



Water Resources Division  
Nunavut Regional Office  
Iqaluit, NU X0A 0H0

Our File: 9545-3-3CAPG / CIDMS 152111

Your File: 3BMCAP

June 7, 2007

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**Re: 3BM-CAP / Hamlet of Cape Dorset / Qikiqtani Region / licence amendment 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).

The Government of Nunavut is applying for an amendment to the Hamlet of Cape Dorset's municipal water licence to allow for the operation of a new annual retention sewage lagoon. The Hamlet of Cape Dorset is situated on Dorset Island, off the shore of Baffin Island in Nunavut's Qikiqtani Region (coordinate of 76°31' west latitude and 64°31' north longitude). The Hamlet's current sewage treatment lagoon has limited capacity to manage municipal wastewater effluent to the standards specified in the current licence. As a result, the Government of Nunavut desires to construct a new facility that will meet service the Hamlet for a minimum of 20 years.

Indian and Northern Affairs Canada recommends that the Nunavut Water Board (NWB) consider the following comments when reviewing this licence renewal application.

- a. The Hamlet's current licence is set to expire on August 31, 2007. The proponent is encouraged to submit a licence renewal application that addresses all municipal activities related to freshwater consumption and waste disposal practices as soon as possible.
- b. The need for developing a municipal licence application supplementary questionnaire should be considered. Such a form would provide clarity to municipal licence applicants on NWB information submission expectations (e.g., operations and maintenance planning, spill contingency planning, sludge management, monitoring procedures, and abandonment and reclamation planning).

The P Lake Sewage Lagoon Water Licence Application Design Report: Cape Dorset, NU, dated December 21, 2006 has been reviewed. INAC provides the following comments which pertain to this report.

- c. The submitted report is considered to be the proponent's primary licence renewal application information document. Valuable information is included within this report. However, no detailed analysis of the actual lagoon design is provided for review (i.e., berm design, geotechnical analysis of lagoon surface area, and geothermal analysis of the lagoon surface area). Rather, the reader must query separate reports submitted by AMEC Earth and Environmental or be literate in the review of design drawings to fully understand the scale of the proposed lagoon design. The proponent should ensure that future municipal licence applications are submitted in an organized fashion as a means of minimizing confusion on the part of licence reviewers.
- d. The proponent should state which aggregate borrow sources it intends to exploit for the sewage lagoon's construction. Furthermore, the proponent should identify the quantity of required aggregate resources by grain size and whether the extracted material will be processed to ensure that the lagoon is properly constructed.
- e. The proponent proposes that the new sewage lagoon's effluent have a discharge criteria of 80 mg/L biological oxygen demand, 100 mg/L total suspended solids, and 10E fecal coliforms. The proponent should commit to monitoring the effectiveness of its sewage lagoon's treatment process. Developing a municipal wastewater effluent quality trend analysis for these three parameters and others of interest, such as pH, ammonia nitrogen, and total phosphorus, effluent temperature, and air temperature would be a useful. By doing this, the proponent can analyze collected data and determine whether the timing of effluent discharge is adequate.
- f. The proponent should provide justification that its frozen core dyke concept is realistic. Furthermore, the proponent should explain whether a low-permeability soil cut-off wall designed for unfrozen performance will be established within the dyke and if or if not, why?
- g. The proponent should state whether berm liners will extend into non-fractured bedrock so as to reduce the likelihood of subsurface water flow beyond the sewage lagoon footprint.
- h. The proponent should establish subsurface water quality monitoring wells down gradient of the proposed sewage lagoon to determine whether municipal wastewater effluent is seeping through the lagoon's base into the active layer,

and if so, whether the quality of the subsurface water meets requirements set by the NWB.

- i. The proponent should develop a detailed monitoring program for the NWB's consideration as it drafts municipal licence terms and conditions. This is due to the proponent's familiarity with the project area. A monitoring program should specify sampling site locations by global positioning system coordinates, parameters to be analyzed at each sampling site, when samples are to be taken, who will collect the samples, where the samples will be sent, and a quality assurance/quality control plan for sample collection procedures.
- j. INAC notes that the construction drawings included in the Design Report are not signed and sealed by a qualified professional. The proponent should develop design and water management beyond the conceptual and intermediate phases before the submission of a water licence application. INAC recommends that the NWB require the applicant to file final design plans that are stamped, signed, and dated by a qualified professional, with in advance of project implementation. INAC also recommends that the NWB require the applicant to file final as-built designs that are stamped, signed, and dated by a qualified professional, prior to the lagoon's start-up operation date.

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 should you have any questions or comments with regards to the foregoing. I can be reached by telephone at (867) 975-4555 or by email at [abernethyd@inac-ainc.gc.ca](mailto:abernethyd@inac-ainc.gc.ca).

Regards,  
***Original signed***

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