

# MEMO



**TO:** Stuart Rostant, Project Officer, Department of Community and Government Services, Government of Nunavut

**CC:** Phyllis Beaulieu, Manager of Licensing, Nunvut Water Board

**FROM:** Gary Strong, P. Eng

**DATE:** August 11<sup>th</sup>, 2014

**SUBJECT:** Gjoa Haven, NU Old Lagoon Effluent Analysis

**OUR FILE:** 11-5029

This memo provides the results of the old lagoon supernatant characterization from the July 24<sup>th</sup>, 2014 sampling campaign in Gjoa Haven, NU. Three supernatant grab samples were taken (one near the inlet, one near the middle and one near the outlet of the lagoon) and are reported herein as a composite to represent the overall anticipated effluent quality to be discharged. Sampling methodology was in compliance with the Water Licence, Part D-2.

The results of the sampling campaign are shown in **Table 1** below, along with the relevant water licence criteria as recommended by the Nunavut Water Board. These criteria are to be met prior to the commencement of the final lagoon decant.

**TABLE 1: OLD LAGOON SUPERNATANT ANALYSIS RESULTS AND NWB CRITERIA**

Parameter	Units	MDL	Measured Value (composite)	Water Licence Criteria
Biochemical Oxygen Demand	mg/L	2	115	80 mg/L
Total Suspended Solids	mg/L	3	111	100 mg/L
Fecal Coliforms	CFU/100mL	1	< 10	1 x 10 <sup>4</sup> CFU/dl
Hexane Extractable Material	mg/L	2	5.9	No visible sheen
pH	pH units	-	8.1	Between 6 and 9

These results reflect the effects of a successful freeze-thaw process, having achieved settling of solids and pH optimization. It should be noted that the reported TSS exceeds the water licence criteria by 10% and BOD<sub>5</sub> exceeds the water licence criteria limit by a factor of 1.4. This can likely be attributed to temperature dependent decrease in bioactivity and the presence of algal growth in the lagoon. It is expected that the effluent will meet regulatory requirements during decant. Further polishing of the effluent will also be achieved in the wetlands prior to final discharge into the receiving environment. A final sampling and analysis of effluent will be conducted on August 20<sup>th</sup>, 2014, prior to breaching the lagoon berm for decant.

Yours sincerely,

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