



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

February 11, 2010

Richard Dwyer  
Licensing Administrator  
Nunavut Water Board  
PO Box 119  
Gjoa Haven, NU X0A 1J0

**Re: 3BM-KIM0911 – Government of Nunavut, Community and  
Government Services (GN-CGS) – Hamlet of Kimmirut – Application  
for Amendment – Additional Information Submission**

Please be advised that Indian and Northern Affairs Canada (INAC) has completed a review of the above noted additional information as submitted by GN – CGS in relation to the Kimmirut water licence application for amendment.

The Nunavut Water Board (NWB) distributed the information for comment on January 21, 2009.

In conducting this review, I have referred to all documents on the Nunavut Water Board FTP site as it relates to 3BM-KIM0911. Attached is a Technical Review Memorandum for your consideration.

Please feel free to contact me should you have any questions or comments. I can be reached at (867) 975-4566 or by email at [tanya.trenholm@inac.gc.ca](mailto:tanya.trenholm@inac.gc.ca).

Sincerely,

*Original signed by*

Tanya Trenholm  
Pollution Policy Specialist



## **Technical Review Memorandum**

**To:** Richard Dwyer, Licensing Administrator - Nunavut Water Board

**From:** Tanya Trenholm, Pollution Policy Specialist - Indian and Northern Affairs Canada – Water Resources Division

**Re:** **Additional Information concerning Application for Amendment – GN – CGS**

### **Existing Water Licence # 3BM-KIM0911**

#### **Background Information:**

Following the December 7, 2009 teleconference, concerning the Kimmirut application for an amendment to the above-reference water licence, GN-CGS has agreed to submit additional information related to the following:

- a) CGS to discuss the fish bearing nature of the pond that drains to the large lake with the Hamlet and provide a memo to the NWB and reviewers
- b) Trow to correct the table headers in its October 30, 2009 memo and provide a revised memo for submission to the NWB
- c) CGS to review condition D, 10 of the Licence as well as reviews comments on the Quarry Management Plan and provide a response (Including Spill Contingency Planning) to the NQWB
- d) CGS to provide a Plan for Compliance to address solid waste disposal
- e) CGS to provide a Plan for Compliance to address the geotechnical engineer's inspection and report, and
- f) CGS to provide a Plan for Compliance to address abandonment and restoration plans.

#### **Recommendations / Comments**

INAC has reviewed the supplemental information and has the following comments for the Board's consideration:

##### **1. Sewage Effluent Discharge Criteria:**

INAC is unsure of the ability of the wetlands to meet the discharge criteria that are proposed for post wetlands treatment of 45mg/L BOD and 45 mg/L TSS. The site-specific wetland treatment process that is proposed is based largely on generalized assumptions provided in the January 8, 2008 Kimmirut Wetland Study.



The Kimmirut Wetland Study has indicated that only 'approximately 20%' (3 of 15 hectares) of the wetland will contact the discharged effluent. Further, this is based on an assumed path of effluent flow through the wetlands, as the wetlands contain a number of water channels. Studies have not been undertaken to verify a flow pattern, flow rate or retention time for discharged effluent through the wetlands.

In the interest of avoiding future compliance issues and exercising sound environmental best practices, INAC recommends that a site specific evaluation of the wetlands be undertaken to ensure that the required end of wetlands effluent quality criteria are achievable. This may include the use of an engineered wetland as well as an assessment of the hydrologic and biological characteristics and functions of the existing wetlands. Although it is understandable this may be time consuming and costly in the forefront, INAC strongly believes that an investment in a technically verified lagoon and wetland system will lead to a facility that operates fully within compliance standards and is in the best interest for effective long-term resource management.

Due to the lack of an existing operational sewage facility and the unknowns around flow patterns/discharge dispersion and potential assimilative capacity of the proposed wetland treatment, an alternate course of action might be to allow for a water licence amendment for 3 years (one to complete the construction of the lagoon and associated facilities and 2 for operation of the facility) with more conservative parameters allotted to the wetlands, and by virtue, the compliance point at the end of the lagoon system. In advance of the operational phase of the licence, comprehensive monitoring plans should be implemented to assess the actual effluent discharge levels at end of pipe, and also at the end of wetlands. This would allow for verification of appropriate effluent quality criteria at the compliance point and further at the end of wetlands, as the wetlands are an integral part of the effluent treatment process before the effluent enters the receiving water body. In the case that decant is not necessitated within the first 2 years of operation, the above noted wetlands studies should be conducted while the construction of the lower lagoon takes place.

### **Solid Waste Disposal Plan for Compliance:**

As per the teleconference minutes, "It was generally agreed that the Plan for Compliance must address plans for the Solid Waste Disposal Facility such as what is being proposed (a new facility), when funding is anticipated and when activities are planned. CGS agreed to provide more information to address the Solid Waste Disposal Facility."

However, CGS has not provided information pertaining to when funding is anticipated or a proposed schedule of activities (i.e. when it is expected the facility will be constructed and commissioned). CGS included a 'Location map of



the proposed landfill site' (Appendix-D). However, it is difficult to discern a number of important items in relation to the landfill, including, landfill location in relation to the lagoons, surface water drainage patterns, and potential contaminant pathways (i.e for possible leachate from the landfill).

### **Plan for Compliance to Address Abandonment and Restoration Plans:**

CGS was asked to provide clarification in the Plan for Compliance addressing solid waste disposal, which would help to determine when abandonment and restoration plans for solid waste disposal facilities will be required.

As previously noted, this has not been completed. As such, it remains unclear as to when CGS plans to undertake the construction of facilities, and also the development of the appropriate Abandonment and Restoration Plans.

### **Plan for compliance – General**

CGS should note that the 'Plan for Compliance' should be in a stand alone document, that addresses the compliance related concerns noted in the December 7, 2009 teleconference Minutes.

### **Summary of Recommendations:**

CGS should, at a minimum, provide the following:

- Before the amendment is approved, the proponent must submit a more detailed topographic map that covers the entire sewage effluent treatment train (i.e from the upper lagoon to the receiving water body – Soper Lake) that includes, at a minimum, definitive flow patterns, discharge location into wetlands, predicted flow course through the wetlands, discharge into small pond, and finally, discharge into Soper Lake.
- INAC recommends an adaptive management approach, which includes a short licensing period (3 years) and more conservative parameters at the forefront, to be verified through monitoring, and re-evaluated based on actual data. Or, wetlands studies should be conducted while the construction of the lower lagoon takes place if it is determined that decant will not occur during the first 2 years of operation.
- More detailed solid waste disposal facility location map that identifies flow patterns, and potential contaminant pathways.
- Proposed construction and anticipated funding schedule for the solid waste disposal facility.
- A 'stand-alone' Plan for Compliance that addresses all of the issues identified in the December 7, 2009 teleconference 'next steps'.



Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

Please feel free to contact me at your convenience should you wish to further discuss any part of this submission to the Board. I can be reached at 867-975-4566 or via email, [tanya.trenholm@inac.gc.ca](mailto:tanya.trenholm@inac.gc.ca).

Cc. Lou-Ann Cornacchio, Manager, Water Resources Division – Indian and Northern Affairs Canada;