

City of Iqaluit
2014 Annual Water License Report
Executive Summary

Under Water License 3AM-IQA0611 (the License), the City of Iqaluit (the City):

- Extracts water from Lake Geraldine for municipal use,
- Manages its solid waste at the West 40 Landfill, and
- Manages its wastewater at the West 40 Wastewater Treatment Plant and backup Sewage Lagoon.

This License was issued by the Nunavut Water Board (NWB) in 2006 and expired on July 15, 2012. On October 2, 2012, the City submitted its Application for Water License Renewal. In compliance with requirements of Schedule B of the License, this Annual Water License Report summarizes the activities conducted by the City in 2014.

Monthly Monitoring Program

In 2014, the City continued with the Monthly Monitoring Program implemented in 2013.

Water Supply

In 2014, the City used 990,140 m³ of water from the Lake Geraldine, which is below the quantity of water not to be exceeded under the License (1,100,000 m³).

In September/October 2014, a Dam Safety Inspection (DSI) was completed on Lake Geraldine Dam.

The Supplementary Water Supply Plan and Preliminary Design was completed in 2014 and will be presented to City Council in 2015 for approval.

Wastewater Treatment

The City issued a Request for Proposals to prepare a feasibility study for the upgrade of the Wastewater Treatment Plant.

Solid Waste Management

The City continues to manage its solid waste at the West 40 Landfill, which is nearing capacity. Landfill runoff continues to be managed through on-site detention ponds and an off-site retention pond.

A fire occurred in one of the landfill piles during the summer which required significant volumes of water to extinguish. All leachate water has been contained within the landfill site and will be treated in 2015.

ወደርረውል፣ ልክጋል፣
2014 ልጅጋር፣ካል፣ ለረገጥ፣ጋረ፣ ለረገጥ፣ጋረ፣
ለጋረ፣ጋረ፣ ለጋረ፣ጋረ፣

ፊርማው በባለሥልጣናቸው ለፊርማው ርዕስ 3AM-IQA0611 (ርዕስ),
ወደቀው ለፊርማው ርዕስ ለፊርማው ርዕስ (ሥልጣን):

- [illegible]

[illegible]

$C^b \rho C \dot{L}^b \quad {}^b b \Delta \rho \quad {}^b \sigma^b d^c \quad \wedge C n \quad \nabla^c \quad {}^b$

[illegible]
$$\underline{\Delta L^{sb} \cap \sigma^{sb}}$$

2014-ዓበር 20, ወደፍትሃዊ ልማት 990,140 ሺሮች³ ልማት ልማት ልማት, ልማት ልማት ልማት (1,100,000 m³).

[illegible][illegible]
$$\Delta\Gamma\mathcal{P}\mathcal{L}\Gamma^c \text{ ከኃረር ካሲብረት}^a\sigma^c \text{ ከኃረር ካሲ}\Delta\sigma^{fb}$$
[illegible]

$\partial \Gamma \sigma^c$ ከ $\sigma \in \Gamma$ ለሆነ σ^c ነው።

ወደርረጉ፣ ሥራ ለማድረግ ስለሚችሉት ሰራተኛ ሰዎች ለማግኘት ማረጋገጥና ለሚገኙት ሰራተኞች ለሚከፈሉት ገንዘብ ማረጋገጥ ይቻላል።

March 2014

Water License No. 3AM-IQA0611
2014 Annual Report
City of Iqaluit

In July of 2006, the City of Iqaluit (City) was issued Water License number 3AM-IQA0611 (the License) by the Nunavut Water Board. This license was issued for a five-year period commencing on May 15, 2006. On June 17, 2011, the Nunavut Water Board amended the License expiry date to July 15, 2012. On October 2, 2012, the City submitted its Application for Water License Renewal. 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. In accordance with Schedule B of the Water License, this Annual Water License Report summarizes the activities conducted by the City of Iqaluit in 2013.

A. The monthly and annual quantities in cubic meters of water obtained from Lake Geraldine

Table 1 summarizes the monthly and annual quantities of water drawn from Lake Geraldine, the City of Iqaluit's raw water source. The total water usage for 2014 was 990,140 m³, which is below the maximum allowable usage of 1,100,000 m³.

**Table 1. Raw Water Drawn
from Lake Geraldine Reservoir (2014)**

Month	Volume (m ³)
January	78,850
February	75,580
March	87,210
April	84,220
May	84,720
June	83,150
July	80,410
August	82,760
September	81,580
October	85,900
November	82,180
December	83,580
Total	990,140

B. The monthly and annual quantities in cubic meters of discharge from the Wastewater Treatment Facility

Table 2 summarizes the monthly and annual quantities of discharge from the City of Iqaluit's Wastewater Treatment Plant (WWTP) during 2014.

Table 2. Discharge from the Wastewater Treatment Plant (2014)

Month	Volume (m³)
January	76,760.09
February	68,155.03
March	79,809.53
April	76,815.71
May	82,486.30
June	81,159.96
July	88,158.26
August	88,222.94
September	84,702.88
October	80,031.56
November	78,254.12
December	78,115.38
Total	962,671.77

During periods when the WWTP was shutdown for maintenance, raw sewage was diverted to the backup sewage lagoon. The knife gate valve that diverts the sewage to the sewage lagoon is not equipped with a monitoring device; therefore, there were no measurements taken to determine the amount of discharge for the days that the WWTP was not operational. As a result, the amount of discharge for the duration of each shutdown was calculated using average daily discharge rates. The average daily total was determined by dividing the total volume of discharge from the WWTP recorded for the month that the shutdown occurred by the number of days the WWTP was operational that month. The dates of each shutdown can be found in Section F.

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

Table 3 summarizes the estimated monthly and annual quantities of sewage sludge removed from the City of Iqaluit's WWTP and deposited at a designated area in the West 40 Landfill.

Table 3. Sewage Sludge Removed from the Wastewater Treatment Facility and Deposited at the West 40 Landfill (2014)

Month	Volume (m³)
January	47.6
February	47.6
March	44.2
April	51
May	44.2
June	44.2
July	51
August	51
September	51
October	47.6
November	51
December	49.3
Total	579.7

The sludge that is removed by the Salsnes Filter in the WWTP falls into a trailer in a room below the primary treatment room. The trailer that is used to catch the sludge from the Salsnes Filter has 3.4 cubic meters of storage and is approximately 100% full each time it is unloaded. The trailer is unloaded at the West 40 Landfill every second day including weekends and holidays. The difference in volume from month to month is due to two different factors: 1) every month doesn't have the same number of days, and 2) during the shutdowns there is no sludge produced because the raw sewage was diverted to the lagoon.

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

In 2013, the City submitted the Quality Assurance/ Quality Control Plan and the plan was followed throughout the 2014 Monitoring Program.

The City completed the 2014 Monitoring Program based on the requirements outlined in schedule C of the Water License. Sample bottles were ordered from an accredited laboratory in Ottawa and shipped to Iqaluit. Samples were taken by

City staff and sent back to the laboratory the same day. Please see Appendix 'A' for a summary of the samples taken and a copy of all of the sample reports provided by the laboratory. Some test results could not be obtained for certain months due to errors by the laboratory or the shipping company. Monthly Monitoring Reports were completed for each month that samples were taken as well as an Annual Monitoring Report that summarizes the Monthly Monitoring Reports. Please see Appendix 'B' for the Monthly Monitoring Reports and the Annual Monitoring Report. The City has not been able to find a laboratory that can complete the required chlorinated paraffin analysis in wastewater samples taken from the Wastewater Treatment Plant. It has asked for a laboratory recommendation from the NWB but they were unable to identify a laboratory who could complete the required chlorinated paraffin analysis. As a result, this test has not been included in the 2014 Monitoring Program schedule.

E. A summary of construction activities conducted

Landfill Water Management Upgrades

In October 2014, record drawings of the berm upgrade were provided and attached in Appendix 'C'.

F. A summary of any modification and/or major maintenance work and/or demolition work carried out and any associated structures

Wastewater Treatment Plant

The following maintenance work was carried out at the WWTP in 2014:

February 28, 2014:	The filter in the Salsnes Filter was replaced.
September 15, 2014:	Repairs to the lift station pump were required.
October 22, 2014:	Repair of overheating pump was required.
October 28, 2014:	The filter in the Salsnes Filter was replaced.

During the above listed maintenance work, the WWTP was shut down and the sewage was diverted to the sewage lagoon.

West 40 Landfill

In 2014, hazardous waste from the West 40 Landfill was shipped south for recycling or disposal. 20 Quatrex bags of batteries (approximately 560 batteries) were shipped to Qikiqtaaluk Environmental in Brossard, Quebec facility for recycling. 20 barrels of unknown waste were shipped to Solva Rec Environnement in St. Jean Sur Richelieu, Quebec and disposed of properly. 31 chlorine cylinders were shipped Brenntag Canada in Montreal, Quebec for recycling. Documentation on the transportation and disposal of the batteries, chlorine cylinders and unknown waste can be found in Appendix 'D'.

G. A summary of all work carried out under the Managements Plans in accordance with this License

Lake Geraldine Dam Safety Inspection

In July 2014, a Dam Safety Inspection (DSI) was performed on Lake Geraldine Dam. The DSI report can be found in Appendix 'E'.

Solid Waste Management Plan

In 2011, the City began the Solid Waste Management Project, which involves extensive public consultation and technical analysis to develop a new solid waste management plan and identify a new solid waste management site. The Project also involves the development of a decommissioning plan for the West 40 Landfill and update its operation and maintenance manual.

The Solid Waste Management Project was approved by City Council in January 2014 and attached in Appendix 'F'.

Lake Geraldine Dam Emergency Preparedness Plan

In 2014, work on the Emergency Preparedness Plan (EPP) continued, including the:

- Definition of hazards posed by the dam;
- Identification of roles and responsibilities; and,
- Completion of inundation mapping.

The EPP is a requirement from the 2011 Dam Safety Inspection and is expected to be completed in 2015.

Landfill Decommissioning Plan

A decommissioning plan for the current landfill site was completed in 2014, and attached in Appendix 'G'.

H. A progress report and revisions 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, an executive summary in terms understandable to the general public, translated into Inuktitut

Supplementary Water Supply Plan

The City's 2010 General Plan identifies Apex River as a potential supplementary water source for the City. In 2013, the City undertook the development of a Supplementary Water Supply Plan and Preliminary Design. This work includes a feasibility study to confirm that Apex River is a suitable source. The Supplementary Water Supply Plan was completed in 2014 and will be brought before Council in 2015. Once Council has approved the Plan, a copy of the Plan will be submitted to the NWB along with the necessary Application for Amendment. A copy of the Supplementary Water Supply Plan is included in Appendix 'H'

I. Any addenda to the approved Contingency Plans and the approved Operation and Maintenance Manuals

None

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

Table 4 provides a summary of all spills and un-authorized discharges that occurred in 2013, including volumes, Spill Report Line Identification Number and summaries of the follow-up actions taken. Copies of the spill reports and a map showing all spill locations can be found in Appendix 'I'.

Table 4:

Spill Report ID Number	Date (m/d/y)	Location	Description	Volume (m ³)	Cause	Follow up Actions
2014064	3/4/2014	Access Vault 301 on Queen's Way Road, across Arctic College	Sewage	3	Sanitary partially collapsed and Access Vault overflow	The sanitary sewer was blasted and the access vault was pumped out to stop the sewage over flow. The City of Iqaluit Roads Crew cleaned the sewage from the affected area.
2014080	3/15/2014	Manhole #32A	Sewage	2	Sanitary sewer was clogged with grease/oil	A sewage truck was used to pump out the manhole and the sanitary sewer was blasted until the blockage was removed. The City of Iqaluit Roads Crew cleaned the sewage from the affected area.
2014220	6/18/2014	Lift Station #2 @ Manhole #23	Sewage	Unknown	Pump Failure	The sanitary sewer was blasted and manhole pumped out. The City of Iqaluit Roads Crew cleaned the sewage from the affected area.
2014330	9/15/2014	Access Vault 53, Palaugaa Drive	Sewage	Unknown	Rags / Main Break??	Access Vault was pumped out. The City of Iqaluit Roads Crew cleaned the sewage from the affected area.
2014383	10/20/2014	Building 778	Hydraulic Fluid	.01 (10 L)	Hydraulic line failure on sewer truck	When power take-off unit was engaged on the truck, the hose connect it to the hydraulic fluid tank ruptured. . The City of Iqaluit Roads Crew cleaned the the affected area and transported contaminated snow to Nunatta Environmental yard for proper disposal. Nunatta Environmental proceeded with the clean-up from the building.

K. Any revisions to approved Closure and Reclamation Plans

In 2014, no revisions were made to approved Closure and Reclamation Plans.

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

In 2014, no closure and reclamation work was undertaken. No closure or reclamation work is anticipated for 2015.

M. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector**Water License Inspection June 30, 2014****Water Supply (WTP):**

- ☐ **One UV light system was found to be non-functional during time of inspection.**
 - The UV light filter that was not functioning at the time of inspection is still not functioning properly. The City is in contact with the manufacturer to determine how to repair the UV light filter. The matter has been an on-going issue. The City has one fully functioning UV lamp in use while the issue is properly diagnosed and rectified.

Water License Inspection October 8, 2014**Inspectors Statement:**

In an Inspector's Direction dated March 5th, 2013, issued by Environment Canada pursuant to Section 38(7.1) of the Fisheries Act, the City of Iqaluit was found to be in contravention of 36(3) of the Fisheries Act for "depositing or permitting the deposit of a deleterious substance of any type in water frequented by fish" from the waste water treatment plant. This Inspector is satisfied that the City Of Iqaluit's actions taken to date are consistent with the conditions of that Inspector's Direction.

A similar Inspector's Direction was issued by AANDC Water Inspections unit on the same day (March 5, 2013) that will be revoked and replaced with a Letter of Non-Compliance towards the City of Iqaluit, pursuant to Section 90 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* for contravening Section 11(1), namely, using waters for a municipal undertaking without a water use licence as prescribed in Schedule 2 of the *Nunavut Waters Regulations*.

Lake Geraldine Reservoir**Observations:**

1. As mentioned in the 'Inspector's Statement,' a Dam Safety Inspection was completed on September 22, 2014 and will be submitted to AANDC and the Nunavut Water Board.

Drinking Water Treatment Plant**Concerns**

The City of Iqaluit, pursuant to Section 90 of the NWNSRTA is in non-compliance for contravening Section 11(1), namely, using waters for a municipal undertaking without a water use licence as prescribed in Schedule 2 of the Nunavut Waters Regulations. This non-compliance is being addressed currently through quarterly progress meetings to determine the City of Iqaluit water licence application and work progress.

The City of Iqaluit submitted an application for a water licence on October 2, 2014

Waste Water Treatment Plant**Observations**

The waste water treatment plant continues to operate only as a primary treatment and sludge is collected and placed at the landfill. As mentioned above, the water entering the intertidal zone of Frobisher Bay is in contravention of Section 36(3) of the Fisheries Act and is required to meet milestones of compliance activities to prevent further enforcement action.

Concerns

It is important to note that City of Iqaluit is in non-compliance with Section 4(1) of Arctic Pollution Prevention Act for depositing waste into Arctic Waters. The Inspector's Direction issued by Environment Canada addresses this non-compliance and the corrective measures required.

This non-compliance is being addressed currently through quarterly progress meetings to determine the City of Iqaluit water licence application and work progress.

An RFP for a feasibility study for the Wastewater Treatment Plant upgrade was issued in November 2014. The City is progressing towards meeting the requirements of the directive. Please see the attached quarterly reports in Appendix 'J'

West 40 Landfill Site**Observations**

The West 40 Landfill area has undergone significant changes due to the recent fire and extinguishment activities pursuant to Section 11(2)(b)(ii) of the NWNSRTA. This included water use, creating a new retention pond, moving a culvert, installing a weir in Carney Creek, relocating solid waste, and contouring and covering the solid waste pile that was on fire to prevent any further fire issues.

During the fire extinguishment it was explained to the City of Iqaluit that all major water use measures would be temporary in nature and would require work to restore and reclaim the workings to pre-extinguishment status within a reasonable time. The City of Iqaluit responded post-fire with a work plan outlining the work that would be undertaken to address the restorative work required. Please refer to the Schedule 2 - Actions Required in Appendix 'K'.

N. Update on implementation of recommendations from any Dam Safety Inspection and/or Review

Lake Geraldine Dam Safety Inspections

See below the recommendations that were made in the 2014 Dam Safety Review (DSI) and the implementation of the recommendations:

- ☐ Repair concrete spalling and fill joints on upstream faces of concrete structures by autumn 2016.
 - Complete this work sooner if there are changes to site conditions such as seepage that are linked to concrete condition. If conditions deteriorate, repairs should be initiated as soon as practical.
- ☐ Inspect the upstream faces of the concrete structures during the 5-year DSRs and time the inspection to gain as much visual inspection of the upstream face as possible. Document findings in the DSRs.

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

New Solid Waste Management Facilities

City Council approved the Solid Waste Management Plan in 2014. Please see Appendix 'F' for the Plan

Phase 2 Wastewater Treatment Plant Upgrade

The City issued a Request for Proposals to prepare a feasibility study for the upgrade of the Wastewater Treatment Plant

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

There were no requests made by the Board after November 1, 2014.

Appendices

Appendix A - Summary of Samples

Appendix B - Monthly and Annual Monitoring Reports

Appendix C - Landfill Water Management Record Drawings

Appendix D - Hazardous Materials Transportation Documentation

Appendix E - Lake Geraldine Dam DSI

Appendix F - Solid Waste Management Plan

Appendix G – Landfill Decommissioning Plan

Appendix H - Supplementary Water Supply Plan

Appendix I - Spill Reports

Appendix J – Quarterly Reports

Appendix K – Schedule 2-Actions Required