



3AM-GRA1624 Licence Application
May 31, 2021

Community and Government Services
Government of Nunavut

Executive Summary

The Government of Nunavut, Community and Government Services, as licensee, has applied to the Nunavut Water Board to amend the existing water licence 3AM-GRA1624 and extend the licence term to 2031. The objectives of the amendment are to allow for the relocation of the annual resupply from Char River, 200 m upstream to Lower Landing Lake, to increase daily and annual resupply volumes to accommodate the growing population in Rankin Inlet, while respecting the ecologic objectives set by the Department of Fisheries and Oceans Canada, and to modify several monitoring and submission requirements of the existing licence.

Licence 3AM-GRA1624 allows for the use of water and operation of the water supply facilities, Utilidor and sewage treatment facility by the Government of Nunavut, Community and Government services in Rankin Inlet. This licence was last renewed on May 2, 2016 and expires on May 1, 2024.

The current amendment submission is for the following:

- To relocate the resupply to Lower Landing Lake from Char River
- To increase the maximum daily pumping volume from 3,485 m³/day to 10,000 m³/day
- To remove the quarterly reporting requirement.
- To submit a Resupply Pumping Plan and remove the requirement for this to be updated and submitted annually.
- To remove the compliance point GRA-6 from the monitoring requirements of the licence.

Justification for these amendments were provided within the application and supplemental documentation throughout the technical review and following the technical meeting. Additional commitments were made by the Licensee during the technical meeting, as requested by the Nunavut Water Board and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC).

In their final written submission, CIRNAC has indicated their support to the amendments requested. GN-CGS is requesting that the amendments as presented be carried into a renewed licence for the water use, operation of the water supply facilities, utilidor, and sewage treatment plant in Rankin Inlet, Nunavut.

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1.0 Introduction

The Government of Nunavut Department of Community and Government Services (CGS) own and operate the municipal water resupply, water treatment plant, utilidor, sewage treatment facility, and effluent discharge under Type A Water Licence number 3AM-GRA1624 for the community of Rankin Inlet, Nunavut. This licence was last renewed in 2016 and expires in 2024. The current amendment application is related to the relocation and increase of the annual domestic water resupply and associated monitoring and reporting requirements, as described in more detail in the proceeding sections.

The Hamlet of Rankin Inlet is in the Kivalliq region of Nunavut. Nipissar Lake is the domestic water supply for the community, with an approximate population of 2,842 (2016 Census). The watershed is frozen for up to 9 months of the year, meaning the lake must be resupplied annually prior to freeze-up. In 2012 the water supply pipeline was constructed to recharge Nipissar Lake from Char River. This resupply was complete with a diesel pump and removable flexible hose with screen. The resupply season typically extends for three months each year, from mid-June to mid-September.

Char River flow objectives were outlined by the Department of Fisheries and Oceans (DFO) to limit water taking to 10% of the instantaneous flow within the River to protect the natural environment and habitat. While supplementing Nipissar Lake from Char River, water levels within the Lake have continued to drop annually, to a point where members of the Community and the Department of Health identified extreme concern over the water source.

The current amendment application aims to provide a solution to the volume of resupply for the domestic use by the community, while respecting the objectives set by DFO for the River by moving the resupply upstream to Lower Landing Lake. Additional amendments are requested to update the licence to align with the relocation of the source.

The following sections have been organized to align with the Pre-Hearing Conference Decision and have accounted for comments received from the Interveners.

2.0 Scope of Amendments to Existing Licence

The scope of the amendment application and justifications have been provided in previous submissions, most recently in the document under the title: Water Licence 3AM-GRA1624 Amendment Application: Supplemental Information, submitted by CGS on March 1, 2021. Table 2.1 provides a summary of the amendments and purpose for the licence amendment request.

Table 2.1

Requested Amendment	Purpose of Amendment
Relocation of resupply to Lower Landing Lake	<ul style="list-style-type: none">Char River is unable to provide the supplemental water volumes to Nipissar Lake required to meet the community consumption. The Chief Public Health Officer of Nunavut made an emergency order to move the water supply in 2018 due to inadequate supply.The Nipissar Lake and Lower Landing Lake Water Balance Assessment (Water Balance Assessment) completed in 2016 recommends that Lower Landing Lake is a suitable supplemental water source.Flow objectives imposed by DFO can be respected on an annual basis at this location, while prolonging the pumping season.
Increase the maximum daily pumping volume from 3,485 m³/day to 10,000 m³/day.	<ul style="list-style-type: none">DFO 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. Due to the nature of the resupply system in Rankin, modifying pumping volumes to instantaneous river flow volumes would not be practical.Annual water usage for the Community was 776,956 m³ in 2020. The approximate annual recharge from the Nipissar watershed is 200,000 – 300,000 m³, leaving an annual deficit of 500,000-600,000 m³ for the current consumption rate.Resupply up to 1,000,000 m³ annually is based on the following:<ul style="list-style-type: none">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.The growing population in Rankin Inlet, and expected new infrastructure will continue to increase community consumption throughout the term of the licence.Respect flow objectives imposed by DFO on an annual basis.The request for up to 10,000 m³ daily is based on the following:<ul style="list-style-type: none">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 slight upgrades to pump infrastructure, if required.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	<ul style="list-style-type: none">This compliance point was to monitor water quality at the pumping location on Char River. 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	<ul style="list-style-type: none">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, and are not considered to be necessary for this water licence.
Removal of annual Adaptive Management Plan submission	<ul style="list-style-type: none">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	<ul style="list-style-type: none">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 Water Quantity and Timing of Pumping

Water Quality Monitoring and Lower Landing Lake level monitoring

GRA-7 is an existing compliance point in the current licence for water quality. This will be continued, and CGS has made the commitment to add water level monitoring at Lower Landing Lake, 1/month during open water, and 1/week during resupply pumping. CIRNAC states in their final written submission that this commitment resolves their recommendation during the technical review.

Potential Adverse effects onto Char River

CIRNAC indicated that there could be concern for potential impacts to the ecologic flows within Char River due to the increased pumping volumes. This concern was deferred to DFO who indicated that they are "... of the view that this proposal is not likely to result in the contravention of the above-mentioned prohibitions and requirements." CIRNAC stated in the final submission that this concern is resolved.

Pumping from Lower Landing Lake throughout the open water season

CGS had mistakenly indicated a pumping season in the application of July-August, but pumping will not be limited to this timeframe. CGS has corrected the submission by indicating the pumping will take place during the full open water season, which extends from mid-June to mid-September, as required to replenish Nipissar Lake within the pumping volumes requested in this amendment. CIRNAC stated in the final submission that this concern has been resolved.

4.0 Construction of New Facilities

In the technical review CIRNAC indicated a concern with erosion prevention during seasonal pipe installation/removal. CGS responded informing that the Char River crossing is in place and consists of a steel carrier pipe that remains in place. Annually, the flexible pipe is fed through the carrier, not impacting the riverbanks. CIRNAC stated in their final submission that this resolves the concern.

5.0 Compliance History

CGS has been required to submit quarterly reports. This requirement was added to the licence based on the requirement from the Fisheries Act Direction set by the Department of Environment and Climate Change Canada. This direction has been fulfilled, and the quarterly reports no longer required. CIRNAC stated in their final submission that removing the quarterly report and maintaining annual reporting is acceptable.

6.0 Monitoring Program

Modifications and required updates to reflect relocation of the pumping station

CGS has requested to remove compliance point GRA-6 and add water level measurements to GRA-7. As described in table 2.1 above, there are no ongoing construction activities to impact the river, and quality monitoring and water level monitoring commitments have been made to monitor at GRA-7 on Lower Landing Lake. CIRNAC has stated that this resolves their concern within their final submission.

Additionally, CGS has committed to the submission of an updated Pumping Plan for the pumping at Lower Landing Lake. This plan will be updated as required, when pumping equipment and procedures change.

Environmental Monitoring and Quality Assurance/Quality Control Plans have been submitted for review.

7.0 Closure and Reclamation Planning

Timeline for submission of Closure and Reclamation Plan to reflect the removal of, and addition of pumping

CGS has indicated that no additional works are required. The pumping equipment at Char River was removable pipe and screen that was removed annually and has already been removed and placed at Lower Landing Lake within the sea can.

8.0 Conclusion

Based on the correspondence throughout the technical review, commitments and follow-up supplemental information provided during and after the Technical Meeting, it is understood that all concerns have been addressed, and there are no outstanding issues with the requested amendments by the interveners, with the addition of the previously discussed commitments and items included in CIRNAC's final submission. Based on this, CGS requests the Board consider the above described amendments to Type A water licence 3AM-GRA1624 as reasonable and necessary for the operations of the community water supply system and protection of the ecological environment.