

Executive Summary

The Hamlet of Gjoa Haven is responsible for the disposal of sewage and solid waste generated from the community. These facilities are currently operating with an Amendment Water Licence 3BM-GJO1318, which does not include the newly constructed Sewage lagoon. Current sewage lagoon construction completed and turned to operation in Nov 2013 and the sewage discharge program transferred to this new facility from the old lagoon which being decommissioned.

The new facility is a single-cell rectangular shaped engineered lagoon and has been sized to a capacity at least 57,907 m³ to meet the needs for next 30 years. Using population projections in 2042 (about 1800 people) and average water uses of 75L/day which estimate a sewage volume not exceeding 55,000 m³/year, is less than the new lagoon capacity. The lagoon is designed and developed to hold raw sewage for 10-12 months during early winter to next summer (Sep-June), and decanting during late summer and fall (July-Aug).

The un-engineered wetland located immediately downstream of the lagoon is an integral to the remediation process of sewage effluent after the primary remediation of effluent inside the lagoon. The wetland basically provides the polishing of effluent in presence of oxygen and sunlight before final merge into ocean. Monitoring stations located on the wetland for samples collection which then test in the laboratory to ensure contamination parameters level compare to the MAC (maximum allowable limit) value. The monitoring stations (GJO-2, GJO-4) remained unchanged on the wetland except GJO-3 in the new location of sewage drop-off in the new lagoon which is consistence with the newly amended Water Licence 3BM-GJO 1318. The new decanting location marked at the opposite corner of raw sewage drop-off (shown in the drawing) point where decanting structure is installed including an overflow free discharge dyke. Sewage sludge depth on the bottom bed of the lagoon will be measured and monitored in accordance with the guideline (National Guide to Sustainable Municipal Infrastructure 2004) and as needed. Collected sludge will be managed and dried on a selected sludge drying pad. A detail sludge management plan will be submitted when required for the Board approval. A complete O&M manual was submitted to the Board for the operation & management of the new sewage facility.

The amendment is required to include the operation of the current lagoon in place of the old lagoon in the newly amended Water Licence. The A&R plan for the old lagoon has been submitted and approved by the Board. The complete set of 'as-built drawings' of the new lagoon has attached with this submission to the Board.

We confidently determined, operation of the new lagoon will be helpful in compliance with the requirement of the Nunavut Water Licence for this northern community.