CITY OF IQALUIT

WATER LICENCE 3AM-IQA1626

2023 ANNUAL WATER LICENSE REPORT

May 23, 2024

EXECUTIVE SUMMARY

Under Type A Water License 3AM-IQA1626 (the License), the City of Iqaluit (the City):

- Extracts Water: From Apex River to Lake Geraldine and from Lake Geraldine for municipal use.
- Discharges Landfill Run-off: From the West 40 Landfill.
- Discharges Wastewater: From the West 40 Wastewater Treatment Plant and backup Sewage Lagoon.

The City's existing license was issued by the Nunavut Water Board (NWB) in 2016 and expires on June 16, 2026. To date, there have been seven amendments made to the License, with the following amendments being relevant to the contents of the City's 2023 Annual Report:

- Amendment No. 4 (Effective April 1, 2020)
- Amendment No. 5 (Effective March 15, 2021)
- Amendment No. 6 (Effective October 15, 2021)

This Annual Water License Report summarizes the activities conducted by the City in 2023, pursuant to the requirements stipulated in Schedule B of the License.

Monitoring Program
The City continued to perform monitoring requirements as per the City's approved Environmental Monitoring Program and Quality Assurance/Quality Control Plan (the Monitoring Plan).

Long-Term Water Supply and Storage
Qikiqtaaluk Lake (formerly Unnamed Lake) was chosen as the City's long-term water source. A water balance model of the lake was completed to validate if the water extraction volumes of Qikiqtaaluk Lake align with the long-term needs of the program. Based on the hydrological modeling results, the City continues to investigate the viability of the lake and the option of supplementing volumes with water supply from Apex River. The City is advancing in design development and is currently engaging in the technical review of the 30% design.

Once the conceptual plans for the long-term water solution are sufficiently developed, the City will provide a 30% design level submission to the Nunavut Impact Review Board (NIRB) to facilitate the project pre-screening process. Based on feedback from the pre-screening, a 70% design level submission will be provided to the Nunavut Water Board as part of the license amendment process.

Niaqunguk River (Apex River) Supplementary Pumping Program
The City executed the replenishment of the Lake Geraldine Reservoir via supplemental pumping of water from the Apex River. Pumping activities were completed between June 26, 2023, and July 13, 2023.

A total of 222,784 cubic meters of water was pumped during the supplemental pumping operations, with a maximum daily pumped volume of 15,100 cubic meters, which is less than the maximum allowable volume from the Apex River of 500,000 cubic meters as per Amendment 4 of the City's water license.

The spill elevation of 111.30 metersat the Lake Geraldine reservoir was reached four days after the conclusion of the pumping program.

Water Treatment Plant

The City assessed all known potential sources of contamination at the Water Treatment Plant, including the water infrastructure from Lake Geraldine to the outlet of its treated water reservoir. The assessment confirmed no new sources of contamination, and all existing contamination had been reasonably mitigated.

The Water Treatment Plant returned to service on April 25, 2023. As per the approved Return to Service plan, the City completed tests on the raw water and treated water, including bacteria tests, chlorine tests, and ongoing use of the S::CAN digital monitoring system to detect hydrocarbons.

Wastewater Treatment

In 2023, the City discharged approximately 1,115,913 cubic meters of effluent from the Wastewater Treatment Plant. It is also estimated that approximately 624 cubic meters of sludge was removed from the Wastewater Treatment Plant, which was deposited at the City's West 40 Landfill.

Solid Waste Management

Construction of the North 40 Landfill and Waste Transfer Station is ongoing. The 2023 scope of work included pouring the concrete foundation slab and architectural works to erect the prefabricated building. The project has begun procuring major long-lead equipment, such as the biomass boiler and conveyance systems.

The City continues to accept and manage waste at the West 40 Landfill. These operations will continue until the construction of the new landfill and waste transfer station is completed in Q4-2024 and the City's decommissioning plan is submitted and accepted by the Board one year before the planned closure.

In 2023, about 33,037 cubic meters of waste was deposited at the West 40 Landfill.

ᐱᓕᕆᐊᖏᓂᐊᖅᑐᒍᑦ ᐱᓪᓗᐊᑕᐃᓕᑦ

ᐊᑐᖅᑐᑎᒃ ᐃᒪᐃᓪᑐᒥᒃ ᐃᒪᓕᕆᔨᖏᓐᓇᐅᑎᒥᒃ ᓪᓚᕐᓂᒃ (Type A Water License 3AM-IQA1626) (ᓪᓚᕐᓂ), ᓄᓇᓕᐸᐅᕐᓴᐃᓪᑦ ᐃᖅᑲᓇᐃᓪᑦ (ᓄᓇᓕᐸᐅᕐᓴᖅᓯᑦ):

- ᐃᒪᐃᕐᐃᐊᓪᑐᑐᑎᓄᑦ ᓯᐊᖏᓐᓄᐅᑎᓄᑦ ᑯᓴᒥᒃ ᐃᒥᖅᑕᐃᓴᒪᒍᑦ ᐊᓴᒪ ᐃᒥᖅᑕᐃᓴᕐᒥᒃ ᓄᓇᓕᖓᓄᑦ ᐊᑐᖅᑕᐅᔪᓕᕐᒥᒃ;
- ᐊᑦᓯᐃᓴᕐᒥᒃ ᑭᓇᐯᓂᒃ ᐃᒪᐃᕐᐃᐊᓪᑐᑐᑎᓄᑦ ᑯᓕᐊᓕᐊᒥ ᐊᑦᓯᐃᓴᕐᒥ; ᐊᓴᒪ
- ᐃᒥᑉᐳᔨᒥᒃ ᐃᑎᑕᓕᕐᒥᒃ ᑯᓕᐊᓕᐊᒥ ᐃᒥᑉᐳᔨᒥᒃ ᐃᑎᑕᓕᕐᒥᒃ ᓴᓗᓴᒪᓕᕐᐃᐃᓴᕐᒥᒃ ᐊᓴᒪ ᑭᖓᔪᖏᐃᐅᑎᐸᓪᓕᐊᑐᑎᓄᑦ ᑭᓇᐯᓇᓕᓗᑦ ᑭᓇᐯᓂᓕᓗᑦ.

ᓄᓇᓕᐸᐅᖅᓯᑦ ᐊᑐᖅᑕᖓᓕᑦ ᓪᓚᕐᓂ ᐱᖅᐅᓪᓕᐅᖏᓐᓇᖅᓱᖅ ᐅᑯᓇᖅᖓᓕᑦ ᓄᓇᕗᑦ ᐃᒪᓕᕆᓂᖏᒃ ᑲᑎᒪᔨᖓᔪᓂᑦ (NWB) 2016-ᖃᐅᔨᓪᓗᒍ ᐊᓴᒪ ᐃᓱᓕᓴᐃᖏᖅᑐᑐᓂ ᐋᓂ 16, 2026. ᐃᓚᓇᒍᑦ ᐅᓪᓗᖏᐅᑎᒍᑦ, 7-ᕿᖅᑎᖅᑐᑎᒃ ᐊᓯᔨᖅᑕᐅᓯᒪᓕᖅᑐᑦ ᑎᑎᕿᖏᓚᐅᑦ ᓪᓚᕿᒥ, ᐅᑯᐊ ᐊᓯᔨᐅᑎᐅᓯᒪᔪᓕᑎᒃ ᐊᑐᑎᖃᖅᑕᑦ ᐃᓗᓕᖓᔪᓂᓕᑦ ᓄᓇᓕᐸᐅᖅᓯᑦ 2023 ᐊᖏᕐᒍᒍᒪᔪᖏᐅᑎᓄᑦ ᐅᓂᒃᑲᓕᑕᓂᖓᓂᓂ:

- **ᐊᓯᔨᐅᑎᑎ ᓱᓴᐅᑎᓕᒃ 4** – ᐊᑐᓯᕆᐊᓕᐅᖅᑐᖅ ᐃᐳᑭ 1, 2020
- **ᐊᓯᔨᐅᑎᑎ ᓱᓴᐅᑎᓕᒃ 5** – ᐊᑐᓯᕆᐊᓕᐅᖅᑐᖅ ᐊᖏᓀ 15, 2021
- **ᐊᓯᔨᐅᑎᑎ ᓱᓴᐅᑎᓕᒃ 6** – ᐊᑐᓯᕆᐊᓕᐅᖅᑐᖅ ᐊᒃᑐᐸ 15, 2021

ᐅᓇ ᐊᖏᕐᒍᒍᒪᔪᖏᐅᑎᓄᑦ ᐃᒥᓕᓵᔨᓂ ᓪᓚᕐᓂᒃ ᐅᓂᒃᑲᓕᐊᖓᓕᔨᖅ ᐱᓪᓗᐊᑕᖓᓂᓂᒃ ᖃᓄᐃᓕᓕᐅᑦᑎᐅᓯᒪᔪᓕᑦ ᓄᓇᓕᐸᐅᖅᓯᒃᓴᓂᓕᑦ ᐊᖏᕐᒍᒍᒪᔪᖏᐅᑎᓄᑦ 2023, ᒪᓕᓪᑐᑎᓪᑦ ᐊᑐᖅᑕᐅᖏᓐᓄᐅᑎᓯᒪᔪᓕᑦ ᑎᑎᕿᖏᓚᐅᑎᓯᒪᔪᓕᑦ ᐃᓕᓴᖅᓂ B ᓪᓚᕐᓂᐅᕐᓴᐅᑦ.

ᖃᐅᔨᓴᐃᓐᓇᓂᖏᓪᒍᑦ ᐱᓕᕆᐊᑦᓴᖅ

ᓄᓇᓕᐸᐅᖅᓯᑦ ᓂᓕ ᖃᐅᔨᓴᐃᓐᓇᐸᓪᑐᑦ ᒪᓕᓪᑐᑎᒃ ᐊᑐᑕᐊᓕᓐᓂᒃ ᒪᓕᓪᑐᑑ ᓄᓇᓕᐸᐅᖅᓯᑦ ᐊᖏᕐᓂᑕᐅᔨᓕᖏᓂᖏᓪᓗᒍᑦ ᐊᐸᒃᓴᐅᑎᒃ ᖃᐅᔨᓴᐃᓐᓇᐅᓂᖏᓪᒍᑦ ᐱᓕᕆᐊᑦᓴᖅᓯᒪᓂᖅ ᐃᒥᐅᐸᑦ ᐊᓗᓇᐃᖅᐃᓂᖏᓪᓗᒍᑦ/ᖃᐅᔨᑦᓄᓇᑑ ᐊᐅᓪᓚᓂᓕᒃᑐᒃ ᐸᑦᓇᐅᑎᒥᒃ (ᖃᐅᔨᓴᐃᓐᓇᐅᓂᖏᓪᒍᑦ ᐸᑦᓇᐅᑎᑎ).

ᐊᑯᓂᐅᔪᒍᑦ ᐃᒥᖃᖅᑎᑦᓂᓂᖅ ᐊᖏᓪ ᐃᒥᐅᑯᖃᖅᓴᖅ

ᖁᑭᖅᑕᓪᓕᐅ ᑕᓂᖅ (ᖃᐅᔨᓴᒪᓕᐅᓪᓕᐅᖅᑐᖅ ᐊᑎᖃᖅᑎᑦᑕᖅ ᑕᓂᖅ) ᓂᕈᐊᒪᐅᓪᓕᐅᖅᑐᖅ ᓄᓇᓕᐸᐅᖅᓯᑯᓂᓕᑦ ᐊᑯᓂᐅᔪᒍᑦ. ᐃᒥᐅᐸ ᖃᓄᐃᓕᓂᖅᓱᓂᓕ ᖃᐅᔨᓴᐃᓐᓇᐅᑎᓄᑦ ᑕᓂᖅ ᐱᓕᕆᔨᖅᑎᑦᓂᖅ ᐃᓕᓴᖅᓂᓕᑦ ᐊᓗᓇᐃᖅᐃᓂᖏᓪᓗᒍᑦ ᐊᐅᓪᓚᓂᓕᒃᑐᒃ ᐱᖁᔭᓕᐅᖅᑐᖅ ᐃᒥᐅᑯᖃᖅᓴᖅᓯᒪᓂᖅ ᐊᑐᑕᐊᓕᓐᓂᒃ ᐱᖁᔭᖅᑕᐅᓕᖅᑐᖅ, ᓄᓇᓕᐸᐅᖅᓯᑯᓂᓕᑦ ᖃᐅᔨᓴᐃᓐᓇᐅᓂᖏᓪᓗᒍᑦ ᐊᑐᑕᐊᓕᓐᓂᒃ ᐱᖁᔭᓕᐅᖅᑐᖅᓯᒪᓂᖅ ᐊᑐᖅᑕᐅᓕᖅᑐᖅ ᐱᖁᔭᖅᑕᐅᓕᖅᑐᖅ ᐊᓗᓇᐃᖅᐃᓂᖏᓪᓗᒍᑦ ᐊᐅᓪᓚᓂᓕᒃᑐᒃ

ᐱᓕᕆᐊᖃᖅᐸᑦᓕᐊᔪᑦ ᓯᓇᑐᐃᓐᓇᐃᑦ ᐁᖅᑭᑦᓯᒪᑦᓯᐊᕆᐊᖃᖅᓴᓂᖅᓗᓂᑦ ᐱᓕᕆᔨᔪᑎᖅᑭᓐᓂᖅ ᖃᑎᖅᑕᐊᖅᑐᑎᒃ ᐱᓴᓰᖅᑕᐅᓯᒪᓂᖅᑭᓐᓂᖅ 30%-ᓴᐱᒃ ᖃᓄᖅ ᐱᓇᓴᐅᓂᐊᓂᖅᓱᓄᒃ.

ᐃᓯᒪᑎᓴᐅᔪᑦ ᖃᓄᖅ ᐱᓇᓴᐅᑎᓴᓂᖅᓱᓄᓄᑦ <ᑦᓇᐅᑎᐅᔪᑦ ᐊᑯᓂᐅᔪᒧᑦ ᐃᒥᖅᑎᑦᓯᔨᔪᑎᐅᓂᐊᖅᑐᑦ ᓇᓴᒥᓂᐅᓕᖅᐸᑕ ᐱᓇᓴᐅᓯᒪᓂᖅᑭᓐᓂ, ᓄᓇᓕᐸᐅᓴᑯᑦ ᐱᑎᑦᓯᑎᓴᖅᑐᑦ ᐱᓴᓰᑦᓯᒪᓂᖅᑭᓐᓂᖅ 30%-ᓴᐱᒃ ᖃᓄᖅ ᐱᓇᓴᐅᓂᐊᓂᖅᓱᓄᒃ ᓄᓇᕗᑦ ᐱᓂᕆᔨᖅᑐᑦ ᐊᑐᖅᑕᐅᓂᖅᓱᓄᓂᑦ ᖃᒥᑦᑕᐃᓄᑦ (NIRB) ᐊᐅᓪᓚᑦᓯᐊᐅᓗᑎᒃ ᐱᓕᕆᐊᑦᓴᐅᐸᑦ ᓯᐅᓂᐊᔪᑦ ᖃᐅᔨᓴᐅᑎᓂᒃ ᐅᐸᓗᖅᓱᓄᒃ ᐅᐸᓗᖅᑐᒥᒃ. ᒪᓕᓪᓗᑎᑦ ᐅᖃᐅᓯᐅᓪᓗᖅᑐᑦ ᓯᐅᓂᐊᔪᑦ ᖃᐅᔨᓴᐅᑎᓂᒃ, 70%-ᓴᐱᒃ ᖃᓄᖅ ᐱᓇᓴᐅᓂᐊᓂᖅᓱᓄᒃ ᑐᓂᓴᐅᓪᓗᖅᑐᑦ ᓄᓇᖅᑐᑦ ᐃᒪᓕᕆᓂᖅᑎᒃ ᑲᑎᒪᔨᐅᓗᑎᒃ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ.

ᓂᐊᖅᑐᑦ ᐊᓪᓚᑎᓴᐃᐅᓕᒃ (ᓂᐊᖅᑐᑦᓴᐃᑎᐅᓕᒃ ᑲᓚᑎ) ᐃᒥᖅᑎᑦ ᒥᑦᓗᐊᖅᓂᖅᑎᑦ ᐃᒥᖅᑕᐃᓚᒪᓕᒃ ᐱᓕᕆᐊᖅᓴᖅ
ᓄᓇᓕᐸᐅᑦᓯᑯᑦ ᐱᓕᕆᐊᖅᑲᓕᐅᖅᑐᑦ ᐃᒪᓚᐃᓂᖅᑎᑦ ᐃᒥᖅᑕᐃᓚᒪᑎᑦ ᐃᓚᖅᓴᐃᓐᓇᓂᑦ ᐊᑐᖅᑐᒥᒃ ᒥᑦᓗᐊᖅᑕᒪᓂᑦ ᒥᑦᓗᐊᖅᑐᓂᑦ ᐃᒥᖅᑎᑦ ᓂᐊᖅᑐᑦᓴᐃᑎᐅᓕᒃ ᑲᓚᑎ. ᒥᑦᓗᐊᖅᑐᑦᓯᐅᑦ ᐱᓴᓰᖅᑕᐅᓯᒪᓂᖅᑭᓐᓂᖅ ᐃᓚᖅᓴᐃᓐᓇᓂᑦ ᐊᐅᓪᓚᑦᓯᐊᐅᓗᑎᒃ ᐃᓚᖅᓴᐃᓐᓇᓂᑦ 26, 2023, ᐊᓚᒪ ᔪᓪᓚᐃ 13, 2023.

ᑲᑎᑦᑐᑦ 222,784 ᑭᐸᒃᓵᓂᖅᑐᑦ ᑭᑕᐃᑦ ᐃᒥᖅᑎᑦ ᒥᑦᓗᐊᖅᑕᐅᓪᓚᐅᖅᑐᑦ ᐊᐅᓪᓚᑦᓯᑎᑦᓯᒪᓂᑦ ᒥᑦᓗᐊᕆᓂᖅᑎᑦ ᐃᒥᖅᑎᑦ, ᐅᑦᓗᖅ ᐊᑕᐅᓯᖅᒥ (1) ᒥᑦᓗᐊᖅᓯᔪᕐᓂᐅᓗᑎᒃ ᐃᓚᓐᓇᐃᑦ 15,100 ᑭᐸᒃᓵᓂᖅᑐᑦ ᑭᑕᐃᑦ, ᒥᑭᓂᖅᑐᓗᓂ ᐊᖏᓪᓕᖏᓐᓇᖅᑎᑕᐅᔪᑦ ᐃᓚᐃᓴᐃᔪᓐᓇᖅᓱᓂᖏᓐᓂᒃ ᓂᐊᖅᑐᓕᕐᓂᖅᑐᒃ ᐃᓚᓐᓇᐃᑦ 500,000 ᑭᐸᒃᓵᓂᖅᑐᑦ ᑭᑕᐃᑦ ᒪᓕᓪᓂᖅᑐᑦ ᐊᓯᔨᐅᑎᐅᐅᓯᒪᔪᑦ 4 ᐅᐳᖏᓐ ᓄᓇᓕᐸᐅᓴᑯᓐᓂᖅ ᐃᓚᓕᓪᔪᓐᓇᐅᑎ ᓕᐃᓴᖏᓐᒧᑦ.
ᑯᐃᐃᖏᑕ >ᖅᑐᓂᖏᓐ, 111.30 ᑭᑕᐃᑦ ᐃᒥᖅᑕᖅᑲᐅᐸ, ᑎᑭᑕᐅᓕᐅᖅᑐᑲᖅ ᐅᓪᓗᓂ ᑎᓴᒪᓂ (4) ᐃᓯᓕᓕᐅᖅᑎᓪᓗᒍ ᒥᓪᓗᐊᖅᓂᖅᒧᑦ ᐱᓕᕆᐊᑦᓴᖅ.

ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᑦ
ᓄᓇᓕᐸᐅᓴᑯᑯᓐᓂᖅ ᖃᐅᔨᓴᖅᑕᐅᓕᐅᖅᑐᑦ ᖃᐅᔨᓕᓴᐅᔪᐃᓐᓇᐅᔪᓂᑦ ᓯᑭᓐᓇᖅᑐᖃᖅᑐᑦ ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓚᒥ ᐱᖃᓯᐅᑦᓴᐅᓗᓂᑎᒃ ᐃᒥᓪᓚᑦᓯᐊᐅᓗᑎᒃ ᐃᒥᖅᑕᐃᓚᒪᑎᑦ ᓯᓚᑖᓂᖅ ᓴᓪᒪᒪᖅᓯᒪᓂᖅᑭᓐᓂᖅ ᐃᒥᖅᑎᑦ ᐃᖃᓗᐃᑦ. ᖃᐅᔨᓴᐅᔪᑦ ᖃᐅᔨᓴᐅᑎᑯᓯᑦ ᓇᓗᓇᐃᔪᓯᓚᐅᖅᑐᑦ ᓄᑖᓂᒃ ᓯᓚᐃᐸᓇᖅᑐᖃᖅᑐᑦ ᓇᓂᓯᓚᐅᖅᑐᒥᒃ ᐊᒻᒪ ᐃᓕᓴᕐᓇᖅᑐᒃ ᓯᓚᐃᐸᓇᖅᑐᖃᖅᑐᑦ ᐊᓪᓚᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓪᓚᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ.

ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓚᒥ ᐅᑎᖅᑎᑕᐅᓕᐅᖅᑐᑦ ᐱᐅᓯᒪᑦ ᐱᓵᓯᓯᕐᓴᐅᑕᐅᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑕᐃᓚᒪᑎᑦ ᓯᓚᑖᓂᖅ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓪᓚᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ.

ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓚᒥ ᐅᑎᖅᑎᑕᐅᓕᐅᖅᑐᑦ ᐱᐅᓯᒪᑦ ᐱᓵᓯᓯᕐᓴᐅᑕᐅᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑕᐃᓚᒪᑎᑦ ᓯᓚᑖᓂᖅ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓪᓚᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ.

ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓚᒥ ᐅᑎᖅᑎᑕᐅᓕᐅᖅᑐᑦ ᐱᐅᓯᒪᑦ ᐱᓵᓯᓯᕐᓴᐅᑕᐅᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑕᐃᓚᒪᑎᑦ ᓯᓚᑖᓂᖅ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓪᓚᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ.

ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓚᒥ ᐅᑎᖅᑎᑕᐅᓕᐅᖅᑐᑦ ᐱᐅᓯᒪᑦ ᐱᓵᓯᓯᕐᓴᐅᑕᐅᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑎᑦ ᓴᓗᒪᖅᓴᐃᐃᓕᓴᐅᓗᓂᑎᒃ ᐃᒥᖅᑕᐃᓚᒪᑎᑦ ᓯᓚᑖᓂᖅ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓪᓚᖅᑐᑦ ᐃᓕᓴᐅᓪᓗᖅᑐᑦ ᐱᓕᕆᔨᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ ᐊᓯᔨᐅᑎ ᐅᐸᓚᕐᓇᐅᓗᖅᑐᑦ.

ᐃᒥᑉᔪᒥᐅᑦ ᐃᒋᑕᖅᓯᒥᐅᑦ ᓴᓗᒪᖅᓇᐃᕕᖅ

2023-ᒥ, ᓄᓇᓕᐸᐅᓴᐅᔨᓂᐅᕐᓗᑦ ᐃᒪᐃᑎᕐᓯᓚᐅᖅᑐᑦ ᐃᒪᓐᓇᓕᓗᐊᓂᐅᑦ 1,115,913 ᑭᐸᑦᓴᓕᖅᑐᑦ ᒥᑕᓂᐅᑦ ᑭᐅᓂᒥᓵᖅᑐᑦ ᐃᒥᑉᔪᒥᐅᑦ ᐃᒋᑕᖅᓯᒥᐅᑦ ᓴᓗᒪᖅᓇᐃᕕᒪᒥᐅᑦ. ᓇᓚᐅᑕᒻᒧᑕᐅᓯᒪᔪᓂᐅᑦ ᐃᒪᓐᓇᓂᐅᑦ 624 ᑭᐸᑦᓴᓕᖅᑐᑦ ᒥᑕᓂᐅᑦ ᐃᓱᐊᑎᕐᓯᒪᓂᖓᓂᐅᑦ ᐋᓴᐃᓚᐅᖅᑐᑦ ᐃᒥᑉᔪᒥᐅᑦ ᐃᒋᑕᖅᓯᒥᐅᑦ ᓴᓗᒪᖅᓇᐃᕕᒪᒥᐅᑦ, ᐃᒋᑕᐅᓚᐅᖅᑐᓂᐅᑦ ᓄᓇᓕᐸᐅᓴᐅᔨᓂᐅᑦ ᑯᓚᖓᑕᐅᖅᑐᓂ ᐊᑐᓕᖓᑎᒥ.

ᑕᖅᑭᓚᓂᐅᑦ ᓴᓂᓂᐅᑦ ᐊᐅᓚᑦᔪᓂᖅ

ᓴᓇᓴᐅᓭᓚᐊᓂᖅᓱᒃ ᐅᐊᓂᓇ 40-ᒥ ᐊᑦᔪᕕᖅᓴᖅ ᐊᒪᒪ ᓴᓂᓚᓇᖏᕕᖅᓴᖅ ᑲᔪᔨᖅ ᓱᓚ. 2023-ᒥ ᐱᓚᓇᐊᖅᓴᐅᑉ ᐃᓗᓚᖅᑭᓂᓂ ᐱᖅᔨᐅᓴᓚᐅᖅᑐᑦ ᖃᔨᐊᖅᑕᖅᑐᒥᐅᑦ ᐊᓚᓚᕋᓚᐅᖅᑕᐅᓂᖓᒃ ᐊᒪᒪ ᐃᓚᓗᓚᐊᖏᓭᓚᐊᔨᑦ ᐱᓚᓇᐊᖏᓗᑎᐅᑦ ᐋᓚᑭᐹᑦᑕᐅᓗᓂ ᓴᓇᔨᒪᔨᓇᖅᑐᑦ ᐃᓚᓗᓕᓴᑦ. ᐱᓚᓇᐊᓕᓴᖅ ᐱᑎᐊᖅᑎᓕᔨᓕᖅᑐᖅ ᓂᐅᕆᐊᖏᓭᓚᐊᓂᖅᑐᓚᓂ ᓄᓇᔨᒪᔨᓇᖅᑐᑦ ᐃᓚᓗᓕᓴᑦ. ᐱᓚᓇᐊᓕᓴᖅ ᐱᑎᐊᖅᑎᓕᔨᓕᖅᑐᖅ ᓂᐅᕆᐊᖏᓭᓚᐊᓂᖅᑐᓚᓂ ᐃᓚᓗᓕᓴᑦ ᐊᒪᒪ ᐊᐅᓚᓕᔨᑦ ᓴᓂᓂᐅᑦ ᐱᓚᓇᐊᖏᓗᑎᐅᑦ ᐱᓚᓇᐊᖏᓗᑎᓕᖅᑐᖅ ᐅᓇᓂᔨᓂᔪᑎᓕᖅᑐᖅ ᐃᒥᑉᔪᒥᐅᑦ ᐊᒪᒪ ᐊᐅᓚᓕᔨᑦ ᓴᓂᓂᐅᑦ.

ᓄᓇᓕᐸᐅᓴᐅᔨᓂᐅᕐᓗᑦ ᓱᓚ ᐃᒥᓂᔪᐃᐅᓭᓂᓗᑦ ᐊᒪᒪ ᐊᐅᓚᓂᔪᓭᓂᓗᑎᐅᑦ ᓴᓂᓂᐅᑦ ᐱᓚᓇᐊᖏᓗᑎᐅᑦ ᐊᑦᔪᕕᖅᑎᒥ, ᑕᒪᓴᐱᓕᖅᑐᑦ ᐊᐅᓚᓕᔨᑦ ᓴᓇᓕᐸᐅᓴᐅᔨᓂᐅᑦ ᐃᓚᓗᓕᓴᑦ ᐊᒪᒪ ᐊᐅᓚᓕᔨᑦ ᓴᓂᓂᐅᑦ ᐱᓚᓇᐊᖏᓗᑎᐅᑦ ᐊᑦᔪᕕᖅᑎᒥ ᓱᓚ ᐃᒥᓂᔪᐃᐅᓭᓂᓗᑎᐅᑦ ᓄᓇᓕᐸᐅᓴᐅᔨᓂᐅᑦ ᐃᒥᑉᔪᒥᐅᑦ ᐊᑦᔪᕕᖅᑎᒥ ᐊᒪᒪ ᐊᐅᓚᓕᔨᑦ ᓴᓂᓂᐅᑦ ᐱᓚᓇᐊᖏᓗᑎᐅᑦ ᐱᓚᓇᐊᖏᓗᑎᓕᖅᑐᖅ ᐃᒥᑉᔪᒥᐅᑦ

INTRODUCTION

In June 2016, the City of Iqaluit (the City) was issued a Water License number 3AM-IQA1626 (the License) by the Nunavut Water Board (NWB). The license was issued for a ten-year period concluding in June 2026.

A requirement of the License is an annual report due March 31 of each year, summarizing activities governed by the License for the previous calendar year. The City was granted an extension on the submission of the 2023 Annual Report until May 23, 2024. In accordance with Schedule B of the Water License, this Annual Water License Report summarizes the activities conducted by the City of Iqaluit in 2023.

ANALYSIS

A. The monthly and annual quantities in cubic meters of fresh water withdrawn from the Lake Geraldine Reservoir (Monitoring Station No. IQA-01).

Table 1 summarizes the estimated monthly and annual quantities of water drawn from Lake Geraldine, the City of Iqaluit's raw water source. The total water usage for 2023 was 1,297,561 cubic meters, which is below the maximum allowable withdrawal allowance of 2,000,000 cubic meters (as per Amendment No. 4)

Table 1 2023 Raw Water Drawn from Lake Geraldine Reservoir

Month	Volume (m^3)
January	104,483
February	125,223
March	121,618
April	117,084
May	116,302
June	104,966
July	97,303
August	106,310
September	105,085
October	109,528
November	96,779
December	92,880
Total	**1,297,561**

B. The monthly and annual quantities in cubic meters of any discharges from the Wastewater Treatment Facilities (Monitoring Stations No. IQA-02, IQA-04, IQA-08).

Effluent was discharged from the Sewage Lagoon to Frobisher Bay (Station ID IQA-02) between May 31, 2023 and June 16, 2023.

A total volume of 1,115,913 cubic metres of effluent was discharged from the City's WWTP to Frobisher Bay (Station ID IQA-04) in 2023. A summary of this is presented in Table 2.

Table 2 IQA-04 – Effluent Discharge from the WWTP in 2023

Month	Volume (m^3)
January	100,258
February	97,232
March	112,641
April	70,357
May	88,914
June	107,975
July	88,914
August	83,378
September	85,363
October	93,601
November	94,229
December	93,052
Total	**1,115,913**

A total volume of 4,429 cubic metres of effluent was discharged from West 40 Landfill Pond #2 to the environment (Station ID IQA-08). The effluent was discharged from Pond #2 to the environment between September 21, 2023 to September 28, 2023. Testing was completed at the start, middle and towards the end of the discharge period.

Please refer to Table 5 for test IDs for the quality monitoring conducted at the specified stations.

C. Reports generated from Dam Safety Inspections and Dam Safety Reviews and proposed actions to address issues identified and/or updates on continuing actions to address issues.

The City undertook Dam Safety Inspections (DSI) in 2023, as per requirements of the Canadian Dam Association (CDA) *Dam Safety Guidelines*. Four (4) separate

inspections were conducted between June and October 2023. The requirement calls for a DSR to be executed every five (5) years as per CDA guidelines.

Details of the DSI's are highlighted below.

Lake Geraldine Dam Safety Inspection

Concentric Associates International Inc. was retained to conduct a Dam Safety Inspection in 2023. Four (4) inspections were completed **June 8, 2023**, **July 24, 2023**, **August 24, 2023**, and **October 4, 2023**. The purpose of the DSI is to help the City identify any visual changes in the dam's condition, identify any new concerns, and make recommendations on maintenance, repairs, or further investigations.

The DSI produced the following recommendations:

1. Items deemed to be of an immediate need include:
    a. Removal of the contaminated soil around the base of the hydro pole adjacent to the south berm.
    b. Removal and replacement of the contaminated soil atop the center and north berms. The contractor undertaking the 2022 dam repairs has been directed to complete this work.
    c. New rip-rap material should be installed within the upstream face of the north and center berms before the reservoir is re-filled. This work should be scheduled for the spring of 2024.
    d. Minor work will be required to repair erosion damage within the north access road and new steel culverts will need to be installed at the two locations where erosion is most active.
    e. Reinstate the cap on the piezometer at the South end of the spillway.
    f. The two sink holes observed on the top of the center berm should be excavated and examined to assess the depth of the sink hole after which the excavated area should be refilled and compacted in 12" lifts. Experts should be present to identify the possible cause and record the depth, size and potential impact on the berm.
    g. Outstanding deficiencies remaining to be corrected by Nunavut Excavation should be completed no later than the 2nd week of October 2023.
    h. The depressions at the base of the upstream face of the center and north berms should be repaired in the spring of 2024 when the water level is low.

2. Updating of the permanent record file and its storage in a central location with an index that documents the date and contents of all records. The permanent record file needs to include:
    a. As-built drawings and specification for work undertaken at the dam.
    b. Weekly/monthly inspections completed by City staff.
    c. Dam Safety Inspections and Dam Safety Reviews generated by third parties on behalf of the City of Iqaluit.
    d. All maintenance records.
    e. Correspondence with regulatory agencies.
    f. Dam operation, maintenance, and surveillance documents.

   g. Reports and documentation generated by third parties on behalf of the City of Iqaluit.
3. Implement a public awareness program to educate and inform the public that:
   a. The dam and earthen berms are a no trespass area.
   b. Dog walkers should not allow their pets to travel atop and across the earthen berms due to the risk of (dog) fecal matter contamination of the potable water supply.
   c. ATV and skidoos should not be traveling atop the berms and across Lake Geraldine
4. The installation of video surveillance should be considered in the future.
5. Exercising and testing of the valves within the valve chamber is required as part of preventative measures. The condition of the valves within the valve chamber at the base of the dam was previously identified as being in an advanced state of corrosion. No maintenance or testing has been completed on the controls valve in the last 10+ years. There is a significant potential for the valves to fail and not operate correctly when needed in an emergency. A study to address this issue is currently underway.
6. Underwater survey of the concrete dam and spillway in 2024.
7. Undertake a test opening on the downstream side of the concrete dam and center berm in late January – early February 2024 to ascertain the source of the water that forms large ice sheets within the valley in the winter months.
8. Concentric conducted a delamination survey of the downstream elevation of the concrete dam on October 27, 2022, and subsequently issued a report of our findings and recommendations. Due to the minor delamination areas identified, a localized repair program should be conducted in 2025.
9. Repair of cracks within the concrete dam, this work is tentatively scheduled for summer 2024.
10. Repair of spalled concrete within the concrete dam, this work is tentatively scheduled for summer 2024.
11. The protective galvanized metal enclosure installed over the pipeline from the dam to the water treatment plant should be re-instated.
12. The metal posts/markers installed along the north side of the south access road should be re-instated.
13. The aggregate stockpiles maintained at the west side of the north berm should be replenished.
14. The installation of video surveillance should be considered with a scheduled implementation in the next 5 years.
15. The north and south access roads should be regraded and eroded material replaced in the spring of 2024.
16. The rip-rap material in the spillway should be re-distributed to provide cover at the base of the spillway.
17. The displaced rip-rap material at the south end of the south berm should be reinstated.

18. Damaged and deteriorated sealant material should be replaced in 2024. It may be necessary to install a (removable) sheet metal panel over the horizontal expansion joint to protect it against damage from ravens.
19. One sink hole was observed within the south access road that leads to the southern berm. The sink hole should be excavated area should be refilled and compacted in 12" lifts. We also recommend Concentric be present to identify the possible cause and record the depth, size, and potential impact on the berm.

A copy of the Dam Safety Reports are appended in **Appendix A** of this report.

D. The monthly and annual quantities in cubic metres of sludge removed from the Wastewater Treatment Facility.

The total amount of sludge removed from the Wastwater Treatment Plant equates to approximately 624 cubic meters annually.

The City utilizes trailers of the same capacity to transport sludge from the Wastewater Treatment Plant (WWTP) to the West 40 Landfill. The trailer is equipped with a capacity of 3 cubic meters, so about 12 cubic meters of sludge is taken weekly from the WWTP. This generates an average monthly volume of 48 cubic meters for a 4-week month and 60 cubic meters for a 5-week month, as outlined in Table 3 below.

Table 3 Sludge removed from the WWTP Treatment Plant (2023)

Month	Volume (m^3)
January	48
February	48
March	48
April	60
May	48
June	48
July	60
August	48
September	48
October	60
November	48
December	60
Total	**624**

Please refer to Table 5 for the corresponding test ID for the testing conducted on the sludge. Due to a staffing resource shortage, the City was unable to complete

the regular sludge characterization according to the testing frequency specified in Schedule I, Table 2 of the Water License. The sludge test reported in Table 5 was completed in December 2023. The City is committed to fulfilling the requirements of the Water License and ensuring that the operation of the WWTP meets the required environmental standards. It is actively working towards training current employees to perform the necessary sludge characterization tasks and investigating the utilization of automated/semi-automated processes to improve testing efficiency.

E. The monthly and annual quantities of waste disposed at the West 40 Landfill.

A total of 33,037 cubic meters of waste is disposed annually at the West 40 Landfill.

The survey and assessment of airspace consumption of the West 40 Landfill was completed by the City through an external consultant AECOM. The airspace consumption compares the waste surface and includes deposited waste and cover soil placement.

Table 4 summarizes the estimated monthly and annual quantities of waste deposited at the West 40 Landfill including the volume of waste transported by municipal garbage trucks.

Table 4 Waste deposited at the West 40 Landfill (2023)

Month	Volume (m^3)
January	2130
February	2363
March	2506
April	2734
May	3061
June	3344
July	2627
August	2629
September	3105
October	3075
November	2951
December	2512
Total	**33,037**

F. A summary report which includes all data and information generated under the Monitoring Program, including the QA/QC program, in electronic and printed formats acceptable to the Board.

In 2023, the City continued testing procedures as described in the City's Type A Water License 3AM-IQA1626, and Environmental Monitoring Program and Quality Assurance/Quality Control Plan. Table 5 lists all samples that were taken in 2023.

The complete monitoring results are provided in **Appendix B and Appendix E**.

Table 5 Summary of 2023 Sampling Conducted

Date	Test	Station ID	Sample Name	Lab Sample ID
30-Jan-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	B23-01532-1 B23-01532-2 B23-01532-3 B23-01532-4
15-Feb-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	B23-01982-1 B23-01982-2 B23-01982-3 B23-01982-4
03-Mar-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	B23-02319-1 B23-02319 -2 B23-02319 -3 B23-02319 -4
12-Apr-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23-007042-1 23-007042-2 23-007042-3 23-007042-4
17-May-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23-009154-1 23-009154-2 23-009154-3 23-009154-4
15-Jun-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23-013193-1 23-013193-2 23-013193-3 23- 013193 -4
25-July-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23- 018774 –1 23- 018774 –2 23- 018774 –3 23- 018774 -4
23-Aug-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23-022291-1 23-022291-2 23-022291-3 23-022291-4

Date	Test	Station ID	Sample Name	Lab Sample ID
21-Sept-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23-025701 –1 23-025701 -2 23-025701 -3 23-025701 -4
22-Nov-2023	A	IQA-01	WTP Raw Water and Potable WTP Raw Water and Potable (Total)	23-033021-1 23-033021-2 23-033021-3 23- 033021-4
31-May-2023	F	IQA-02	Sewage Lagoon (Before Decant)	23-012468-1
12- Jun-2023	F	IQA-02	Sewage Lagoon (Mid Decant)	23-013794-1
16-Jun-2023	F	IQA-02	Sewage Lagoon (End of Decant)	23-014347-1
03-Jan-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	B23-00241-2
		IQA-05		B23-00241-1
06-Feb-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	B23-01683-2
		IQA-05	Wastewater Treatment Plant – Influent	B23-01683-1
01-Mar-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	B23-02321-2
		IQA-05	Wastewater Treatment Plant – Influent	B23-02321-1
03-Apr-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	B23-02787-2
		IQA-05	Wastewater Treatment Plant – Influent	B23-02787-1
04-May-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-009634-2
		IQA-05	Wastewater Treatment Plant – Influent	23-009634-1
05-Jun-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-012945-2
		IQA-05	Wastewater Treatment Plant – Influent	23-012945-1
05-Jul-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-016554-2
		IQA-05	Wastewater Treatment Plant – Influent	23-016554-1

Date	Test	Station ID	Sample Name	Lab Sample ID
08-Aug-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-020497-2
		IQA-05	Wastewater Treatment Plant – Influent	23-020497-1
12-Sept-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-024540-2
		IQA-05	Wastewater Treatment Plant – Influent	23 -024540-1
04-Oct-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-027508-2
		IQA-05	Wastewater Treatment Plant – Influent	23-027508-1
07-Nov-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-031437-2
		IQA-05	Wastewater Treatment Plant – Influent	23-031437-1
06-Dec-2023	F	IQA-04	Wastewater Treatment Plant – Effluent	23-034329-2
		IQA-05	Wastewater Treatment Plant – Influent	23-034329-1
08-Jan-2024	D	IQA-06	Sludge from Wastewater Treatment Plant	24-000925-1
08-Aug-2023	E	IQA-08	West 40 Landfill #1 Inside Landfill	23-020541-1
			West 40 Landfill #1 Outside Landfill	23-020541-2
21-Sep-2023	E	IQA-08	West 40 Landfill – Effluent Discharge (Start)	23-025705-1
26-Sep-2023	E	IQA-08	West 40 Landfill – Effluent Discharge (Middle)	23-026291-1
28-Sep-2023	E	IQA-08	West 40 Landfill – Effluent Discharge (End)	23-026507-1
16-Aug-2023	F	IQA-08A	Landfill Station Up-Gradient	23-021502-2
		IQA-08B	Landfill Station Down-Gradient	23-021502-2
14-Dec-2023		IQA-04	Annual Biosassay Testing	WP2332463

The City is acknowledging that the monitoring results are missing for the following Station IDs, relating to the Waste Transfer Station and North 40 Landfill:

- IQA-15
- IQA-16
- SW1-SW3
- WS-100, WS-101, WS-102
- 19MW-01 – 19MW-05
- W-107 – W111
- IQA-01 (for the month of October and December 2023)

Construction of these facilities is ongoing, with most of the onsite works scheduled for completion in 2024. The City has committed to maintaining the regular monitoring program for the identified stations, as per Schedule B of the Water License, during the construction period in 2024. Monitoring of the leachate discharge will commence when the facilities are in use for municipal waste collection. The schedule for commissioning will be communicated to the Board, along with the final closure design report of the West 40 Landfill (as per Amendment 5 of the Water License).

G. A summary of all construction activities carried out for the facilities.

Long-Term Water Supply and Storage

Following the preliminary investigations that were conducted on Sylvia Grinnell River and Qikiqtaaluk Lake (formerly Unnamed Lake) in 2022, the City decided to pursue Qikiqtaaluk Lake as its long-term water source.

In 2023, hydrological assessments of Qikiqtaaluk Lake persisted to confirm the viability of the lake for the City's long-term needs. Simultaneously, a prime design consultant was engaged to initiate preliminary design activities, laying the groundwork for future permitting applications. Additionally, the City focused on construction services for the ATCO Loop decommissioning and Federal Road Utilidor Extension, both integral components of the Long-Term Water Distribution Upgrades project.

Construction for the Federal Road Watermain Extension project commenced in September 2023. The scope of work encompassed extending the utilidor watermain along Federal Road, including the installation of approximately 240 meters of underground water main and recirculation, as well as the installation of four new access vaults. The project achieved substantial completion on November 18, 2023.

Construction services for the ACTO Loop Decommissioing, commencing in July 2023, included the decommissioning existing sanitary sewer and selected water mains within the ATCO Loop area. Substantial completion was issued in November 15, 2023.

North 40 Landfill

In 2023, significant progress was made in the construction of the landfill site, with various key tasks completed. This included the procurement and compaction of granular C fill to establish a subgrade for Cell-1, installation of thermistors and piping within the cell and the establishment of a storm water collection sump. Construction works for leachate lagoon involved building of berms, placement of rip rap for erosion control, and installation of control manholes and piping systems. Grading of the lagoon subgrade and excavation of thermistors boreholes were conducted, alongside the construction of a level spreader and installation of a compacted granular base to support lagoon infrastructure.

Looking forward to 2024, remaining tasks include the installation of HDPE liners for both the cell and the lagoon, in addition to comprehensive testing and commissioning procedures to guarantee the functionality and integrity of the landfill infrastructure.

Waste Transfer Station

Following the installation of the thermosyphons in 2022, the 2023 scope for construction of the WTS involved pouring of the concrete slab, erection of the walls and roof and overall site works to improve drainage. Additionally, the project has initiated the procurement process for critical long-lead equipment, including the biomass boiler and conveyor system. In 2023, the construction

In 2024, construction will focus on the mechanical, electrical and HVAC installation required to run the facility. And include the placement of all equipment such the conveyor, baler and wood shredder to facilitate its commissioning.

West 40 Landfill

The City submitted a request to the Nunavut Water Board on June 9, 2023, requesting approval on its proposed modification of the West 40 Lanfill drainage system. These modifications covered the removal of the existing berm and fence and extension of the far east berm to allow for proper water collection and divert the flow of contact water off site to the collection area.

Following approval from the Board, received Spetember 25, 2023, the City proceeded with the modification of the berm. The City has also committed to installing portable litter screens/fences along the permiter of the Landfill site. The screens will be positioned based on daily site conditions. Also, the West 40 Landfill Operations and Maintenacne Manual will be updated to reflect a description of the portable litter screen operation. These changes are scheduled to be implemented in 2024 and the City will work closely with representatives of the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to ensure that the Landfill operations meet environemtnal standards.

Water Treatment Plant

Following the water quality emergency in 2021, due to discovery of petroleum hydrocarbons (PHC) in the public water supply, the City took steps to determine and eradiacte the source of contamination. The Plant operations were modificed to bypass the treatment process to allow for thorough investigations and

remediative actions to be conducted. The City assessed all known potential sources of contamination at the Water Treatment Plant inclusive of the water infrastructure from Lake Geraldine to the outlet of its treated water reservoir.

The following actions were carried out to remediate the issue:

- Replacement of an improperly functioning isolation valve in the South Clearwell; and
- Removal of the improperly installed waterstop product, and the application of concrete reinstatement material and waterproofing product to interior walls of all below-ground treated water tanks.
- Replacement of the filter media and installation of Granular Activated Carbon (GAC)

Concurrently, the City's approved Return to Service Plan was implemented. The plan outline assessment and monitoring requirments to be met before the Plant could return to normal operations. The results of the assessment confirmed that there were no new sources of contamination and all existing contamination had been reasonably mitigated. The Water Treatment Plant returned to service on April 25, 2023. The City completed tests on the raw water and treated water involving bacteria tests, chlorine tests, and the ongoing use of the S::CAN digital monitoring system to detect hydrocarbons. The Commissioing report is provided in **Appendix C**

H. A summary of any modifications and/or major maintenance work carried out at the facilities and any associated structures.

Water Treatment Plant Fuel Tank Replacement

The replacement of the interior and exterior avove ground fuel tank at the WTP involved several critical components aimed at enhancing environmental safety and regulatory compliance. These components encompassed:

- Upgrades to the exterior above ground fuel oil storage tank to incorporate spill containment measures
- Modifications to the fuel oil supply pipe from the exterior fuel oil storage tank to the pumps in the vestibule
- Replacement of the interior fuel oil storage day tank and implementation of additional spill containment provisions
- Soil remediation of the site to ensure propoer disposal of any contaminated soil

To facilitate the replacement project, an Environmental Site Assessment (ESA) was conducted by Qikiqtaaluk Environmental which identified areas on the site with soil contamination issues and necessitating remedial action. Throughout the project execution, QE adhered to established guidelines and standards, including those set forth by the Canadian Council of Ministers of the Environment (CCME) and the Government of Nunavut (GN). These standards provided the framework

for assessing soil quality and determining remediation strategies tailored to the specific environmental context of the site.

The efforts undertaken by QE, coupled with thorough analytical assessments and adherence to regulatory standards, have resulted in the effective remediation of impacted ground areas. Approximately 228 cubic meters of soil was excavated and replaced with imported clean fill. As per QE's conclusions, the site was deemed remediated, and further actions were not required. The final report is appended in **Appendix C**.

The Fuel Tank Replacement Project is scheduled for completion in summer of 2024, pending the resolution of project defeciencies and value–add components. Upon completion, the City will provide an updates Operations and Maintenance Manual for the Water Treatment Plant to reflect the upgrades.

I. A progress report and revisions (if applicable) to any studies requested by the Board that relate to waste management, water use, or reclamation and a brief description of any future studies planned by the Licensee including, a non-technical executive summary for the general public, translated into Inuktitut.

Niaqunguk (Apex) River Supplemental Pumping

In 2023, supplementary pumping of water from the Niaqunguk River to Lake Geraldine was undertaken in support of recharging the reservoir prior to the forthcoming winter season. Pumping activities took place between June 26 and July 13, 2023. During this period, the observed flows at the Niaqunguk River were above 30% of the Mean Annual Discharge and withdrawal rates did not exceed 10% of the instantaneous flow of the River. A total of 222,784 cubic meters of raw water was pumped to the Lake Geraldine Reservoir.

The maximum daily pumped volume was 15,100 m³. Pumping records were maintained by the contractor at the pumping site and were provided to City's representative (Nunami Stantec Limited) for review and tabulation throughout the program.

Figure 1 below outlines the average daily pumping rate compared to the 10% instantaneous flow criteria at the Niaqunguk River.

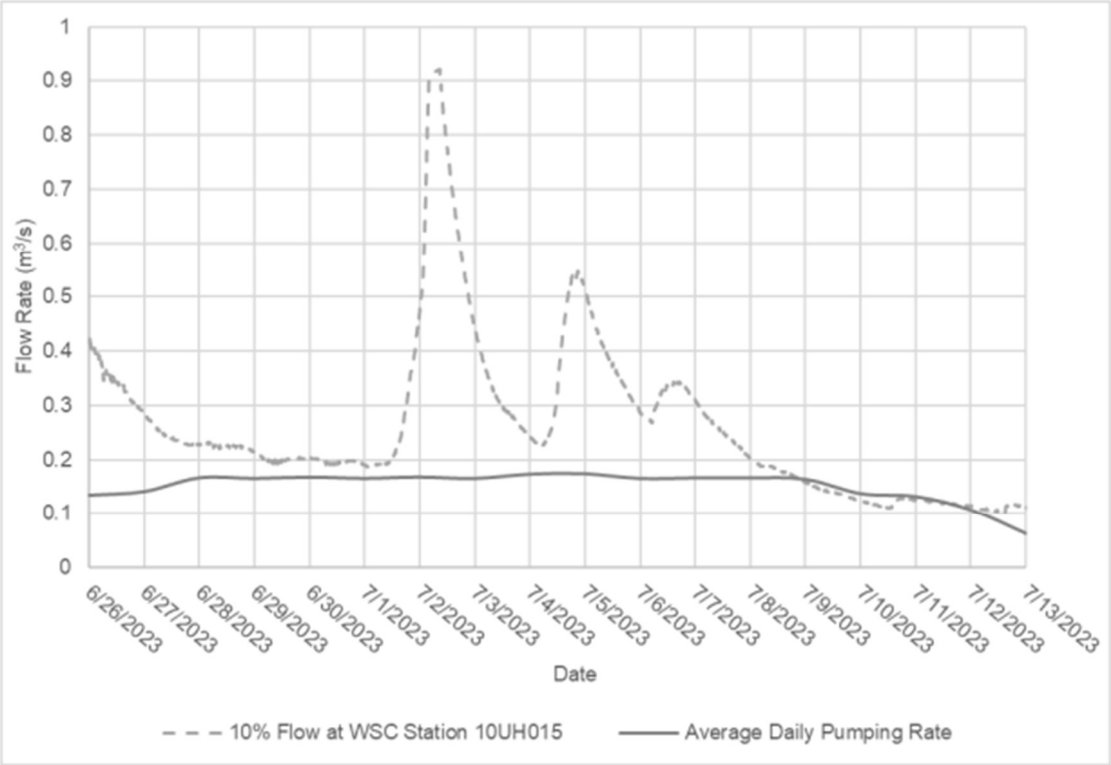

Figure 1- Daily Pumping Rate for 2023 pumping period

The final project report can be found in **Appendix D**. As outlined in the Project Summary report, there were 3 occurences, on July 9, July 10 and July 11, where the daily average pumping rate exceeded 10% of the instantaneous flow (measured at WSC station 10UH015). The exceedances occurred at times when the flows in River were lower than initially recorded.

There were no impacts, disruption or destruction to fish habitiat during the pumpoing program.

J. Any revisions required, in the form of addenda, to Plans, Manuals and Reports approved under the Licence.

Pursuant to the request for information issued through the technical review of the City's 2022 Annual Report, the City provided updated Operations and Maintenace Manuals for:

- Water Treatment Plant
- Wastewater Treatment Plant following substantial completion and commissioning
- West 40 Landfill

The City's existing West 40 Landill Operations and Maintenace Manual is appended in **Appendix G**. The O&M Manual will be updated to outline operational plan of the mobile litter fences/screens.

K. A list and description, including volumes and Spill Report Line Identification Numbers, of all un-authorized discharges, spills and summaries of follow-up action taken.

Table 6 below provides a summary of all reported spills/ un-authorized discharges that occurred in 2023. A copy of the spill reports are appended in **Appendix F**.

Table 6 Summary of spills/ un-authorized discharges in 2023

Spill ID	Date	Location	Type	Volume	Cause	Follow-Up Action
2023026	28-Jan-2023	MH69 (63.7486, -68.5061)	Wastewater	Unknown	Overflow Event	Pumping out of the MH, clean up conducted by the City crew
2023135	05-Apr-2023	Old service connection (63.4456, -68.3121)	Wastewater	Unknown	Blocked sewer main	City crew conducted clean up
2023133	05-Apr-2023	MH63a (63.7401, -68.5051)	Wastewater	Unknown	Blocked sewer main	City crew conducted clean up
2023167	27-Apr-2023	MH 36 (63.7426, -68.5086)	Wastewater	Unknown	Plugged sewer main	Pumping down of the manhole and cleanup of spill by City crew
2023182	04-May-2023	Between AV259 (63.7539, -68.5388) and AV260 (63.7543, -68.5378)	Wastewater	Unknown	Plugged sewer main	City crew conducted clean up
2023199	14-May-2023	MH 36 (63.7426, -68.5086)	Wastewater	Unknown	Blocked sewer main	Pumping down of the manhole and contractor to blast sewer main
2023214	23-May-2023	MH 36 (63.7426, -68.5086)	Wastewater	Unknown	Blocked sewer main	Pumping down of the manhole and contractor to blast sewer main
2023270	06-Jun-2023	MH72 (63.7477, -68.5011)	Wastewater	Unknown	Blockage in sewer basin	Pumping down of the manhole and City crew remove blockage
2023429	06-Oct-2023	AV 53 (63.4453, -68.3114)	Wastewater	Unknown	Sewer main Plugged	Pumping down of AV and contractor to blast sewer main

2023512	03-Dec-2023	WWTP (63.745833, -68.538889)	Wastewater	Unknown	Automated valve failure	City crew conducted clen up and tech support contacted for reason of failure

Given the nature of the spills, it is challenging to provide accurate estimates of the amount of spillage. On average, the volume of substances spilled does not exceed 100 liters. The City adheres to established regulatory requirements during the clean-up process.

L. A summary of any closure and reclamation work undertaken and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.

No closure and reclamation work was undertaken in 2023.

M. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.

The City received notice from the Crown Indigenous Relations and Northern Affairs Canada (CIRNAC), on October 22, 2023, relating to non-compliance to the Solid Waste Landfill and Transfer Station Erosion and Sediment Plan. The City as per the approved plan is to perform the following:

- Conduct sediment monitoring in relation to any project disturbances in or near water (e.g., instream construction);
- Conduct TSS/turbidity monitoring routinely during in-stream works, per thresholds outlined in Canadian Water Quality Guidelines for the Protection of Aquatic Life and the Canadian Sediment Quality Guidelines for the Protection of Aquatic Life

Following discussions and communication with CIRNAC representatives, the City acknowledged its oversight in providing adequate notice to the regulatory board during the installation of the culvert, along Carney Creek. The City issued a Non-Compliance Report to the contractor and committed to complete the monitoring requirements as per Schedule B of its water license.

A letter was addressed to CIRNAC in November 2023, and the issue was confirmed to be closed and approval was granted on the proposed actions.

N. A brief update on the implementation plan of all facilities within the scope of this License including projected implementation and status of the Upgraded Wastewater Treatment Plant.

N/A

O. A summary of any studies, reports and plans requested by the Board that related to waste disposal, water use, or reclamation and a brief description of any future studies planned.

Long-Term Water Supply and Storage

Following the City's Council decision in 2022 to proceed with Qikiqtalik (Unnamed) Lake as the long-term option for supplementing the City's Lake Geraldine raw water reservoir, significant progress has been made to pursue this future water supply source. In 2023, hydrological evaluations of Qikiqtalik Lake were continued to determine sustainable outflows from Qikiqtalik Lake. Simultaneously, a prime design consultant was engaged to start preliminary design activities to support future permitting applications. An archaeological survey for the impacted areas was also conducted in September 2023. This archaeological assessment identified four (4) sites within the project area, scheduled for mitigation in 2024. Furthermore, extensive stakeholder engagements with external organisations (including NTI, HTA, QIA, CIRNAC, NWB and DFO consultation) were completed, with public engagements held in June 2023. Consultation feedback has been incorporated into ongoing design development.

Through an interim report, the ongoing hydrological study of Qikiqtalik Lake (confirming its viability for long-term sustainable water withdrawal) indicates that this lake alone may not be sufficient to meet the City long-term water supply needs (an additional 1,800,000 cubic meters annually). At present, preliminary investigations through an updated water balance model indicate that the water withdrawal from Qikiqtalik Lake is expected to be ~720,000 cubic meters per annum. Consequently, the City is revewing alternative water sourcing setup of supplementing Qikiqtalik Lake with Niaqunguk River and this will be presented through the permitting process in 2024.

P. Any other details on the use of water or waste disposal requested by the Board by November 1st of the year being reported.

Please see **Appendix G** for additional information provided by the City in response to feedback provided for its 2022 Annual Report.

Q. Details of the SPP Program and monitoring at Station No IQA-10.

The appended report in **Appendix D** outlines details of the Supplemental Pumping Program inclusive of:

- Daily and Monthly quantities withdrawn from IQA-10
- Daily water levels at the Niaqunguk River when withdrawals were occurring.

R. Monthly and annual quantities in cubic metres of fresh water withdrawn from Imiqtarviviniq (Dead Dog Lake) at Monitoring Station No. IQA-14.

The City did not withdraw any water from the Dead Dog Lake (Station ID IQA-014) in 2023.

S. Monthly and annual quantities, and general types of wastes brought to the Waste Transfer Station and disposed at the North 40 Landfil.

Construction of the facilities is ongoing with the tentative completion set at Decemebr 2024. The operation of the WTS and North 40 Landfill will commence following the submission and approval by the Board of the decommissioning plan of the West 40 Landfill.

T. Review of procedures for packaging, storage and shipment of harmful hazardous waste.

Hazardous waste is stockpiled at the West 40 Landfill before the annual disposal program, which takes place during the summer months. To minimize the potential of environmental contamination, these materials and products are separated and stored in 40-foot-long containers. In addition, the City utilizes Quartex bags to separate and store various hazardous goods, such as adhesives, sprays, and batteries. Unidentifiable miscellaneous waste is stored separately, and the local waste management company provides guidance on the appropriate steps for the proper disposal of these materials.

The City coordinates the annual removal of hazardous waste materials from the West 40 Landfill using the services of an independent contractor. This complete process entails consolidating, identifying, preparing for transportation, and disposing of hazardous materials outside of Iqaluit. In 2023, this collaborative endeavor was carried out in tandem with Qikiqtaaluk Environmental to ensure the appropriate and compliance management of hazardous waste.

The total quantity of hazardous material is estimated in the tracker sheet provided on **Table 7** as per Schedule B Item of the City's Water License.

Table 7- Hazardous Waste Quantity Tracker 2023

item	Description	Quantity
1	Removal, sealift, and final disposal of Quatrex bags containing used batteries	19
2	Removal, sealift, and final disposal of 20' sea containers containing loosely packed electronic waste (incl. supply of new empty sea container).	4
3	Removal , sealift, and final disposal of black Quatrex bags containing paint-related waste products	2
4	Removal, sealift, and final disposal of 20' sea containers containing used tires (incl. supply of new empty sea container)	9
5	Removal sealift, and final disposal of bulk fluid totes containing oil/fuel mixture	3
6	Removal sealift, and final disposal of bulk mixed fluid totes	1
7	Removal sealift, and final disposal of 100 lbs propane cylinder	2
8	Removal sealift, and final disposal of 45-gal drums of unknown waste	6

9	Removal sealift, and final disposal of 5-gal repack barrels of unknown waste	0
10	Supply and delivery of 20’ sea containers	5
11	Removal sealift, and final disposal of 12-bucket pallets of calcium hypochlorite	0
12	Removal, sealift and final disposal of uncrushed oil filters in bulk tote	1
13	Removal, sealift and final disposal of black Quatrex bags containing chlorine waste products	1
14	Removal, sealift and final disposal of black Quatrex bags containing aerosol waste products	4
N1	Removal, sealift and final disposal of Oxygen gas cylinders	2
N2	Supply and delivery of 20' marine containers, including the installation of a liner for the storage and transportation of paint	1

U. Update on the capacity of the landfill cell currently in use, including the installation timing calculation (inputs and result), including discussion on the required actions/schedule for design and installation of the next lined disposal area in the sequence.

Construction of Cell 1 at the North 40 Landfill is ongoing with the tentative substantial completion date set at December 2024. The operation of the cell will be carried out in accordance to the Operations and Manual Plan shared with the Board, as part of Ammendment 5 of the Water License. Any changes r revisions at the enbd of construction an din preparation of the commissioning of the facility will be provided to the Board for review and approval.

The North 40 Landfill site is equipped with a capacity of 12 cells that provide a 75 year operating life. The remainder of the cells will be designed and built as required over the life span of the facility.

APPENDIX A
DAM SAFETY INSPECTION REPORTS

APPENDIX B

2023 SAMPLING RESULTS

APPENDIX C
WATER TREATMENT PLANT REPORT

APPENDIX D

2023 APEX PUMPING FINAL REPORT

APPENDIX E

CHLORINE AND BACTERIA RESULTS FROM THE WTP (2023)

APPENDIX F
CITY OF IQALUIT SPILL REPORT (2023)

APPENDIX G

REQUEST FOR INFROMATION FROM 2022 ANNUAL REPORT