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Your file - Votre référence
NWB3CAP/TR/EI

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#80086

May 2, 2006

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Via Email

Re: NWB3CAP - Hamlet of Cape Dorset - P Lake Area Sewage Lagoon System Final Design Report and Complete Construction Tender

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 Government of Nunavut's Department of Community Government and Services has submitted the Final Design Report and Construction Tender for the proposed P-Lake Area Sewage Lagoon System in the Hamlet of Cape Dorset. Dillon Consulting Ltd. prepared the Final Design Report on behalf of the proponent. Due to the structural instability of the Hamlet's existing 3-cell lagoon, a new sewage treatment facility is required. The Territorial government intends to have a new lagoon commissioned in the autumn of 2006 following the establishment of an access road and its construction. This sewage lagoon will be situated in the vicinity of P-Lake and be capable of accommodating 96,000 m^3 of effluent so as to meet the Hamlet's 20 year projected sewage generation. The lagoon will be decanted every autumn through a gravity discharge line that directs effluent to P-Lake, which drains into Telik Inlet. The proponent has determined that P-Lake does not support any fish species nor connect to any other fresh water body sources and has an estimated volume of 11,677 m^3 of freshwater. After passing through P-Lake, the discharged effluent will be subjected to wetlands treatment so as to meet the quality standards specified in the proponent's licence.

The proposed sewage lagoon system will be situated approximately 450 m south of the Hamlet in an area outside of the community's watershed. The Hamlet's fresh water source, Tee Lake, is situated 1 km and away from the lagoon site. Sewage effluent will not enter this water source because it is approximately 37.5 m above the lagoon site (150.5 m above sea level (masl) as opposed to 113 masl). The Hamlet will maintain one cell from its existing lagoon for emergency use and will have the remaining two cells decommissioned.

Section 6.7.3 of the Final Design Report, "Treatment Beyond 20 Years," indicates that the sewage treatment area may eventually be expanded by converting the lake into a lagoon capable of accommodating 63,900 m^3 of effluent. The proposed P-Lake area sewage lagoon would continue

to serve as a primary lagoon which will decant into the newly expanded P-Lake lagoon for secondary treatment prior to being subjected to wetlands treatment (it is anticipated that the Hamlet will generate 160,000 m^3 of sewage by 2046). To accomplish this goal, P-Lake will have to be built-up with berms to retain the effluent and ditches will be established for the diversion of the lakes' recharge water.

Indian and Northern Affairs Canada's Comments

It is recommended that the following issues be taken into consideration when reviewing the potential impacts of this project.

- INAC requests the submission of an alternatives' assessment report concerning the selection of an appropriate sewage treatment facility design. The submitted Final Design Report makes reference to the construction of a Mechanical Sewage Treatment Plant at the existing sewage lagoon site but does not make reference to any analysis concerning the feasibility of this alternative.

- The Nunavut Water Board should note that the geotechnical study referred to in section 5.2, "Berm Construction," of the Final Design Report was not included in the document's appendices. This study was submitted by AMEC Earth & Environmental (AMEC) in October 2005 and was obtained by INAC after contacting Dillon Consulting Ltd. INAC is concerned that this information was not made available to the Board's reviewers and that the Final Design Report inaccurately states that AMEC advises that a liner is not needed under the base of the lagoon (refer to section 5.2). INAC recommends that the Board review this geotechnical study as part of its review of the proponent's Final Design Report.

- INAC recommends that the proponent seriously consider the value of placing an impermeable synthetic liner under the base of the lagoon in addition to the interior of retention berms. AMEC's geotechnical investigation noted that the proposed lagoon site consists of fractured bedrock and that the ground temperature below the lagoon will likely rise due to the warming effect of the sewage effluent. Having an impermeable synthetic liner placed under the lagoon can prevent the contamination of ground water from effluent flowing through porous rock.

- INAC recommends that the proponent address the need to establish water diversion measures in the vicinity of the proposed lagoon site so as to protect the integrity of its retention berms.

- INAC recommends that the proponent communicate to the Nunavut Water Board its planned method of treating sewage sludge.

- With regard to the quarry operations used to support the lagoon and its access road construction, INAC recommends the use of erosion control measures in the down-gradient areas of stockpiled rockfill and where quarrying activities are taking place. The proponent should ensure that no sedimentation will result in any nearby water bodies.

If there are any changes in the proposed project, INAC should be notified, 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 by telephone (867) 975-4555 or by email via abernethyd@inac-ainc.gc.ca.

Sincerely,

David W. Abernethy
Water Resources Coordinator

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