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Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

Attention: Mr. Jim Wall  
Technical Advisor

**Re: The Hamlet of Qikiqtarjuaq Sewage Lagoon Situation**

In March 2003, the Hamlet of Qikiqtarjuaq informed the Water Board and other regulatory authorities that the Hamlet Foreman thinks that there is not enough capacity in the sewage lagoon to meet the requirements of the community until the time of decanting the lagoon.

The Department of Community Government and Transportation investigated the problem further by contacting the SAO as well as investigating the site.

The Hamlet's SAO indicated that there is currently at least 8 ft (2.40 m) of free board in the lagoon and further site investigation confirmed that the minimum existing free board in the lagoon is 2.80 m.

Reinders Northern Limited designed the existing lagoon with bed dimensions of 33 x 108 m, a side slope of 4:1 and a total depth of 5.30 m from the lagoon bed level to the top level of the berm. The existing lagoon is considered a first cell and the study recommended the construction of a second cell in the near future.

The designed capacity of the existing lagoon is 16,220 m<sup>3</sup> providing that the depth from the HWL to the invert of the outlet pipe is 3 m.

As indicated earlier, currently there is 2.80 m free board in the lagoon and by running a simple calculation the following is noticed:

$$\begin{aligned}\text{Water consumption in Qikiqtarjuaq} &= 90 \times [1 + (0.00023 \times \text{Pop.})] && \text{L/c/d} \\ &= 102 \text{ L/c/d}\end{aligned}$$

$$\text{Current total annual water consumption} = 102 \times 562 \times 365 = 21,000 \text{ m}^3$$

$$\text{Estimated water consumption (April 1 to July 31)} = 7,000 \text{ m}^3$$

Allowing for a 1.0 m free board at the end of the season, the water level will be allowed to increase by 1.80 m, that would translate into a total volume of over 14,000 m<sup>3</sup> of storage capacity. This available capacity is double the estimated sewage produced by the community in the next four months (until the time of decanting).

From the above calculations, it is clear that:

- There is enough capacity in the sewage lagoon this year providing that the lagoon is protected from spring runoff.
- The existing lagoon is reaching its capacity limit to satisfy the requirements of the community
- The second cell should be constructed within the next couple years.

Therefore, the department of Community Government and Transportation shall take the following measures:

1. Work with the hamlet to closely monitor the increase in the sewage level in the lagoon.
2. Arrange with the hamlet to provide maximum protection for the lagoon from the spring runoff.
3. As identified in the department's Capital Plan an upgrade of the lagoon should take place in the next couple of years. Therefore, the department shall assess further the need of constructing the second cell next years as opposed to this year due to the limitation of fund.

We look forward to working with the Water Board and other stakeholders in the implementation of a long-term sewage management plan for the Hamlet of Qikiqtarjuaq. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Yours Truly,

**Original signed by Sameh Elsayed**

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