

Water License 3AM-GRA1624 Amendment Application: Supplemental Information

Government of Nunavut Community and Government Services March 1, 2020



1.0 Introduction

During the technical meeting it was identified that further information was required to allow the Nunavut Water Board and interveners to fully understand the reasoning behind the requested amendments and to correspond on commitments made during the meeting. The proceeding sections are intended to provide the following:

- justification on requested amendments,
- tentative scheduling of a new Wastewater Treatment Facility and description of how future updates will be provided,
- an outline of the committed water level monitoring to occur at the resupply location,
- outline of when the new Resupply Pump Management Plan will be submitted.

2.0 Amendment Justifications

The below summary is supplemental to the amendment application submitted for 3AM-GRA1624 with further rationale on why the amendments are being requested. The Nipissar Lake and Lower Landing Lake Water Balance Assessment completed by Golder and Associates in 2016 is referenced several times as the "Water Balance Assessment".

Relocation of resupply to Lower Landing Lake:

- Char River is unable to provide the supplemental water volumes to Nipissar Lake required to meet the community consumption.
- The Water Balance Assessment recommends that Lower Landing Lake is a suitable supplemental water source.
- Flow objectives imposed by the Canada Department of Fisheries and Oceans can still be respected at this location, while prolonging the pumping season.
- The Water Balance Assessment recommends water taking to occur after freshet to allow for the Char River hydrograph to continue to be driven by freshet flows.

Increase the maximum daily pumping volume from 3,485 m³/day to 10,000 m³/day:

- Department of Fisheries and Oceans imposed flow objectives restricting water taking to 10% of the instantaneous flow through Char River. The Water Balance Assessment recommends that water taking be capped at 10% of annual flow through Char River, estimated at approximately 0.202 m³/s, or 1,000,000 m³ annually.
- Annual water usage for the Community was 776,956 m³ in 2020, with extreme increases displayed each year. The approximate annual recharge from the Nipissar watershed is



 $200,000 - 300,000 \text{ m}^3$, leaving an annual deficit of $500,000-600,000 \text{ m}^3$ for the current consumption regime.

- The request for 1,000,000 m³ annually is based on the following:
 - o The need to refill Nipissar back to its overflow/hydraulic grade line with Lower Landing Lake due to significant drawdowns over the past number of years.
 - o The growing population in Rankin Inlet, and expected new infrastructure will continue to increase community consumption throughout the term of the licence.
 - o Respect flow objectives imposed by Department of Fisheries and Oceans.
- The request for 10,000 m³ daily is based on the following:
 - O Capacity of current pumping equipment has shown capability of pumping up to approximately 8,000 m³/ day on a full day of pumping, allowing for some slight upgrades to pump infrastructure, if required over the term of the licence.
 - The pumping season is based on timing of freshet and of freeze-up. This daily volume will allow adequate resupply to occur, withstanding late freshet/early freeze, or delays due to equipment failures.

Removal of compliance point GRA-6:

- This compliance point was to monitor water quality at the pumping location. With the pumping location removed, it is no longer informative.
- Historical water quality sampling has shown that chemical parameters between Lower Landing Lake, Char River and Nipissar Lake are similar.
- The pumping equipment at this location was a removable pump and hose (historically removed each year after pumping season). This equipment has already been moved to Lower Landing Lake without impact to the riverbanks.

Removal of quarterly reporting requirement

- It was identified that this requirement was added to align with the Fisheries Act Direction issued to GN-CGS by Environment and Climate Change Canada to monitor effluent quality at the wastewater treatment plant while completing a characterization study and a conceptual planning study.
- This direction was fulfilled as of September 2020, and therefore the quarterly reports are no longer required by ECCC.
- See Appendix A: Email from ECCC noting that the Direction was fulfilled.
- See separate submissions of the Effluent Characterization and Conceptual Planning studies completed in 2019-2020.



Removal of annual Adaptive Management Plan submission:

- With the relocation of the resupply, and recommendations that daily and annual water taking quantities be based on 10% of the annual total flow through Char River, it is anticipated that the pumping plan will not change year to year.
- An updated Resupply Pumping Plan will be submitted within 6 months of licence issuance and will then only be updated and submitted when changes are required, not necessarily on an annual basis.

Requesting 10-year renewal to 2031:

- The requested amendments to the licence have been made to allow for growth and increase in consumption within the community over the requested extended term of the licence, while following recommendations made in the Water Balance Assessment to respect flow objectives of Char River.
- Planning and design studies for new water and wastewater infrastructure will be provided to the board as completed, and amendments relating to new infrastructure will be made accordingly.
- GN-CGS has committed to providing information on the planning and scheduling of the new wastewater treatment facility within the annual report, submitted to NWB.

3.0 Wastewater Treatment Facility Tentative Schedule

The following is a tentative schedule for the planning, design and construction of a new mechanical wastewater treatment facility in Rankin Inlet. Note that contract award and construction years are dependent on success during funding applications. Future updates to this schedule will be included as a section on the annual report.

2021: Field Studies (geotechnical, Environmental, wind/snow)

2022: Funding applications for design/build contract

2023: Award design/build contract

2024-2025: Construction and commissioning.

4.0 Water Level Monitoring at Lower Landing Lake

As discussed in the technical meeting, water level monitoring at Lower Landing Lake will be taken monthly during the open water period, and weekly during the pumping season. These measurements will be included in the annual report.



Appendix A: Environment and Climate Change Canada notice of direction fulfillment



Rankin Inlet WWTP Teleconference Meeting Monday Sept 15, 2020



Didham, Curtis (EC) <curtis.didham@canada.ca>

To Collins, Sarah; Lusty, Megan; Wilson2, Anne (EC); Broome, Craig (EC)

Cc Browne, David

(i) You replied to this message on 2020-09-08 5:24 PM.

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Good Afternoon,

After reviewing all the submitted information I have determined that the Government of Nunavut, Community Government and Service has met all the requirements of the Fisheries Act Direction that was issued on April 5, 2017. To close this file I would like to have a 30min teleconference meeting on Monday September 15, 2020. Can you ALL provide your availability for a teleconference meeting on this day and I will send out a meeting invite.

≪ Reply All

Tue 2020-09-08 3:00 PM

Regards,

Curtis Didham

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Enforcement Branch / Direction générale de l'application de la loi
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