment Facility operator be provided in the O&M Plan.
- INAC recommends that the contact information of the Water Treatment Facility operator be provided in the O&M Plan.
- INAC recommends that any safety procedures practiced by operations staff be provided in the O&M Manual (e.g., chlorine handling protocol and first-aid required for chemical burns).

**Sewage Treatment Facility - Operation and Maintenance (O&M) Plan**

- INAC recommends that the proponent submit a stand-alone O&M Plan.

3.0 - Operation and Maintenance of the Sewage Treatment Facility

- The INAC contact is the Water Resources Officer based in Iqaluit who is accessible by telephone at (867) 975-4289 and fax at (867) 979-6445.
- INAC recommends that any safety procedures practiced by operations staff be provided in the O&M Manual (e.g., spill contingency measures).

3.3 - Periodic and Seasonal Maintenance Procedures

- INAC recommends that the proponent indicate where removed sewage sludge will be deposited. Displaced sludge should be contained in an area where precipitation runoff will be directed to a water quality treatment facility.

**Environmental Emergency Contingency Plan for Water, Sewage, and Solid Waste Operations in the Hamlet of Qikiqtarjuaq, NU**

- INAC recommends that the contact information for the spill response team coordinator be included in the Plan.

4.0 - Spill Reporting Procedure

- The INAC contact is the Water Resources Officer based in Iqaluit who is accessible by telephone at (867) 975-4289 and fax at (867) 979-6445.
- INAC recommends that the Spill Contingency Plan include a copy of the Nunavut Spill Report Form posted on the http://ftp.nunavut.ca/nwb website.

Indian and Northern Affairs Canada requests notification of any changes in the proposed project, as further review may be necessary. Please do not hesitate to contact me if you have any questions or comments with regards to the foregoing.

Sincerely,
***Original signed***

David W. Abernethy
Water Resources Coordinator

Cc. Jim Rogers - Manager of Water Resources, Indian and Northern Affairs Canada, Iqaluit