



Water Resources Division  
Resource Management Directorate  
Nunavut Regional Office  
P.O. Box 100  
Iqaluit, NU X0A 0H0

Your file - Votre référence  
2AM-MRY1325

July 14, 2020

Our file - Notre référence  
CIDM# 1286790

Richard Dwyer  
Manager of Licensing  
Nunavut Water Board  
Gjoa Haven, NU X0B 1J0

Sent via email: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)

**Re: Crown-Indigenous Relations and Northern Affairs Canada Comments on City of Iqaluit 2019 Annual Report for Municipal Type A Water Licence No. 3AM-IQA1626**

Dear Mr. Dwyer,

Thank you for your May 14, 2020, invitation to interested parties to review the 2019 Annual Report submitted by The City of Iqaluit for the Municipal Type "A" Water Licence No. 3AM-IQA1635.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the report and its attachments pursuant to CIRNAC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. The results of our review are provided in the enclosed memo for the Nunavut Water Board's consideration.

If you have any questions or require further information with respect to this matter, please contact me at (867) 975-4282 or email [bridget.campbell@canada.ca](mailto:bridget.campbell@canada.ca), or Godwin Okonkwo at (867) 975-4550 or [godwin.okonkwo@canada.ca](mailto:godwin.okonkwo@canada.ca).

Regards,

Bridget Campbell  
Water Resources Coordinator, Nunavut Regional Office



## **Technical Review Memorandum**

**Date:** July 14, 2020

**To:** Richard Dwyer – Manager of Licensing, Nunavut Water Board

**From:** Bridget Campbell – Water Resources Coordinator, CIRNAC

**Subject: Crown-Indigenous Relations and Northern Affairs Canada Comments  
on City of Iqaluit 2019 Annual Report for Municipal Type A Water  
Licence No. 3AM-IQA1626**

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

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### **A. BACKGROUND**

The City of Iqaluit (City) is located in Southern Baffin Island, in the Qikiqtani Region of Nunavut. The City was awarded its current Type A Municipal Licence, 3AM-IQA1626 in June of 2016 and has amended the licence 4 times. Amendment No. 4 was awarded to the City in December, 2020, and allows the City to supplement Lake Geraldine, the City's drinking water reservoir, with water from the Apex River each spring.

Part B of the licence requires the City to submit an Annual Report every year by March 31 for the previous calendar year. This year, an extension was granted by the Nunavut Water Board (NWB) to May 1, 2020. Four reports were submitted with the Annual Report. A list of documents reviewed can be found in Section B of this memo. Table 1 outlines the subjects of recommendations. Complete comments can be found in Section C. Further references can be found in Section D.

**Table 1: Summary of Recommendations**

<b>Recommendation</b>	<b>Subject</b>
<b>R-01, R-02</b>	Lake Geraldine Dam Safety Inspection 2019: Clarifications
<b>R-03, R-04</b>	Lake Geraldine Dam Safety Inspection 2019: Outstanding Recommendations
<b>R-05</b>	Sewage Lagoon Inspection
<b>R-06</b>	Sewage Solids Disposal
<b>R-07</b>	Architectural and Structural Operation & Maintenance Manual for the Iqaluit Wastewater Treatment Plant
<b>R-08</b>	Expected Submission of Revised Plans, Manuals, and Reports
<b>R-09</b>	Volume of Landfill Effluent Discharged



## B. DOCUMENTS REVIEWED

The following table (Table 2) provides a summary of the documents submitted and the documents reviewed.

**Table 2: Documents Submitted with the 2019 Annual Report**

Document Title	Author, File No., Date
<b>Documents Reviewed by CIRNAC</b>	
City Of Iqaluit Water Licence 3AM-IQA1626 2019 Annual Water Licence Report	City of Iqaluit, 01-05-2020
Appendix A: Monitoring Reports	Caduceon Environmental Laboratories, various dates, 2019
Appendix B: Spill Reports	Government of Nunavut, Environment and Natural Resources, various dates, 2019
Appendix C: Other Reports (Lake Geraldine Dam Safety Inspection Report, Lake Geraldine Dam Investigation of Reported Ice Accumulation Supplemental Report)	Concentric Associates International Incorporated, 19-8293, 31-05-2019
Architectural and Structural Operation & Maintenance Manual for the Iqaluit Wastewater Treatment Plant	City of Iqaluit, Colliers Project Leaders, Nunami Stantec Limited, & Kudik Construction Ltd, 24-04-2020
City of Iqaluit Sewage Lagoon Operation and Maintenance Manual	Stantec Consulting Ltd., 31-03-2020
<b>Documents Not Reviewed by CIRNAC</b>	
Building Mechanical Operation & Maintenance Manual for the Iqaluit Wastewater Treatment Plant	City of Iqaluit, Colliers Project Leaders, Nunami Stantec Limited, & Kudik Construction Ltd, 24-04-2020
Process – Mechanical Operation & Maintenance Manual for the Iqaluit Wastewater Treatment Plant	City of Iqaluit, Colliers Project Leaders, Nunami Stantec Limited, & Kudik Construction Ltd, 24-04-2020



## **C. RESULTS OF REVIEW**

### **1. Lake Geraldine Dam Safety Inspection 2019: Clarifications**

#### Comment:

A Dam Safety Inspection Report was carried out in 2019 by Concentric Geoscience as is required under Part D Item 4 of Water Licence 3AM-IQA1626. This report satisfies the requirements and generally includes all relevant information. CIRNAC seeks clarity on the following two items.

Section 1.1 of the Dam Safety Inspection Report (Appendix C) describes three earth berms: the north, the south and the center berms. The rest of the report and the drawings present discussions on the south and center berms. Information with regards to the north berm is not presented. It would be prudent to provide this information for completeness and consistency purposes.

Further, it is not clear whether the anchors installed in 2005 to the gravity concrete Dam of Lake Geraldine were tested as part of the 2019 Lake Geraldine Dam Safety Inspection.

#### Recommendation:

(R-01) CIRNAC recommends that the City provide the information with regards to the north berm.

(R-02) CIRNAC recommends that the City clarify whether the anchors installed in 2005 to the gravity concrete Dam of Lake Geraldine were tested as part of the 2019 Lake Geraldine Dam Safety Inspection.

### **2. Lake Geraldine Dam Safety Inspection 2019: Outstanding Recommendations**

#### Comment:

CIRNAC concurs with the recommendations and required actions identified in the Lake Geraldine Dam Safety Inspection Report by Concentric Geoscience (Appendix C). In particular, base line mapping and implementation of a monitoring program to measure and verify through-berm leakage would seem practical.

A number of items previously recommended have been outstanding and not carried out. This is concerning particularly as the Dam Consequence Class is identified by in the Dam Safety Inspection Report, Section 3.3, as “Extreme” under the Emergency Preparedness Plan.

Further, it is not clear why a Dam Safety Review was not completed for the Lake Geraldine Dam in 2018 or 2019, as the last review occurred in 2013 and a review is



required by the licence every 5 years. All required actions to undertake the Dam Safety Review should be undertaken as soon as possible to ensure full compliance with respect to the safety of the dam.

Recommendation:

(R-03) CIRNAC recommends that the City implement the recommendations which were put forward by Concentric Geoscience, including the recommendations from previous years which are included in Concentric Geoscience's recommendations under recommendation number 5 (2019 Annual Report, Appendix C, pg. 8):

- Automated/remote monitoring equipment should be incorporated as triggers for the emergency plans and security measures.
- Records indicate that the valves within the valve chamber are in an advanced state of corrosion. Exercising and testing of the valves is recommended as the valves may not operate correctly when needed.
- New signage in conformance with the DSG's should be installed and maintained at the two access roads and around the periphery of the dam.
- To our knowledge the visual monthly inspection program has not been implemented. Inspection reports should be added to the permanent record file.

(R-04) CIRNAC recommends that the City initiate a Dam Safety Review, as soon as possible, to comply with water licence requirements.

### **3. Sewage Lagoon Inspection**

Comment:

The City does not perform a Dam Safety Inspection (DSI) each year and Dam Safety Review (DSR) every 5 years on the sewage lagoon due to the classification of the dam. Still, it is not clear if any other types of structural inspections are carried out on the sewage lagoon on a regular basis, and what issues have come up during inspections.

Inspections, including basic visual inspections, can help identify issues to prevent spills and unauthorized releases. The Dam Safety Inspection for Lake Geraldine, performed by Concentric Geoscience (Appendix C), recommends (pg. 1) "...that City staff trained in dam surveillance inspect the dam on a weekly or monthly basis to identify any conditions that might indicate a change in the dam's performance." CIRNAC would find it sensible to apply the same recommendation to the sewage lagoon performance.

Recommendation:

(R-05) CIRNAC recommends that the City provide an update for 2019, and for each following year in subsequent Annual Reports, on whether any seepage or stability issues are detected in the lagoon.



#### **4. Sewage Solids Disposal**

Comment:

On page 9 of the 2019 Annual Report, the City states that “Sludge was removed and placed within geotube containment cells. A total of 4,700 cubic metres (475 Bone Dry Tons, based on 20% solids) was removed from the sewage lagoon.” It is not clear how the City has disposed of, or plans to dispose of, the geotube containment cells that are filled with sewage sludge.

Recommendation:

(R-06) CIRNAC recommends that the City clarify the disposal method for the sludge-filled geotube containment cells.

#### **5. Architectural and Structural Operation & Maintenance Manual for the Iqaluit Wastewater Treatment Plant**

Comment:

Section 7.1 of the Architectural and Structural Operation & Maintenance Manual for the Iqaluit Wastewater Treatment Plant identifies the need for inspections of the building and/or the process train. It is not clear to which elements require inspection, how frequently they should be inspected, or by whom they should be inspected.

Recommendation:

(R-07) CIRNAC recommends that the City identify which elements require inspection and how frequently they should be inspected, including by whom they should be inspected, in the Architectural and Structural Operation & Maintenance Manual.

#### **6. Expected Submission of Revised Plans, Manuals, and Reports**

Comment:

The City has identified a number of Plans, Manuals, and Reports which are planned to be completed in 2020.

CIRNAC reminds the City to submit these plans for review before or with the submission of the 2020 Annual Report. CIRNAC will follow up with the City and the NWB regarding the review of these documents. These documents include:

- Dam Safety Management Plan (May, 2020);
- Drinking Water Management Plan (April, 2020); and
- Long-Term Water Storage Pre-Feasibility Study (Q4, 2020).



Recommendation:

(R-08) CIRNAC recommends that the City submit the plans identified in comment 6 for review before or with the submission of the 2020 Annual Report.

## **7. Volume of Landfill Effluent Discharged**

Comment:

The City has provided two water quality sample results under Section F (Monitoring Program Summary Report) of the 2019 Annual Report for Monitoring Station IQA-08: Landfill Effluent Discharge Point, as is required by the licence. The monitoring program requires that the samples be taken during times of discharge. The City notes that the samples were taken on May 30 and September 25, 2019, which indicates two discharge events took place.

Section B of the 2019 Annual Report indicates the monthly and annual quantities of any discharges from the Wastewater Treatment Facilities (Monitoring Stations IQA-02, IQA-04, and IQA-08). These items are required under Schedule B, Item b. of the licence. This section does not include information regarding the discharge volumes of the landfill effluent from the two discharge events indicated in Section F.

Recommendation:

(R-09) CIRNAC recommends that the City clarify the volume of landfill effluent discharged during each of the two discharge events in cubic metres, or clarify why these measurements are not available.

## **D. REFERENCES**

Nunavut Water Board Water Licence No. 3AM-IQA1626. City of Iqaluit. Signed by Norman Mike, Hearing Chair, Nunavut Water Board, June 17, 2016.