





## **CITY OF IQALUIT RESPONSE TO INFORMATION FILED TO DATE 3AM-IQA1626 AMENDMENT APPLICATION**

### **INTRODUCTION**

The City of Iqaluit (the City) has applied to the Nunavut Water Board (NWB) to amend its water licence for the period 2019 to 2026 to:

- withdraw up to 500,000 cubic metres (m<sup>3</sup>) of water annually during open water season from the Apex River and pump it to Lake Geraldine; and
- increase the total amount of water allowed annually to be withdrawn from Lake Geraldine, from 1,100,000 m<sup>3</sup> to 2,000,000 m<sup>3</sup>.

The need for the amendment arose because the City annually faces a potential shortage of potable water available in its water reservoir (Lake Geraldine) during the overwinter period when the reservoir does not replenish itself from snowmelt and precipitation. The Apex Drinking Water Supply Project (the Project) proposes to transfer additional water from the Apex (Niaqunguk) River to Lake Geraldine annually during the open water season as needed to fill the reservoir prior to freeze-up. The Project is being proposed as a temporary solution until a permanent solution is implemented to supply and store water sufficient to meet the needs of the City into the future.

The Project has undergone conformity review by the Nunavut Planning Commission and Screening by the Nunavut Impact Review Board. The NIRB's screening decision report (SDR) was issued on April 16, 2019.

The City's amendment application underwent a technical review process, whereby there was an exchange of information between Crown Indigenous Relations and Northern Affairs Canada (CIRNA) and the City. Additional information was provided by the City in response to questions posed by CIRNA and Nunavut Water Board staff during the Technical Meeting held in Iqaluit on May 27, 2019. No other parties have provided written comment during these proceedings.

### **CITY OF IQALUIT RESPONSE TO CIRNA FINAL SUBMISSION JULY 15, 2019**

The City has reviewed Crown Indigenous Relations and Northern Affairs Canada (CIRNA)'s submission of July 15, 2019. The City thanks CIRNA for its engagement in the technical review of the amendment application. The City addresses each of CIRNA's topics and recommendations below:

#### **1. Drinking Water Management Plan**

During the Technical Meeting, the City summarized the various inter-related initiatives underway related to water supply and demand intended to address short and long term water supply security. Identifying and implementing long term water supply is intended to coincide with the renewal of the City's water licence in 2026. The City provided a plausible schedule for researching, designing, procuring and implementing additional water supply in relation to the term of the water licence. The City agrees with CIRNA that a plan for long term water supply will be an aspect of the City's water licence renewal application.



## 2. Contingency Plan

The Apex Drinking Water Supply Project is being proposed as a contingency to Lake Geraldine not recharging naturally prior to freeze-up in any given year. If supplementation from Apex River is needed, the total amount applied for may not be needed each year. The amount of water needed to be withdrawn from Apex River each year, if any, will depend on: (1) the amount needed to fill the reservoir; and (2) the flow available in the Apex River over the duration of the open water season.

In response to concerns raised during the screening of the Project by the NIRB, the City revised its application such that water withdrawal from the Apex River will not exceed Fisheries and Oceans Canada (DFO) guidelines for the protection of fish and fish habitat, which specify not withdrawing more than 10% of the instantaneous flow, when flows are greater than 30% of mean annual discharge (10IF/30MAD). The City also provided compiled information about historic flows in the Apex River, to relate the likelihood that the Apex River will be able to provide enough water that may be necessary to fill the reservoir, while adhering to DFO guidelines. It remains the City's view that in most years, the Apex River will provide sufficient water for supplementation, provided withdrawal can begin as soon in the season as flows allow (June), and can continue, or be completed just prior to freeze-up (October).

The City has considered additional measures that can, in combination, be taken to maximize the available overwinter water supply and/or reduce demand. The City may need to consider these on an annual, case-by-case basis. As such, this is not considered a formal Contingency Plan. The City considers these to be additional options that may or may not need to be developed further. The City is, and will continue to develop the specifics of these options over the next several months, such that they could be implemented, if needed, during the 2020 withdrawal season. Additional specific measures are being sought in 2019.

### a) Increase withdrawal rate

The City has designed a pumping and conveyance system based on a maximum withdrawal rate of 150L/s. This criterion was selected as the optimum rate of withdrawal based on a number of considerations, such as: historical flows in the river, depth of water at the pumping location, size and number of pumps required, power generation and overland conveyance distance and profile. The system will have capability to withdraw at up to 200 litres per second (L/s), though efficiency of the system declines at this rate. The City will consider withdrawing water from the Apex at rates that exceed 150 L/s, if flows allow (such as during rain events), without exceeding 10IF/30MAD.

### b) Establish and withdraw at rates that are protective of fish and fish habitat in the Apex River

Given the temporary nature of the Project (to 2026), the City's preference is to obtain water without causing permanent harm to fish and fish habitat. Based on experience gained during withdrawal from Apex River in 2018 under emergency circumstances, the City believes there may be opportunity to withdraw water from the Apex River at rates that exceed DFO guidelines (10IF/30MAD) if needed, without causing serious harm to fish. Should a situation arise where the reservoir may not likely be filled while withdrawing at 10IF/30MAD conditions, approval to exceed these rates will be sought on a case-by-case basis. The City will discuss this further with DFO should this situation arise and may need to seek



additional approval from DFO. The City has previously proposed a Fish and Fish Habitat Monitoring Program to monitor daily water levels, wetted widths, formation of isolated pools and to identify and respond to fish strandings should it be determined that withdrawal may result in potential for serious harm to fish.

c) Implement additional measures to reduce optimize supply and reduce demand

The City previously outlined measures being taken to optimize water supply and reduce demand. These measures are intended to reduce the amount of water potentially needed each year to fill the reservoir prior to winter, and to reduce overwinter consumption (drawdown) from the reservoir:

- The City will identify and address leakages in the water distribution system to reduce water losses
- The City will continue with the Waterwise campaign to encourage water conservation
- The City will consider the need to implement mandatory water conservation measures for residents and businesses

d) Implement additional temporary supply sources

The Apex River is the City's preferred supplementation location, as it is: the closest water source to the Lake Geraldine reservoir; has road access; and, is the least costly to implement. In 2018, the City also identified the "Unnamed Lake", approximately 3 km north of the Apex River as a potential additional source of water for temporary/emergency supplementation. It should be stated that this location was also identified by the Amaruq Hunters and Trappers Association during the City's consultations held with them over the past year as the preferred alternate source for water supplementation to Lake Geraldine. The City does not at this time, feel that additional sources are needed to provide alternatives to the other alternatives to Apex River supplementation as presented above during years when supplementation can occur during the entire open-water season (June to October), recognizing that this timeframe will not be available in 2019. Due to extremely low water levels and flows in Apex River and Lake Geraldine in 2019, approval to obtain additional water from Unnamed Lake in 2019 only will be sought separate to this application. Further studies of Unnamed Lake are necessary to determine if it is suitable as a long-term source of water, and these studies are underway.

The City also notes that it has been advancing designs of a desalination unit; however, this option will not be available until 2020, and based on preliminary review is very costly to implement; however, it will continue to be considered for contingency implementation.

### **3. Spill Contingency Plan**

The Spill Contingency Plan for the Project will be finalized prior to Project implementation and will be updated each year. The Spill Contingency Plan will reflect the operations of the contractor retained for the work each year, including contractor-specific personnel and contact information, evacuation routes and call-down procedures. MSDS will be included in the plan.

### **4. Monitoring and Reporting**

During supplementation as proposed, the City has committed to:

- Monitoring and recording volume of water withdrawn daily (24 hour period)



- Recording and reporting daily flows in the Apex River
- Reporting water withdrawals as they relate to flows in the Apex River on a weekly or biweekly basis as required
- Providing a summary report of supplementation activities in the Water Licence Annual Report

The City has retained the services of Water Survey Canada to install a new hydrometric station immediately upstream of the proposed pumping location. The City will obtain information from WSC for this new station and the existing station downstream 10UH002 daily for analyses. Water levels will not be recorded as long as withdrawal is maintained at 10IF/30MAD.

## **5. Long term water supply**

At the Technical Meeting, the City presented an overview of ongoing work to investigate, design and implement a long-term water supply and storage solution to supplement the Lake Geraldine reservoir. The City presented a plausible schedule such that approval for a long-term solution would be sought concurrent with the City's application to renew its water licence. As such, the City can commit to providing a final design for long-term supplementation six months prior to the expiry of the current water licence. The City intends to involve interested stakeholders in progress updates and discussions on an annual or semi-annual basis through forums such as City Council meetings and meetings with the Hunters and Trappers Association.

## **6. Sedimentation and Erosion Control**

Recording of sedimentation and erosion control measures is an aspect of the Sedimentation and Erosion Control Plan. The City will submit a report of supplementation activities to the Nunavut Water Board as part of its Water Licence Annual Report. This report can include information about in-water and sedimentation control activities conducted in association with the Project.

## **SUMMARY OF COMMITMENTS**

The City has made the following commitments during the water licence amendment process:

- Water withdrawal will not exceed 10% of instantaneous flow in the river when flows are greater than 30% of mean annual discharge
- A new hydrometric station will be installed upstream of the pumping location
- Flows and water withdrawal will be recorded daily
- A report of supplementation activities will be provided within the Water Licence Annual Report
- The City will seek from DFO approval to withdraw water at rates that exceed DFO guidelines without causing serious harm to fish.
- Withdrawal will take place during the entire open water season (as early as June and as late as October), as flows allow.
- A water balance model will be prepared each year to forecast need for supplementation of the reservoir.
- The City will implement a Spill Contingency Plan and Erosion and Sedimentation Control Plan to mitigate potential effects to water quality
- The City will screen, maintain and install water intakes to prevent entrainment or impingement of fish in accordance with DFO's Freshwater Intake end-of-Pipe Fish Screen Guideline (1995).
- The City will include Material Safety Data Sheets (MSDS) in its final Spill Contingency Plan



- Final design(s) for long term water supplementation will be submitted to the Nunavut Water Board six months prior to the expiry of the current water licence as part of its application to renew the water licence.

## **CONCLUSION**

The City looks forward to the Public Hearing on August 8-9, and will participate fully to provide the information needed by the Nunavut Water Board to conclude its proceeding on this important application to amend the City's water licence to allow supplementation of water supply from the Apex River.