



**City of Iqaluit**

**Environmental Monitoring Program and Quality  
Assurance / Quality Control Plan**

**July 21, 2026**

**Rev 5**



| Revision History |               |                                                                                                                                                           |                                     |
|------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Rev              | Date          | Comments                                                                                                                                                  | Author                              |
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| 1                | March 2017    | Updated per NWB comments                                                                                                                                  | Richard Sparham                     |
| 2                | March 2019    | Updated per NWB/ECCC comments                                                                                                                             | Josip Deronja                       |
| 3                | April 2019    | Updated per CIRNAC comments                                                                                                                               | Josip Deronja                       |
| 4                | July 21, 2026 | Updated to reflect latest SNP stations, updated the lab accreditation                                                                                     | Richard Cook<br>Knight Piésold Ltd. |
| 5                | July 21, 2026 | Added field testing equipment (s. 4.1), sampling personnel (s. 4.10), lab letter (s. 5.1 and Appendix D) and updated sample location figures (Appendix A) | Richard Cook<br>Knight Piésold Ltd. |



## Table of Contents

|             |                                                                                     |           |
|-------------|-------------------------------------------------------------------------------------|-----------|
| <b>1.0</b>  | <b>Introduction.....</b>                                                            | <b>1</b>  |
| <b>2.0</b>  | <b>Background .....</b>                                                             | <b>2</b>  |
| <b>3.0</b>  | <b>Environmental Monitoring and Quality Assurance/Quality Control Plan.....</b>     | <b>3</b>  |
| <b>3.1</b>  | <b>Definitions .....</b>                                                            | <b>3</b>  |
| <b>3.2</b>  | <b>Monitoring and Regulatory Requirement Program .....</b>                          | <b>3</b>  |
| <b>3.3</b>  | <b>Scope and Objective of Environmental Monitoring Program and QA/QC Plan .....</b> | <b>3</b>  |
| <b>4.0</b>  | <b>Field Sampling .....</b>                                                         | <b>5</b>  |
| <b>4.1</b>  | <b>Field Measurements.....</b>                                                      | <b>5</b>  |
| <b>4.2</b>  | <b>Sampling Procedures .....</b>                                                    | <b>5</b>  |
| <b>4.3</b>  | <b>Pre-Sampling Activities .....</b>                                                | <b>6</b>  |
| <b>4.4</b>  | <b>Sampling Locations and Schedule .....</b>                                        | <b>6</b>  |
| <b>4.5</b>  | <b>Sampling Equipment .....</b>                                                     | <b>7</b>  |
| <b>4.6</b>  | <b>Sampling Methods .....</b>                                                       | <b>7</b>  |
| 4.6.1       | Water Treatment Plant (IQA-01) .....                                                | 7         |
| 4.6.2       | Wastewater Treatment Plant (IQA-04 and IQA-05) .....                                | 7         |
| 4.6.3       | Sewage lagoon (IQA-02).....                                                         | 7         |
| 4.6.4       | Sewage Sludge (IQA-06).....                                                         | 8         |
| 4.6.5       | Landfill Leachate (IQA-08, IQA-15, and IQA-16).....                                 | 8         |
| 4.6.6       | Groundwater (19MW-01 to 19MW-05, W-107 to W-111).....                               | 8         |
| 4.6.7       | Surface Water (SW1, SW2, SW3, WS-100, WS-101, WS-102).....                          | 9         |
| <b>4.7</b>  | <b>Sample Handling, Labelling and Chain of Custody Form .....</b>                   | <b>9</b>  |
| <b>4.8</b>  | <b>Sample Shipment.....</b>                                                         | <b>10</b> |
| <b>4.9</b>  | <b>Quality Assurance and Quality Control Program .....</b>                          | <b>10</b> |
| <b>4.10</b> | <b>Sampling Personnel .....</b>                                                     | <b>11</b> |
| <b>5.0</b>  | <b>Lab Analysis.....</b>                                                            | <b>12</b> |
| <b>5.1</b>  | <b>Lab Information .....</b>                                                        | <b>12</b> |
| <b>5.2</b>  | <b>Detection Limits .....</b>                                                       | <b>12</b> |
| <b>5.3</b>  | <b>Methodology.....</b>                                                             | <b>12</b> |
| <b>6.0</b>  | <b>Reporting Requirements.....</b>                                                  | <b>13</b> |
| <b>6.1</b>  | <b>General Submissions .....</b>                                                    | <b>13</b> |
| <b>7.0</b>  | <b>References .....</b>                                                             | <b>14</b> |



## Appendices

Appendix A

Site Plans

Appendix B

Sample Bottle Requirements

Appendix C

Monitoring Program Sampling Schedule

Appendix D

Laboratory Accreditation & Supporting Documentation





## 1.0 INTRODUCTION

The Environmental Monitoring Program and Quality Assurance / Quality Control (QA/QC) Plan for the City of Iqaluit (City) was prepared as a requirement of the Nunavut Water Board (NWB) Licence No. 3AM-IQA1626, issued on June 17, 2016, which expires on June 16, 2026. This Plan applies specifically to the following facilities:

- Permanent water supply infrastructure including the Lake Geraldine Reservoir and water treatment plant
- West 40 Landfill
- North 40 Landfill and Waste Transfer Station, added to the current licence under an amendment in 2021
- Sewage treatment plant, sewage lagoon and sludge management facility
- Temporary water supply facilities to supplement the permanent water supply



## 2.0 BACKGROUND

The City of Iqaluit is the capital of the Territory of Nunavut and is located at the south end of Baffin Island, Frobisher Bay 64°31'N latitude and 68°31'W longitude (Figure A.1, Appendix A: Site Plan). Access to Iqaluit is provided by regular scheduled commercial aircraft year-round, snowmobile trails from Baffin Island communities in the winter, and sealift from the port of Montreal in the summer. Iqaluit is the largest community in Nunavut, with a population of approximately 7,429 in 2021 (Government of Canada, 2025). Having been ranked as the fastest growing community in Nunavut, the forecasted growth rate is 3% - 4% annually (Arcadis Canada Inc., 2025).

Iqaluit's location is above the tree line and within the continuous permafrost zone of Canada. The region generally consists of glacially scoured igneous/ metamorphic terrain. The City has an arctic climate with January and July high and low mean temperatures of -21.5°C/ -29.7°C (high/ low) and 11.4°C/ 3.7°C (high/ low) respectively. The annual precipitation is made up of 19.2 cm of rainfall and 255.0 cm of snowfall for a total of 43.0 cm precipitation. It is recognized that Iqaluit, like many other northern communities are susceptible to significant climate change impacts.

Raw water is supplied to the municipality from the Lake Geraldine water reservoir. During the spring and summer, runoff from the surrounding watershed fills the lake. Water is stored for over-winter consumption by a dam on Lake Geraldine. From the dam outfall, water is transmitted by gravity to the water treatment plant (WTP) where it is treated by UV, filtration and chlorination. Treated water is stored in two storage reservoirs located next to the WTP prior to entering the main distribution system.

The City's wastewater receives primary treatment at the wastewater treatment plant (WWTP) before being disposed into Frobisher Bay.

At the operating West 40 Landfill, runoff is collected in the on-site detention ponds. The run-off is then pumped to the retention pond located across the road from the landfill. When the retention pond is decanted, a 4" pump is then connected to a Geotube dewatering bag and the retention pond is decanted through the Geotube.

A new North 40 Landfill, Waste Transfer Station, and associated infrastructure were added into the scope of the current Licence in Amendment No. 5 of the current Licence in 2021. Issued for Construction drawings of these facilities were submitted in 2022 in accordance with Part F, Item 1 of the current Licence, and the facilities have been constructed but are not currently in operation. The various site locations can be found in Appendix A: Site Plans.



## 3.0 ENVIRONMENTAL MONITORING AND QUALITY ASSURANCE/QUALITY CONTROL PLAN

### 3.1 DEFINITIONS

**Quality Assurance** is a system that ensures that quality control procedures are correctly performed and documented.

**Quality Control** refers to the established procedures observed both in the field and in the laboratory, designed to ensure that the resulting end data meet intended quality objectives.

**Monitoring Program** refers to the program to collect data on effluent quality, surface water and groundwater quality to assess impacts to the environment of an appurtenant undertaking.

### 3.2 MONITORING AND REGULATORY REQUIREMENT PROGRAM

Conditions 2 and 5 of Part I of the Water Licence 3AM-IQA1626 issued to the City of Iqaluit requires that the Licensee:

- The Submit to the Board for approval in writing an updated Monitoring Program that addresses monitoring requirements for the Water Treatment Facility and Waste Treatment Facilities. The Monitoring Program shall address, among other items, the requirements outlined in Schedule I.
- Submit to the Board for review an updated Quality Assurance/ Quality Control (QA/QC) Plan prepared in accordance with *Quality Assurance (QA) and Quality Control (QC) Guidelines for use by Class "A" Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan* (Department of Indian and Northern Affairs Canada, 1996). The submission shall include a covering letter from an accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence.

### 3.3 SCOPE AND OBJECTIVE OF ENVIRONMENTAL MONITORING PROGRAM AND QA/QC PLAN

The scope and objective of this document is to provide guidance to ensure that the monitoring program samples collected in the field are done so with a high degree of quality and reliability, in order to confirm that the data collected during monitoring activities at the various sites accurately reflect the physical and chemical nature of the matrix being tested.



Under the conditions of the Water Licence 3AM-IQA1626, the Licence requires an Environmental Monitoring Program and Quality Assurance/ Quality Control (QA/QC) Plan. The QA/QC Plan has been prepared to achieve the following objectives:

- Ensure that the collection of samples taken in the field follow required procedures and controls to maintain a high-level quality and reliability, while ensuring that the data obtained is indicative of the physical and chemical nature of the water at the various sampling sites
- Ensure best management practices are executed as part of the monitoring program
- Ensure all samples are delivered and analyzed by an accredited laboratory

The Environmental Monitoring Program and QA/QC Plan describes the necessary procedures and controls to be used by the City Operations staff when performing the work described herein.



## 4.0 FIELD SAMPLING

### 4.1 FIELD MEASUREMENTS

Field measurements of various water quality parameters are recorded using the multi meter instruments listed in Table 1.

*Table 1 Field Measurement Equipment*

| Facility                                  | Meter                                           | Parameter(s)                                                                                                            |
|-------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Lake Geraldine Reservoir (IQA-01)         | Hach HQ with separate probes for each parameter | R - Routine<br><i>pH, oxidation-reduction potential (ORP), conductivity, and temperature</i>                            |
| Sewage Lagoon Effluent Discharge (IQA-02) | Same as above                                   | Effluent (E)<br><i>Temperature, Conductivity, pH</i>                                                                    |
| WWTP Effluent Discharge (IQA-04)          | Same as above                                   | Effluent (E)<br><i>Temperature, Conductivity, pH</i>                                                                    |
| WWTP Sludge (IQA-06)                      | No field testing                                |                                                                                                                         |
| West 40 Landfill (IQA-08A and IQA-08B)    | Hach DR3900<br><br>Hach HQ series probes (E)    | N - Nutrients<br><i>Nitrate-N, Nitrite-N and orthophosphate</i><br>E - Effluent<br><i>Temperature, Conductivity, pH</i> |

The instrument probes are calibrated prior to use following manufacturer's procedures using analytical grade reagents. In most instances, a clean beaker grab sample is collected from influent and effluent tap for the collection of field measurements using the multi-meter instrument.

### 4.2 SAMPLING PROCEDURES

Effluent, surface water and groundwater sampling is conducted to provide the City with effective environmental management information and to monitor regulatory compliance requirements.

The collection of samples in the field must follow the recommendation established by the CALA laboratory selected to do the analysis. These should conform to the protocols outlined in the Canadian Environmental Quality Guidelines (CCME, 2007). To ensure the quality and reliability of the monitoring and sampling work, staff must be adequately trained.

All sampling, sample preservation and analyses will be conducted in accordance with methods described in the current edition of *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association, American Water Works Association, and Water Environment Federation, most current edition).



To obtain meaningful results from the analysis, the following six factors are of importance:

- Sample collection as per schedule and location
- Correct usage of container/sample bottle for parameter being tested
- Correct labelling of sample bottles and filling out record/field sheet
- Correct procedure for field sampling
- Proper and timely shipment of samples to the laboratory (City controlled)
- Timely delivery of samples to the laboratory (not City controlled)

Sampling procedures are described below. Sample bottle requirements are presented in Appendix B: Environmental Monitoring Program Checklist.

### 4.3 PRE-SAMPLING ACTIVITIES

It is important to conduct pre-sampling activities to ensure a safe and successful sampling event. Table 2 shows the general steps to be taken prior to sample collection.

*Table 2 Pre-Sampling Activities*

|                               |                                                                                                                                                                                                                                                   |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bottling Order                | At least two weeks before upcoming environmental sampling, send a request to the contract laboratory for the appropriate sample sets (bottles) for the required sampling test groups (see Appendix C).                                            |
| Personal Protective Equipment | Ensure that the required personal protective equipment (PPE), such as latex gloves, is on hand before commencing the environmental monitoring program.                                                                                            |
| Sampling Location Inspection  | Perform an initial inspection of the sampling location before the commencement of the monitoring program. Make note of any equipment damage or unsafe conditions that may prevent the collection of the environmental monitoring program samples. |

### 4.4 SAMPLING LOCATIONS AND SCHEDULE

The Water Licence issued to the City (3AM-IQA1626) by the NWB specifies 28 monitoring stations across the following City facilities:

- Water Treatment Plant
- Waste Water Treatment Plant
- West 40 Landfill
- Waste Transfer Station (sampling to start one year before commission)
- Sewage Lagoon
- Niaqunguk river (Apex River)
- North 40 Landfill (sampling to start one year before commission)

The sample locations at the above facilities are shown on site plans in Appendix A.



The Monitoring Program created by Water Licence 3AM-IQA1626 includes specific requirements regarding sampling locations, sampling frequency, parameters to be analyzed. These requirements are summarized in Appendix C.

## **4.5 SAMPLING EQUIPMENT**

The following equipment is required when collecting samples:

- Dedicated latex or nitrile gloves (one pair per sample)
- Sampling pole (pond sampling)
- Foot valve, Wattera tubing, and graduated bucket (groundwater)
- Multimeter and bucket (when in-situ readings are required)

Dedicated latex or nitrile gloves are used when handling samples. Equipment such as sampling poles and holding buckets are cleaned with soap and water after each sample is collected to prevent cross-contamination. The water used must be Distilled Deionized Water (DDW).

Environmental monitoring samples collected for analysis of selected chemical parameters are placed directly into new pre-cleaned, laboratory-supplied sample bottles. All monitoring samples are placed in clean coolers prior to and during transportation to the contract laboratory. The samples are transported/submitted under Chain of Custody documentation.

## **4.6 SAMPLING METHODS**

### **4.6.1 WATER TREATMENT PLANT (IQA-01)**

Raw water samples are collected from the valve at the gravity intake pipe from the dam at Lake Geraldine, just as it enters the WTP. To take the sample, hold the sample bottle below the valve until the bottle is filled to the indicated level.

### **4.6.2 WASTEWATER TREATMENT PLANT (IQA-04 AND IQA-05)**

Samples of influent wastewater to the WWTP (IQA-05) are collected from a valve located after the wastewater enters the screw screen tanks. Effluent wastewater samples (IQA-04) are collected from a valve located at the last effluent pipe leading to discharge. To take samples, hold the sample bottle below the valve until the bottle is filled to the indicated level.

To collect in-situ data, fill a large clean container from the valve, big enough to ensure the multimeter can be fully submerged. Follow the procedure outlined in the multimeter manual for measurements.

### **4.6.3 SEWAGE LAGOON (IQA-02)**

Sewage lagoon samples are collected from the effluent outlet structure located on the west dyke, which is connected to the control valve. To take samples, place a large clean sample container in front of the effluent outlet while water is discharging. Once it is full, use the larger container to fill the smaller sample bottles. To



take in-situ measurements, place the multimeter in the large container and ensure it is fully submerged. Follow the procedure outlined in the multimeter manual.

#### **4.6.4 SEWAGE SLUDGE (IQA-06)**

Sewage sludge collected in a trailer located beneath the filter room of the WWTP. Sewage sludge samples are collected directly from the trailer by immersing the sample bottle into the sludge neck first to a depth of 5 to 10 cm. The sampling container is filled with sludge, and the sample bottle is raised neck first to prevent sample spillage.

#### **4.6.5 LANDFILL LEACHATE (IQA-08, IQA-15, AND IQA-16)**

This section is relevant to Stations IQA-08 (West 40 Landfill), IQA-15 (WTS), and IQA-16 (North Landfill).

Run-off from the West 40 Landfill is collected in an on-site run-off retention pond. The run-off is then pumped to the retention Pond 1 located across the road from the landfill, and when full, the contents of Retention Pond 1 is pumped to Retention Pond 2.

The landfill leachate sample is to be collected from Retention Pond 2. Sample bottles are filled with the discharge during the decanting period. When a Geotube is used, the samples are taken from the Geotube discharge (after filtration). Three water samples are collected during each decant, including a sample at the start, mid-point and at the end.

Samples from IQA-08A are collected from the ditch upstream of the landfill, and IQ-08B is collected from the ditch downstream of the landfill. To take these samples, lower an empty sample bottle (no preservatives) into the ditch at mid-depth, facing upstream. When the bottle is full, use it to decant into the other sample bottles.

Leachate at the Waste Transfer Station will be collected in a holding tank (IQA-15). The WTS leachate sample will be filled by opening the tank valve, before and during transfer.

At the North 40 Landfill, leachate will collect in two leachate ponds. Leachate samples should be collected from the valved discharge manhole on the second pond. Alternatively, samples may be collected using a sampling pole. Samples collected using this latter method should be collected as close to the middle of the pond (and at mid-depth), prioritizing the safety of the sampler. The intent is to avoid dead zones, corners, or surface scum as these parts of the pond are less likely to represent conditions within most of the pond.

#### **4.6.6 GROUNDWATER (19MW-01 TO 19MW-05, W-107 TO W-111)**

Groundwater is monitored at the Waste Transfer Station and the North Landfill, which include the following stations:

- Waste Transfer Station: 19MW-01, 19MW-02, 19MW-03, 19MW-04, and 19MW-05
- North Landfill: W-107, W-108, W-109, W-110, and W-111 (sampling to start one year before commission)

The wells are sampled using Waterra tubing equipped with a foot valve. Three well volumes (measured from the current water level to the bottom of the well, typically 3 litres to 6 litres in total) are purged prior to sampling; to do this, lower the foot valve into the well while connected to Waterra tubing, and shake up and down in a





pulsing movement, which should cause water to flow out of the Waterra tubing. Ensure the Waterra tubing outlets into a graduated bucket to keep track of how much water has been purged. Once the required volume is purged, sample bottles can be filled using the same technique. If water stops coming out before the required volume is purged, you will be required to wait for the well to recharge so you can continue purging. If the well is dry, contains insufficient water to purge/sample, or the well is frozen, write down the observation and continue to the next location as necessary.

To collect in-situ measurements, fill a large clean container, big enough to ensure the multimeter can be fully submerged. Follow the procedure outlined in the multimeter manual for measurements.

It is possible for wells to take time (minutes to hours) to recover after purging. Thus, it may be necessary to move on from a well and purge the other wells, before returning to collect samples.

#### **4.6.7 SURFACE WATER (SW1, SW2, SW3, WS-100, WS-101, WS-102)**

Surface water surrounding the WTS is sampled at Stations SW1, SW2, and SW3. When sampling these locations, a clean empty bottle (no preservatives) is lowered into the water body and fully submerged. This bottle is used to fill the other bottles as required.

### **4.7 SAMPLE HANDLING, LABELLING AND CHAIN OF CUSTODY FORM**

It is important to follow the laboratory-provided procedures to ensure a representative sample is taken, with no contamination. Even small amounts of foreign material (dirt on hands, sweat, other liquids/samples, etc.) can change the sample results.

Latex or nitrile gloves should be worn during sampling and should be replaced with fresh gloves after all sample containers are filled at each sampling location. Sampling equipment such as sampling poles should be cleaned with soap and water after each sample is collected to prevent cross-contamination.

All water samples are collected in laboratory-supplied containers with the proper preservative, where applicable. A complete list of parameters for handling and preservation can be found in Appendix B: Environmental Monitoring Program Checklists.

All sample containers are tightly sealed and properly labelled with the following information:

- Sample ID
- Date and time of sample collection
- Location of sample collection (i.e. location and monitoring station number)
- Parameters to be analyzed

The main objective of the sampler is to minimize any chemical changes to the sample between the time it is collected and delivery to the laboratory. The outside of the bottles should be cleaned with soap and water after sampling and prior to placing the samples in the cooler. Use ice or freezer packs to ensure that the samples are maintained below 10°C in the cooler during shipment to the laboratory. The samples are stored on ice in a cooler to maintain sample temperatures below 10°C until delivery to the laboratory. The samples cannot be allowed to freeze.



A chain of custody form is filled out completely and is used to track the samples. Complete the Chain of Custody form, keep the last page for the Foreman and put the form into the cooler with the samples. Place Custody seals across the lip of the cooler lid and ensure you sign and date the seals.

## 4.8 SAMPLE SHIPMENT

Ensure all samples are shipped to the contract laboratory by priority freight immediately after the completion of the environmental monitoring event to ensure that the hold times are respected for the various parameters. Follow-up with the contract laboratory on the day after the samples were shipped to ensure that the samples were collected from the air cargo facility and received by the contract laboratory for analysis.

The following checks are generally performed by the laboratory upon receipt:

- Verification of the integrity and condition of all sample coolers.
- Verification of the integrity and condition of all sample containers.
- Checks for leakage, cracked or broken closures or containers, evidence of grossly contaminated container exteriors or shipping cooler interiors, and obvious odours, etc.
- Verification of receipt of complete documentation for each container.
- Verification that sample identification numbers on sample transmittal forms correspond to sample identification numbers on the sample containers.
- Verifications that holding times were met and samples were kept cool during transit.

Upon arrival at the laboratory, samples shall be refrigerated as soon as possible.

## 4.9 QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM

Cross contamination is a common source of error in sampling procedures. QC samples help identify when and how contamination might occur. There are various types of QC samples including: blind duplicates, field blanks, and trip blanks. A blind duplicate is a duplicate sample that is not labelled as such. The purpose of the blind duplicate sample is to ensure analytical precision. A field blank is a sample of analyte free (i.e., clean) water poured into the container in the field, preserved and shipped to the laboratory with field samples and is analyzed along with field samples to check contamination from field conditions during sampling. A trip blank is a clean water sample that stays unopened and that remains with collected samples during transportation and is analyzed along with field samples to check residual contamination (i.e., to determine if cross contamination occurs during shipping).

The following number of quality control samples have been recommended based on the number of samples collected:

- One trip blank per cooler
- One field blank per cooler
- 10% blind duplicates

If the total number of samples collected is less than five, include at a minimum, one blind duplicate.



## 4.10 SAMPLING PERSONNEL

The following positions are responsible for conducting sampling at the various municipal facilities:

- Water treatment plant: Level 1 to Level 3 water treatment operator training
- WWTP and sewage lagoon: Level 1 to Level 2 wastewater treatment and collection training
- Landfills and other locations: In-house training on environmental sampling

City personnel currently completing the sampling under this Plan include the following:

Peter Martel, Operator ID 90086972

- Level 3 - Water Treatment
- Level 2 - Wastewater Treatment
- Level 1 - Water Distribution and Supply
- Level 1 - Wastewater Collection

p.martel@iqaluit.ca and 867-222-4468

Cameron Besner, Operator ID 90086967

- Level 2 - Water Treatment
- Level 1 - Water Distribution and supply
- Level 1 - Wastewater Treatment
- Level 1 - Wastewater Collection

c.besner@iqaluit.ca and 867-222-4925



## 5.0 LAB ANALYSIS

### 5.1 LAB INFORMATION

The City uses the following laboratory for water quality testing:

**Caduceon Environmental Laboratories (Ottawa)**

2378 Holly Lane Ottawa, ON K1V 7P1

Tel: 613-526-0123

Caduceon's accreditation with the Canadian Association for Laboratory Accreditation (CALA) is presented in Appendix D: Laboratory Accreditation & Supporting Documentation. This includes the list of the parameters for which they are certified, as well as a letter of support confirming the laboratories testing capabilities. Caduceon send samples to other accredited labs for any parameters that it does not have accreditation.

### 5.2 DETECTION LIMITS

Details on the calculation of the Method Detection Limits (MDLs) and the establishment of the Method Reporting Limits (MRLs) can be found in Appendix D: Laboratory Accreditation & Supporting Documentation.

### 5.3 METHODOLOGY

Current (2012) standard methodology is used by the contracted laboratory. Details on the methods used can be found in the Accreditation documentation found in Appendix D: Laboratory Accreditation & Supporting Documentation.



## **6.0 REPORTING REQUIREMENTS**

### **6.1 GENERAL SUBMISSIONS**

The City is required to submit an Annual Report formulated in accordance with the requirements under Schedule B of the Licence to the NWB. The objective of the Annual Report is to document the environmental monitoring, pursuant to the NWB licence, undertaken by the City during the period.



## 7.0 REFERENCES

Arcadis Canada Inc. (Arcadis). (2025). *Physical, Biological and Socioeconomic Screening Report - Long Term Water Project - Supply and Storage*. September. Ref. No. 30192375. Prepared for the City of Iqaluit.



## APPENDIX A

### Site Plans

|            |                                                                 |
|------------|-----------------------------------------------------------------|
| Figure A.1 | Location of Municipal Facilities                                |
| Figure A.2 | Water Treatment Plant SNP Station Location                      |
| Figure A.3 | Wastewater Treatment Plant and Sewage Lagoon Sampling Locations |
| Figure A.4 | West 40 Landfill Sampling Locations                             |
| Figure A.5 | Waste Transfer Station Sampling Locations                       |
| Figure A.6 | North 40 Landfill Sampling Locations                            |



Figure A.1

Location of Municipal Facilities





Figure A.2

Water Treatment Plant SNP Station Location



Figure A.3

Wastewater Treatment Plant and Sewage Lagoon Sampling Locations





Figure A.4

West 40 Landfill Sampling Locations



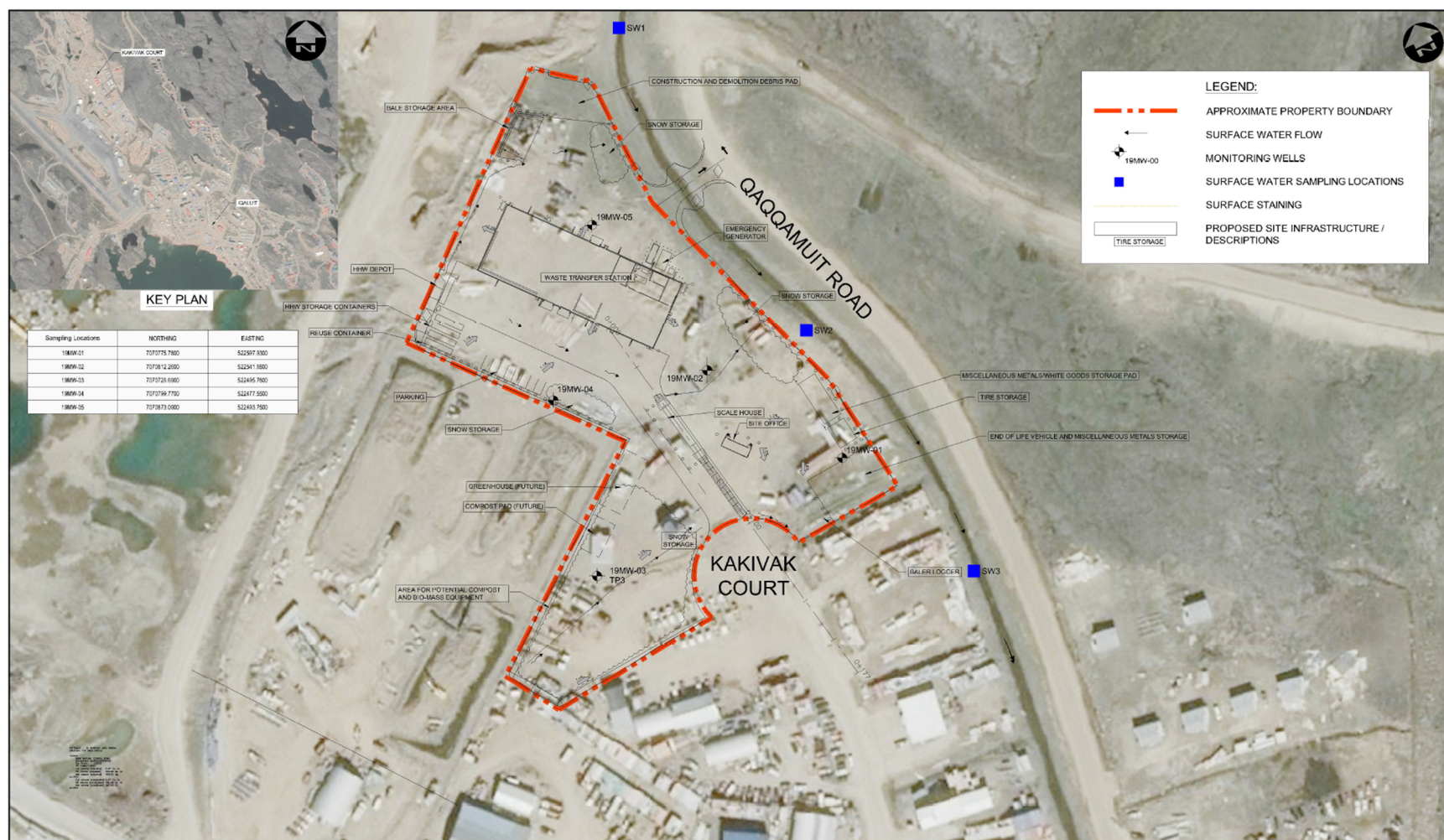


Figure A.5

Waste Transfer Station Sampling Locations

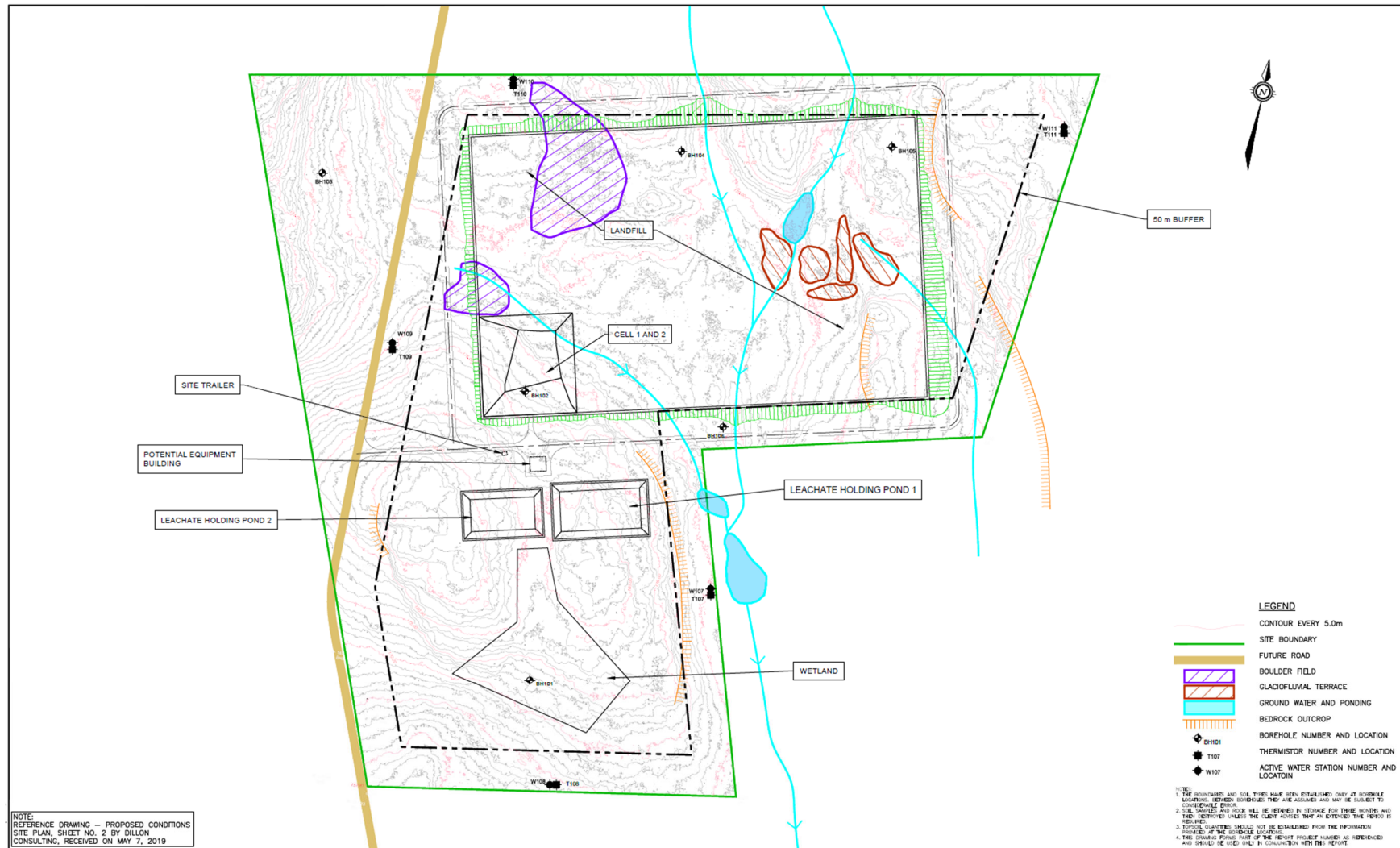


Figure A.6

North 40 Landfill Sampling Locations



## **APPENDIX B**

### **Sample Bottle Requirements**



## APPENDIX B

### SAMPLE BOTTLE REQUIREMENTS

*Table B.1                      Sample Bottle Requirements*

| Water                            |        |                  |                                                                                         |       |           |
|----------------------------------|--------|------------------|-----------------------------------------------------------------------------------------|-------|-----------|
| Parameter                        | Bottle | Bottle Size (mL) | Preservative/Instructions                                                               | Store | Hold Time |
| Acidity                          | P, G   | 250-1000         |                                                                                         | C     | 14d       |
| Alkalinity                       | P, G   | 250-1000         |                                                                                         | C     | 7d        |
| Anions                           | P, G   | 250-1000         |                                                                                         | C     | 7d        |
| BOD5/CBOD5                       | P, G   | 1000             |                                                                                         | C     | 5d        |
| Chlorine, residual               | P, G   | 250-1000         | No headspace                                                                            | C     | N.S.      |
| Chromium VI                      | P      | 125              | NaOH                                                                                    | C     | 24h       |
| Chromium VI - O.Reg. 153         | P      | 125              | (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> /NH <sub>4</sub> OH field filter for GW | C     | 28d       |
| COD                              | A, TL  | 125              | H <sub>2</sub> SO <sub>4</sub> to pH < 2                                                | C     | 28d       |
| Colour                           | P, G   | 250-1000         |                                                                                         | C     | 7d        |
| Conductivity                     | P, G   | 250-1000         |                                                                                         | C     | 14d       |
| Cyanide, Total or Free           | P      | 125              | NaOH to pH > 12                                                                         | C     | 14d       |
| DOC/DIC                          | A, TL  | 125              |                                                                                         | C     | 28d       |
| Hardness                         | P, G   | 250-1000         |                                                                                         |       | 28d       |
| HPLC Parameters                  | P      | 1000             | Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>                                           | C     | 14d       |
| Mercury                          | P, G   | 125              | HCl to pH < 2, field filter for GW or SW                                                |       | 14d       |
| Metals, general                  | P      | 125              | HNO <sub>3</sub> to pH < 2, field filter for GW                                         |       | 28d       |
| Microbiology                     | P, S   | 300              | Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> , 100mL min. vol./parameter               | C     | 48h       |
| Minerals - Ca, Mg, Na, K         | P, G   | 250-1000         |                                                                                         |       | 28d       |
| Nitrogen, Total Ammonia or TKN   | P      | 125              | H <sub>2</sub> SO <sub>4</sub> to pH < 2                                                | C     | 14d       |
| OC Pesticides                    | A, TL  | 1000             |                                                                                         | C     | 14d       |
| Oil & Grease                     | A, TL  | 1000             |                                                                                         | C     | 14d       |
| OP Pesticides                    | A, TL  | 1000             |                                                                                         | C     | 14d       |
| Petroleum Hydrocarbons - F1      | A, ST  | 2 x 40           | No headspace                                                                            | C     | 7d        |
| Petroleum Hydrocarbons - F2 - F4 | A, TL  | 1000             |                                                                                         | C     | 7d        |
| pH                               | P, G   | 250-1000         | 14-day hold time for DW/GW, 4-day for other                                             | C     | 14d/4d    |
| Phenols, colourmetric            | A, TL  | 125              | H <sub>2</sub> SO <sub>4</sub> to pH < 2                                                | C     | 28d       |
| Phosphorus, dissolved reactive   | P, G   | 250-1000         | Field filter for GW or SW                                                               | C     | 28d       |
| Phosphorus, total                | P      | 125              | H <sub>2</sub> SO <sub>4</sub> to pH < 2                                                | C     | 28d       |
| Polychlorinated Biphenyls (PCBs) | A, TL  | 1000             |                                                                                         | C     | 14d       |
| Semi-Volatiles, incl. PAH        | A, TL  | 1000             |                                                                                         | C     | 14d       |
| Solids                           | P, G   | 250-1000         |                                                                                         | C     | 28d       |



| Water                               |        |                  |                                                   |       |           |
|-------------------------------------|--------|------------------|---------------------------------------------------|-------|-----------|
| Parameter                           | Bottle | Bottle Size (mL) | Preservative/Instructions                         | Store | Hold Time |
| Sulphide                            | P      | 125              | NaOH/zinc acetate to pH >9                        | C     | 14d       |
| Triazine Herbicides                 | A, TL  | 1000             |                                                   | C     | 14d       |
| Turbidity                           | P, G   | 250-1000         |                                                   | C     | 48h       |
| Volatiles, BTEX, 624                | A, ST  | 2 x 40           | No headspace                                      | C     | 7d        |
| Soil/Solids                         |        |                  |                                                   |       |           |
| Parameter                           | Jar    | Jar Size (mL)    | Preservative                                      | Store | Hold Time |
| Agricultural Soil - Nutrients       | P, G   | 250-1000         |                                                   |       | 28d       |
| Carbon, Organic - TOC               | P, G   | 250              |                                                   | C     | 28d       |
| Chromium VI                         | P, G   | 250              |                                                   |       | 28d       |
| Cyanide, Total and Free             | P, G   | 250              |                                                   | C     | 14d       |
| Hydrometer                          | P, G   | 500              |                                                   |       | 28d       |
| Mercury                             | P, G   | 250              |                                                   |       | 28d       |
| Metals, general                     | P, G   | 250              |                                                   |       | 28d       |
| TKN                                 | P, G   | 250              |                                                   | C     | 14d       |
| Nitrogen, Total Ammonia             | P, G   | 250              |                                                   | C     | 28d       |
| OC Pesticides                       | A, TL  | 250              |                                                   | C     | 14d       |
| Oil & Grease                        | A, TL  | 250              |                                                   | C     | 14d       |
| Petroleum Hydrocarbons - F1         | A, ST  | 2 x 40 + 250     | Methanol in glass vials, extra 250mL for moisture | C     | 14d       |
| Petroleum Hydrocarbons - F2 - F4    | A, TL  | 250              |                                                   | C     | 14d       |
| pH                                  | P, G   | 250              |                                                   |       | 7d        |
| Phosphorus, total or extractable    | P, G   | 250              |                                                   | C     | 28d       |
| Polychlorinated Biphenyls (PCBs)    | A, TL  | 250              |                                                   | C     | 14d       |
| Regulation 347/558 - Metals         | A, TL  | 250              |                                                   |       | 28d       |
| Regulation 347/558 - PCBs           | A, TL  | 250              |                                                   | C     | 14d       |
| Regulation 347/558 - Semi-Volatiles | A, TL  | 250              |                                                   | C     | 14d       |
| Regulation 347/558 - Volatiles      | A, TL  | 250              |                                                   | C     | 14d       |
| Semi-Volatiles, incl. PAH           | A, TL  | 250              |                                                   | C     | 14d       |
| Sieve Analysis                      | P, G   | 500              |                                                   |       | 28d       |
| Triazine Herbicides                 | A, TL  | 250              |                                                   | C     | 14d       |
| Volatiles, BTEX, 624                | A, ST  | 2 x 40 + 250     | Methanol in glass vials, extra 250mL for moisture | C     | 14d       |

**Note(s):**

1. G=Glass P=Plastic A=Amber Glass TL=Teflon Lined ST=Septum Top S=Sterile C=Cold N.S=No Storage All volumes are listed in mL. Please contact the laboratory for parameters not listed. It is recommended that all samples be kept between 4 and 10°C to ensure sample integrity. Please do not freeze samples unless otherwise instructed. Bottles may be shared provided that the minimum sample volumes are met. Please contact the lab for further information.





## **APPENDIX C**

### **Monitoring Program Sampling Schedule**



## APPENDIX C

### MONITORING PROGRAM SAMPLING SCHEDULE

Appendix C contains information on sampling locations, sampling frequency, and parameters to be analyzed as required by Water Licence 3AM-IQA1626, including additional sampling sites and parameters introduced through the associated amendments. This information is presented in the following tables (Table C.1 and C.2).



Table C. 1 Water Quality Monitoring Station Summary

| Station ID | Description                                                                                     | Status   | Parameter           | Testing / Measurement Frequency                                                               | Reporting Frequency | UTM Coordinates (Zone 19V) |            |
|------------|-------------------------------------------------------------------------------------------------|----------|---------------------|-----------------------------------------------------------------------------------------------|---------------------|----------------------------|------------|
|            |                                                                                                 |          |                     |                                                                                               |                     | Easting                    | Northing   |
| IQA-01     | Lake Geraldine Reservoir - Raw Water                                                            | Active   | R, PW               | Monthly                                                                                       | Biannually          | 524367.61                  | 7069633.85 |
|            |                                                                                                 |          | F                   | Monthly                                                                                       |                     |                            |            |
| IQA-01(#)  | Based on Part I, Item 4 of Expired Licence                                                      | Inactive | N/A                 | N/A                                                                                           | N/A                 | N/A                        | N/A        |
| IQA-02     | Sewage Lagoon - Effluent Discharge Point                                                        | Active   | B, N, E, ICP        | Once prior to discharge; once during discharge; and once prior to the completion of discharge | Annually            | 522861.57                  | 7068606.42 |
|            |                                                                                                 |          | F                   | During decant                                                                                 |                     |                            |            |
| IQA-03     | Sewage Lagoon -Influent                                                                         | Inactive | N/A                 | N/A                                                                                           | N/A                 | N/A                        | N/A        |
| IQA-04     | Wastewater Treatment Plant - Effluent                                                           | Active   | B, N, E, ICP        | Quarterly - Prior to commissioning of the WWTP                                                | Annually            | 522745.4                   | 7068760.91 |
|            |                                                                                                 |          | B, N, E, ICP        | Monthly -Following commissioning of the WWTP                                                  |                     |                            |            |
|            |                                                                                                 |          | AL                  | Annually - following commissioning of the WWTP                                                |                     |                            |            |
|            |                                                                                                 |          | F                   | During Discharge                                                                              |                     |                            |            |
| IQA-05     | Wastewater Treatment Plant - Influent                                                           | Active   | B, E, N, ICP        | Biannually - Prior to commissioning of the WWTP                                               | Annually            | 522754.98                  | 7068795.08 |
|            |                                                                                                 |          |                     | No testing requirements following commissioning of the WWTP                                   | N/A                 |                            |            |
| IQA-06     | Sludge - From WWTP                                                                              | Active   | B, E, N, ICP        | Quarterly                                                                                     | Annually            | 522740.03                  | 7068772.46 |
| IQA-07     | Surface Water entering West 40 Landfill - Based on Part E, Item 4 of the Expired Licence        | Inactive | N/A                 | N/A                                                                                           | N/A                 | N/A                        | N/A        |
| IQA-08     | West 40 Landfill - Effluent Discharge Point (Discharge from Retention Pond 2 to Koojesse Inlet) | Active   | B, E, N, ICP, F, LS | Once prior to discharge; once during discharge; and once prior to the completion of discharge |                     | 522944.29                  | 7067134.88 |
|            |                                                                                                 |          | F                   | During Discharge                                                                              |                     |                            |            |



| Station ID | Description                                                                                                                                                                                                                                                                 | Status   | Parameter           | Testing / Measurement Frequency                   | Reporting Frequency | UTM Coordinates (Zone 19V) |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------|---------------------------------------------------|---------------------|----------------------------|------------|
|            |                                                                                                                                                                                                                                                                             |          |                     |                                                   |                     | Easting                    | Northing   |
| IQA-08(#)  | Based on E, Item 17, Part F, Item 10 & Part I, Item 4 of the Expired Licence                                                                                                                                                                                                | Inactive | N/A <sup>2</sup>    | N/A                                               | N/A                 | N/A                        | N/A        |
| IQA-08A    | Station situated up-gradient of West 40 Landfill                                                                                                                                                                                                                            | Active   | B, E, N, ICP, F, LS | Annually                                          | Annually            | 523009.56                  | 7067197.87 |
| IQA-08B    | Station situated down-gradient of West 40 Landfill                                                                                                                                                                                                                          | Active   |                     |                                                   |                     | 522888.14                  | 7067611.07 |
| IQA-09     | Contaminated soil accepted at the West 40 Landfill                                                                                                                                                                                                                          | Inactive | NA                  | NA                                                | NA                  | N/A                        | N/A        |
| IQA-10     | Withdrawal from Upper Niaqunngut River for transfer directly into the Reservoir.                                                                                                                                                                                            | Active   | F                   | Daily when withdrawals occurring at this station. | Annual Report       | 525652.96                  | 7070564.94 |
| IQA-11     | Withdrawal from Middle Niaqunngut River watershed for transfer directly into the Reservoir. Withdrawal point to be located on an ephemeral tributary near where it enters the Niaqunngut River or on the river itself just downstream of the confluence with the tributary. | Inactive | F                   | Daily when withdrawals occurring at this station. | N/A                 | N/A                        | N/A        |
| IQA-12     | Withdrawal from small unnamed source water lakes adjacent to Lake Geraldine Reservoir for transfer directly to the reservoir.                                                                                                                                               | Inactive | F                   | Daily when withdrawals occurring at this station. | N/A                 | N/A                        | N/A        |
| IQA-13     | Withdrawal from large unnamed source water lake for transfer into ephemeral tributary to Niaqunngut River. Intent of withdrawal is to provide water to withdrawal point at Monitoring Station IQA-10.                                                                       | Inactive | F                   | Daily when withdrawals occurring at this station. | N/A                 | N/A                        | N/A        |
| IQA-14     | Withdrawal from Imiqtariviviniq (Dead Dog Lake) for dust suppression.                                                                                                                                                                                                       | Active   | F                   | Daily when withdrawals occurring at this station  | Annually            | 525233.6                   | 7068931.84 |



| Station ID      | Description                                            | Status   | Parameter           | Testing / Measurement Frequency                                                                                     | Reporting Frequency | UTM Coordinates (Zone 19V) |            |
|-----------------|--------------------------------------------------------|----------|---------------------|---------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------|------------|
|                 |                                                        |          |                     |                                                                                                                     |                     | Easting                    | Northing   |
| IQA-15          | Waste Transfer Station Runoff/Leachate Discharge Point | Active   | B, N, E, ICP, F, LS | Daily flow measurements; Once prior to discharge; once during discharge; and once prior to completion of discharge. | Annually            | 522486.33                  | 7070862.23 |
| IQA-16 (WS-103) | Landfill Runoff/Leachate Discharge Point               | Active   | B, N, E, ICP, F, LS | Daily flow measurements; Once prior to discharge; once during discharge; and once prior to completion of discharge  | Annually            | 520895.03                  | 7075982.07 |
| IQA-17          | Withdrawal from Sylvia Grinnell River                  | Inactive | F                   | Daily when withdrawal occurring at this Station                                                                     | 2021 Annual Report  | N/A                        | N/A        |
| SW1             | Waste Transfer Station surface water monitoring        | Active   | Field               | Monthly                                                                                                             | Annually            | 522508.82                  | 7070951.76 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| SW2             | Waste Transfer Station surface water monitoring        | Active   | Field               | Monthly                                                                                                             | Annually            | 522535.75                  | 7070882.75 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| SW3             | Waste Transfer Station surface water monitoring        | Active   | Field               | Monthly                                                                                                             | Annually            | 522560.7                   | 7070856.75 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| WS-100          | New North Landfill surface water monitoring            | Active   | Field               | Monthly                                                                                                             | Annually            | 521411.38                  | 7076275.05 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| WS-101          | New North Landfill surface water monitoring            | Active   | Field               | Monthly                                                                                                             | Annually            | 520461.29                  | 7076406.01 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| WS-102          | New North Landfill surface water monitoring            | Active   | Field               | Monthly                                                                                                             | Annually            | 520503.61                  | 7076138.07 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| 19MW-01         | Waste Transfer Station ground water monitoring         | Active   | Field               | Monthly                                                                                                             | Annually            | 522597.93                  | 7070755.78 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| 19MW-02         | Waste Transfer Station ground water monitoring         | Active   | Field               | Monthly                                                                                                             | Annually            | 522541.68                  | 7070812.28 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| 19MW-03         | Waste Transfer Station ground water monitoring         | Active   | Field               | Monthly                                                                                                             | Annually            | 522495.78                  | 7070726.69 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |
| 19MW-04         | Waste Transfer Station ground water monitoring         | Active   | Field               | Monthly                                                                                                             | Annually            | 522477.55                  | 7070799.77 |
|                 |                                                        |          | Laboratory          | Twice per Year                                                                                                      |                     |                            |            |



| Station ID | Description                                | Status | Parameter  | Testing / Measurement Frequency | Reporting Frequency | UTM Coordinates (Zone 19V) |            |
|------------|--------------------------------------------|--------|------------|---------------------------------|---------------------|----------------------------|------------|
|            |                                            |        |            |                                 |                     | Easting                    | Northing   |
| W-107      | New North Landfill ground water monitoring | Active | Field      | Monthly                         | Annually            | 521116.06                  | 7076117.94 |
|            |                                            |        | Laboratory | Twice per Year                  |                     |                            |            |
| W-108      | New North Landfill ground water monitoring | Active | Field      | Monthly                         | Annually            | 520926.65                  | 7075878.21 |
|            |                                            |        | Laboratory | Twice per Year                  |                     |                            |            |
| W-109      | New North Landfill ground water monitoring | Active | Field      | Monthly                         | Annually            | 520695.06                  | 7076355.5  |
|            |                                            |        | Laboratory | Twice per Year                  |                     |                            |            |
| W-110      | New North Landfill ground water monitoring | Active | Field      | Monthly                         | Annually            | 520764.5                   | 7076679    |
|            |                                            |        | Laboratory | Twice per Year                  |                     |                            |            |
| W-111      | New North Landfill ground water monitoring | Active | Field      | Monthly                         | Annually            | 521370.41                  | 7076746.25 |
|            |                                            |        | Laboratory | Twice per Year                  |                     |                            |            |

Table C. 2 Water Quality Parameters

| Test Group                | Analytical Parameters                                                                                                                                                                                                                                                             | Units           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Routine (R)               | Alkalinity, Acidity, Chloride, Carbonate, Bicarbonate, Total Hardness, Hydroxide, Sulphate, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Total Organic Carbon (TOC), Total Inorganic Carbon (TIC)                                                                  | mg/L            |
|                           | pH (field and lab)                                                                                                                                                                                                                                                                | pH units        |
|                           | Oxidation-Reduction Potential (ORP) (field)                                                                                                                                                                                                                                       | mV              |
|                           | Conductivity (field and lab)                                                                                                                                                                                                                                                      | uS/cm           |
|                           | Temperature (field)                                                                                                                                                                                                                                                               | °C              |
|                           | Turbidity                                                                                                                                                                                                                                                                         | NTU             |
| Effluent (E)              | Total Suspended Solids (TSS)                                                                                                                                                                                                                                                      | mg/L            |
|                           | Temperature (field)                                                                                                                                                                                                                                                               | °C              |
|                           | Conductivity (field and lab)                                                                                                                                                                                                                                                      | uS/cm           |
|                           | pH (field and lab)                                                                                                                                                                                                                                                                | pH units        |
| Acute Lethality (AL)      | Based on Environmental Canada's Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout (EPS 1/RM/50, March 2008), if single concentration test fails and unionized ammonia concentration is less than or equal to 1.25 mg/L | "Pass" / "Fail" |
| ICP - Metals Scan (Total) | Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Ag, Sr, Tl, Ti, U, V, Zn, Hg                                                                                                                                                                                  | mg/L            |
| Nutrients (N)             | Ammonia-N, Nitrate-N, Nitrite-N                                                                                                                                                                                                                                                   | mg N/L          |





| Test Group             | Analytical Parameters                                                                                                                                                                                        | Units                             |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
|                        | Total Phosphorus, Orthophosphate                                                                                                                                                                             | mg/L                              |
| Biological (B)         | Biochemical Oxygen Demand                                                                                                                                                                                    | mg/L                              |
|                        | Total and Fecal Coliform                                                                                                                                                                                     | CFU/100 mL                        |
| Potable Water (PW)     | Fecal Coliform                                                                                                                                                                                               | CFU/100 mL                        |
|                        | ICP Metals (Total and dissolved)                                                                                                                                                                             | mg/L                              |
|                        | Total Suspended Solids - TSS                                                                                                                                                                                 | mg/L                              |
| Flow (F)               | Volume                                                                                                                                                                                                       | m <sup>3</sup>                    |
| Landfill Specific (LS) | Polychlorinated Biphenyls (PCBs), Benzene, Toluene, Ethylbenzene, Xylene (BTEX)                                                                                                                              | mg/L                              |
| Field                  | pH, temperature, conductivity, Dissolved Oxygen (DO), and turbidity.                                                                                                                                         | pH units, °C,<br>uS/cm, mg/L, NTU |
| Laboratory             | PHCs Fractions F1 to F4, including BTEX, Total metals, Dissolved metals, PFAS (WTS only) PAHs, and Dissolved major ions (including alkalinity), hardness, total dissolved solids and total suspended solids. | mg/L                              |



## **APPENDIX D**

### **Laboratory Accreditation & Supporting Documentation**



## APPENDIX D

### LABORATORY ACCREDITATION & SUPPORTING DOCUMENTS

#### 1.0 METHOD DETECTION LIMIT (MDL)

The Method Detection Limit (MDL) is calculated based on procedures as published by the Ontario Ministry of Environment in various documents. The MDL is a statistically derived level where measured results above this value indicate the presence of an analyte with a specified probability (confidence limit) and assumes there are no known sources of error in identification or biases in measurement. The confidence limit for this determination is 99% and is used to determine the multiplication factor used from Student's t-tables. The t-value depends on the amount of data used for the MDL determination with 8 being the minimum number of replicates for the calculation. The MDL must initially be estimated by the analyst based on, but not limited to the following; instrument sensitivity (e.g. a concentration that corresponds to a signal to noise value of 3:1), instrumental reproducibility, analyte recovery, sample types (matrices/interference), anticipated analyte levels, and any applicable regulatory requirements.

#### 2.0 METHOD REPORTING LIMIT (MRL)

The Method Reporting Limit (MRL) is be established as the lowest practical level of quantification for an analyte. The value of the MRL will be established at a level equal to or greater than the MDL. At no time can the MRL be lower than the MDL. The MRL will be established based on, but not limited to the following criteria:

- MDL & IDL
- Sample matrix
- Instrument operating conditions - stability, sensitivity etc.
- End use of data - historical data considerations
- Regulatory reporting requirements
- Analytical considerations - multi-parameter scan vs. single-parameter method
- Consistency between analytical techniques - e.g. IC vs. Electrode, ICP-MS vs. ICP-AES
- Preparation procedures - analyte recovery etc.

The MRL will be set at a level between 1 and 10 times the MDL as required. The MRL must be a measurable quantity and will be verified by analysis of a standard solution at the level of the MRL on a regular basis, generally, but not limited to, weekly analysis. This solution will typically be lower than the lowest calibration standard used, which must be < 10X the MRL, but in some cases may be the lowest calibration standard. The frequency and acceptable deviation of the verification solution will be method dependent and will be included in the individual SOPs. Any results below the MRL will be reported as <MRL. There will be no further indicators of results that are below the MRL but above the MDL.

June 9, 2026

Kevin Kerr, P.Eng.  
Director of Engineering and Capital Projects  
City of Iqaluit  
1085 Mivvik Street  
Building 901  
P.O. Box 460  
Iqaluit, NU  
[k.kerr@iqaluit.ca](mailto:k.kerr@iqaluit.ca)

Dear Kevin Kerr,

Caduceon Environmental Laboratories looks forward to aiding the City of Iqaluit in their environmental analysis. Caduceon staff have reviewed the PDF document entitled Rev 4 (April 24, 2026) version of the City's Environmental Monitoring Program and QA/QC Plan that was provided to our Laboratory.

Our staff have read and understand the requirements found within this document and see no issues with providing you quality service and analysis. In addition, it has been noted that it is necessary all testing be completed by a CALA accredited Laboratory. Caduceon Environmental Laboratories are accredited for the majority of the parameters listed within the document. Those parameters for which Caduceon is not currently accredited will be subcontracted to an accredited lab.

Should you require any further information please feel to contact me at the coordinates listed in my signature below.

Thank you for providing us with the opportunity to work with the City of Iqaluit.

Regards,



Steve Garrett – Director of Laboratory Services  
Caduceon Environmental Laboratories  
Tel: (613) 544-2001  
E-mail: [sgarrett@caduceonlabs.com](mailto:sgarrett@caduceonlabs.com)

cc: Scott Burrows, Quality Assurance Office  
Damien Gilbert, CEO

# CALA Scope of Accreditation

**Laboratory Name:** Caduceon Environmental Laboratories (Ottawa)

**Parent Institution:** Caduceon Enterprises Inc.

**Contact:** Mr. Steve Garrett

**Phone:** (613) 526-0123

**Standard:** Conforms with requirements of ISO/IEC 17025:2017

**Revised On:** 05/24/2024

**Client ID:** 1002644

**Address:** 2378 Holly Lane, Ottawa, Ontario, K1V 7P1

**Email:** sgarrett@caduceonlabs.com; sburrows@caduceonlabs.com

**Fax:** (613) 526-1244

**Clients Served:**

**Valid To:** 05/22/2027

CALA is committed to [Canada's anti-spam legislation \(CASL\)](https://ised-isde.canada.ca/site/canada-anti-spam-legislation/en) (<https://ised-isde.canada.ca/site/canada-anti-spam-legislation/en>). Please note that the email addresses published on this website are provided solely for professional or informational purposes. Any use of these addresses for unsolicited commercial electronic messages or the harvesting of email addresses is strictly prohibited and may be subject to legal action under CASL.

## 002 - Anions

**Field of Accreditation:** Environmental **Matrix:** Water [Liquid Biosolid, Wastewater] OSDWA<sup>†</sup>

**Analytical Method:** ION CHROMATOGRAPHY (IC) **Preparation Method:**

**Lab Method ID(s):** A-IC-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| SM 4110 B        | Yes           | Yes               | No                 |

### Parameter

Bromide  
Chloride  
Fluoride  
Nitrate  
Nitrite  
Sulfate

## 003 - Conductivity

**Field of Accreditation:** Environmental **Matrix:** Water OSDWA<sup>†</sup>

**Analytical Method:** CONDUCTIVITY METER **Preparation Method:**

**Lab Method ID(s):** A-COND-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| SM 2510 B        | Yes           | Yes               | No                 |

### Parameter

Conductivity (25°C)

## 004 - Dissolved and Extractable Metals

**Field of Accreditation:** Environmental **Matrix:** Water OSDWA<sup>†</sup>

**Analytical Method:** ICP **Preparation Method:**

**Lab Method ID(s):** D-ICP-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| SM 3120 B        | Yes           | Yes               | No                 |

### Parameter

Aluminum  
Barium  
Beryllium  
Bismuth  
Boron  
Cadmium  
Calcium  
Chromium  
Cobalt  
Copper  
Iron  
Lead  
Lithium  
Magnesium  
Manganese  
Molybdenum  
Nickel  
Potassium

|                  |  |
|------------------|--|
| <b>Parameter</b> |  |
| Silicon          |  |
| Silver           |  |
| Sodium           |  |
| Strontium        |  |
| Tin              |  |
| Titanium         |  |
| Tungsten         |  |
| Vanadium         |  |
| Yttrium          |  |
| Zinc             |  |
| Zirconium        |  |

### 005 - pH

|                                              |                                                    |                           |
|----------------------------------------------|----------------------------------------------------|---------------------------|
| <b>Field of Accreditation:</b> Environmental | <b>Matrix:</b> Water [Liquid Biosolid, Wastewater] | OSDWA <sup>†</sup>        |
| <b>Analytical Method:</b> PH METER           | <b>Preparation Method:</b>                         |                           |
| <b>Lab Method ID(s):</b> A-PH-01             |                                                    |                           |
| <b>Method Reference</b>                      | <b>Modified From</b>                               | <b>Analytical Method</b>  |
| SM 4500-H+                                   | Yes                                                | Yes                       |
|                                              |                                                    | <b>Preparation Method</b> |
|                                              |                                                    | No                        |
| <b>Parameter</b>                             |                                                    |                           |
| pH                                           |                                                    |                           |

### 010 - Escherichia coli (E. coli)

|                                                    |                            |                           |
|----------------------------------------------------|----------------------------|---------------------------|
| <b>Field of Accreditation:</b> Environmental       | <b>Matrix:</b> Water       | OSDWA <sup>†</sup>        |
| <b>Analytical Method:</b> MEMBRANE FILTRATION (EC) | <b>Preparation Method:</b> |                           |
| <b>Lab Method ID(s):</b> B-MFEC-01                 |                            |                           |
| <b>Method Reference</b>                            | <b>Modified From</b>       | <b>Analytical Method</b>  |
| ON MECP E3371                                      | Yes                        | Yes                       |
|                                                    |                            | <b>Preparation Method</b> |
|                                                    |                            | No                        |
| <b>Parameter</b>                                   |                            |                           |
| Escherichia coli                                   |                            |                           |

### 012 - Metals

|                                              |                                      |                           |
|----------------------------------------------|--------------------------------------|---------------------------|
| <b>Field of Accreditation:</b> Environmental | <b>Matrix:</b> Air [Filter]          |                           |
| <b>Analytical Method:</b> ICP                | <b>Preparation Method:</b> DIGESTION |                           |
| <b>Lab Method ID(s):</b> D-ICP-02            |                                      |                           |
| <b>Method Reference</b>                      | <b>Modified From</b>                 | <b>Analytical Method</b>  |
| NIOSH 7303                                   | No                                   | Yes                       |
| SM 3120 B                                    | Yes                                  | Yes                       |
|                                              |                                      | <b>Preparation Method</b> |
|                                              |                                      | No                        |
| <b>Parameter</b>                             |                                      |                           |
| Cadmium                                      |                                      |                           |
| Copper                                       |                                      |                           |
| Lead                                         |                                      |                           |
| Zinc                                         |                                      |                           |

### 015 - Metals

|                                              |                                        |                           |
|----------------------------------------------|----------------------------------------|---------------------------|
| <b>Field of Accreditation:</b> Environmental | <b>Matrix:</b> Solids [Biosolid, Soil] |                           |
| <b>Analytical Method:</b> ICP/OES            | <b>Preparation Method:</b> DIGESTION   |                           |
| <b>Lab Method ID(s):</b> D-ICP-02            |                                        |                           |
| <b>Method Reference</b>                      | <b>Modified From</b>                   | <b>Analytical Method</b>  |
| EPA 6010                                     | Yes                                    | Yes                       |
|                                              |                                        | <b>Preparation Method</b> |
|                                              |                                        | No                        |
| <b>Parameter</b>                             |                                        |                           |
| Aluminum                                     |                                        |                           |
| Antimony                                     |                                        |                           |
| Arsenic                                      |                                        |                           |
| Barium                                       |                                        |                           |
| Beryllium                                    |                                        |                           |
| Boron                                        |                                        |                           |
| Cadmium                                      |                                        |                           |
| Calcium                                      |                                        |                           |
| Chromium                                     |                                        |                           |
| Cobalt                                       |                                        |                           |
| Copper                                       |                                        |                           |
| Iron                                         |                                        |                           |
| Lead                                         |                                        |                           |
| Magnesium                                    |                                        |                           |

|                  |
|------------------|
| <b>Parameter</b> |
| Manganese        |
| Molybdenum       |
| Nickel           |
| Potassium        |
| Silver           |
| Sodium           |
| Strontium        |
| Tin              |
| Titanium         |
| Tungsten         |
| Vanadium         |
| Zinc             |

### 017 - Mercury

|                                                                |                      |                                        |                           |
|----------------------------------------------------------------|----------------------|----------------------------------------|---------------------------|
| <b>Field of Accreditation:</b> Environmental                   |                      | <b>Matrix:</b> Solids [Biosolid, Soil] |                           |
| <b>Analytical Method:</b> COLD VAPOUR ATOMIC ABSORPTION (CVAA) |                      | <b>Preparation Method:</b> DIGESTION   |                           |
| <b>Lab Method ID(s):</b> D-HG-01                               |                      |                                        |                           |
| <b>Method Reference</b>                                        | <b>Modified From</b> | <b>Analytical Method</b>               | <b>Preparation Method</b> |
| EPA 7471A                                                      | Yes                  | Yes                                    | No                        |
| <b>Parameter</b>                                               |                      |                                        |                           |
| Mercury                                                        |                      |                                        |                           |

### 018 - Total Suspended Particulates

|                                       |               |                                   |                    |
|---------------------------------------|---------------|-----------------------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Air [Filter, Particulate] |                    |
| Analytical Method: GRAVIMETRIC        |               | Preparation Method:               |                    |
| Lab Method ID(s): A-TSP-01            |               |                                   |                    |
| Method Reference                      | Modified From | Analytical Method                 | Preparation Method |
| ON MECP E3288A                        | Yes           | Yes                               | No                 |
| Parameter                             |               |                                   |                    |
| Total Suspended Particulates          |               |                                   |                    |

### 019 - Fluoride

|                                                         |                      |                                      |                           |
|---------------------------------------------------------|----------------------|--------------------------------------|---------------------------|
| <b>Field of Accreditation:</b> Environmental            |                      | <b>Matrix:</b> Fluoride Candles      |                           |
| <b>Analytical Method:</b> ION SELECTIVE ELECTRODE (ISE) |                      | <b>Preparation Method:</b> DIGESTION |                           |
| <b>Lab Method ID(s):</b> A-FISE-01                      |                      |                                      |                           |
| <b>Method Reference</b>                                 | <b>Modified From</b> | <b>Analytical Method</b>             | <b>Preparation Method</b> |
| ON MECP FSIE-1983D                                      | Yes                  | Yes                                  | No                        |
| <b>Parameter</b>                                        |                      |                                      |                           |
| Fluoride                                                |                      |                                      |                           |

### 020 - Dustfall

|                                       |               |                                |                    |
|---------------------------------------|---------------|--------------------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Dustfall               |                    |
| Analytical Method: GRAVIMETRIC        |               | Preparation Method: FILTRATION |                    |
| Lab Method ID(s): A-DF-01             |               |                                |                    |
| Method Reference                      | Modified From | Analytical Method              | Preparation Method |
| ON MECP E3043                         | Yes           | Yes                            | No                 |
| Parameter                             |               |                                |                    |
| Insoluble Dustfall                    |               |                                |                    |
| Total Dustfall                        |               |                                |                    |

### 021 - Heterotrophic Plate Count (HPC)

|                                       |               |                     |                    |        |
|---------------------------------------|---------------|---------------------|--------------------|--------|
| Field of Accreditation: Environmental |               | Matrix: Water       |                    | OSDWA† |
| Analytical Method: SPREAD PLATE       |               | Preparation Method: |                    |        |
| Lab Method ID(s): B-HPC-01            |               |                     |                    |        |
| Method Reference                      | Modified From | Analytical Method   | Preparation Method |        |
| SM 9215 C                             | Yes           | Yes                 | No                 |        |
| Parameter                             |               |                     |                    |        |
| Heterotrophic Plate Count (HPC)       |               |                     |                    |        |

### 025 - Mercury

|                                              |                                   |                    |
|----------------------------------------------|-----------------------------------|--------------------|
| <b>Field of Accreditation:</b> Environmental | <b>Matrix:</b> Water [Wastewater] | OSDWA <sup>†</sup> |
|----------------------------------------------|-----------------------------------|--------------------|



|                                                         |               |                   |                    |                                              |        |
|---------------------------------------------------------|---------------|-------------------|--------------------|----------------------------------------------|--------|
| Analytical Method: COLD VAPOUR ATOMIC ABSORPTION (CVAA) |               |                   |                    | Preparation Method: DIGESTION                |        |
| Lab Method ID(s): D-HG-02                               |               |                   |                    |                                              |        |
| Method Reference                                        | Modified From | Analytical Method | Preparation Method |                                              |        |
| SM 3112 B                                               | Yes           | Yes               | No                 |                                              |        |
| Parameter                                               |               |                   |                    |                                              |        |
| Mercury                                                 |               |                   |                    |                                              |        |
| 026 - Turbidity                                         |               |                   |                    |                                              |        |
| Field of Accreditation: Environmental                   |               |                   |                    | Matrix: Water                                | OSDWA† |
| Analytical Method: NEPHELOMETRIC                        |               |                   |                    | Preparation Method:                          |        |
| Lab Method ID(s): A-TURB-01                             |               |                   |                    |                                              |        |
| Method Reference                                        | Modified From | Analytical Method | Preparation Method |                                              |        |
| SM 2130 B                                               | Yes           | Yes               | No                 |                                              |        |
| Parameter                                               |               |                   |                    |                                              |        |
| Turbidity                                               |               |                   |                    |                                              |        |
| 027 - Colour                                            |               |                   |                    |                                              |        |
| Field of Accreditation: Environmental                   |               |                   |                    | Matrix: Water                                | OSDWA† |
| Analytical Method: SPECTROPHOTOMETRIC                   |               |                   |                    | Preparation Method:                          |        |
| Lab Method ID(s): A-COL-01                              |               |                   |                    |                                              |        |
| Method Reference                                        | Modified From | Analytical Method | Preparation Method |                                              |        |
| SM 2120 C                                               | Yes           | Yes               | No                 |                                              |        |
| Parameter                                               |               |                   |                    |                                              |        |
| True Colour                                             |               |                   |                    |                                              |        |
| 049 - Dissolved Metals                                  |               |                   |                    |                                              |        |
| Field of Accreditation: Environmental                   |               |                   |                    | Matrix: Water                                | OSDWA† |
| Analytical Method: ICP/MS                               |               |                   |                    | Preparation Method:                          |        |
| Lab Method ID(s): D-ICPMS-01                            |               |                   |                    |                                              |        |
| Method Reference                                        | Modified From | Analytical Method | Preparation Method |                                              |        |
| EPA 200.8                                               | Yes           | Yes               | No                 |                                              |        |
| Parameter                                               |               |                   |                    |                                              |        |
| Antimony                                                |               |                   |                    |                                              |        |
| Arsenic                                                 |               |                   |                    |                                              |        |
| Barium                                                  |               |                   |                    |                                              |        |
| Beryllium                                               |               |                   |                    |                                              |        |
| Cadmium                                                 |               |                   |                    |                                              |        |
| Chromium                                                |               |                   |                    |                                              |        |
| Cobalt                                                  |               |                   |                    |                                              |        |
| Copper                                                  |               |                   |                    |                                              |        |
| Lead                                                    |               |                   |                    |                                              |        |
| Molybdenum                                              |               |                   |                    |                                              |        |
| Selenium                                                |               |                   |                    |                                              |        |
| Silver                                                  |               |                   |                    |                                              |        |
| Thallium                                                |               |                   |                    |                                              |        |
| Uranium                                                 |               |                   |                    |                                              |        |
| Vanadium                                                |               |                   |                    |                                              |        |
| 050 - Coliforms                                         |               |                   |                    |                                              |        |
| Field of Accreditation: Environmental                   |               |                   |                    | Matrix: Water                                | OSDWA† |
| Analytical Method: MEMBRANE FILTRATION (DC)             |               |                   |                    | Preparation Method:                          |        |
| Lab Method ID(s): B-ECTC-01                             |               |                   |                    |                                              |        |
| Method Reference                                        | Modified From | Analytical Method | Preparation Method |                                              |        |
| ON MECP E3407                                           | Yes           | Yes               | No                 |                                              |        |
| Parameter                                               |               |                   |                    |                                              |        |
| Background Counts                                       |               |                   |                    |                                              |        |
| Escherichia coli                                        |               |                   |                    |                                              |        |
| Total Coliforms                                         |               |                   |                    |                                              |        |
| 054 - Carbon                                            |               |                   |                    |                                              |        |
| Field of Accreditation: Environmental                   |               |                   |                    | Matrix: Water                                | OSDWA† |
| Analytical Method: INFRARED SPECTROSCOPY (IR)           |               |                   |                    | Preparation Method: UV-PERSULPHATE OXIDATION |        |

Lab Method ID(s): C-OC-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| EPA 415.2        | Yes           | Yes               | No                 |
| SM 5310 C        | Yes           | Yes               | No                 |

Parameter  
Organic Carbon

065 - Fecal (Thermotolerant) Coliforms

|                                               |                     |                    |
|-----------------------------------------------|---------------------|--------------------|
| Field of Accreditation: Environmental         | Matrix: Water       | OSDWA <sup>†</sup> |
| Analytical Method: MEMBRANE FILTRATION (M-FC) | Preparation Method: |                    |

Lab Method ID(s): B-MFFC-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| SM 9222 D        | Yes           | Yes               | No                 |

Parameter  
Fecal (Thermotolerant) Coliforms

066 - Total Coliforms

|                                                 |                     |                    |
|-------------------------------------------------|---------------------|--------------------|
| Field of Accreditation: Environmental           | Matrix: Water       | OSDWA <sup>†</sup> |
| Analytical Method: MEMBRANE FILTRATION (M-ENDO) | Preparation Method: |                    |

Lab Method ID(s): B-MFTC-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| ON MECP E3371    | Yes           | Yes               | No                 |

Parameter  
Background Counts  
Total Coliforms

067 - Total Metals

|                                       |                                             |
|---------------------------------------|---------------------------------------------|
| Field of Accreditation: Environmental | Matrix: Water [Liquid Biosolid, Wastewater] |
| Analytical Method: ICP/OES            | Preparation Method: DIGESTION               |

Lab Method ID(s): D-ICP-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| SM 3120 B        | Yes           | Yes               | No                 |

Parameter  
Aluminum  
Antimony  
Arsenic  
Barium  
Beryllium  
Bismuth  
Boron  
Cadmium  
Calcium  
Chromium  
Cobalt  
Copper  
Iron  
Lead  
Lithium  
Magnesium  
Manganese  
Molybdenum  
Nickel  
Potassium  
Silver  
Sodium  
Strontium  
Tin  
Titanium  
Tungsten  
Vanadium  
Yttrium  
Zinc  
Zirconium

069 - Anions

|                                       |                                 |
|---------------------------------------|---------------------------------|
| Field of Accreditation: Environmental | Matrix: Solids [Biosolid, Soil] |
|---------------------------------------|---------------------------------|

Analytical Method: ION CHROMATOGRAPHY (IC)

Preparation Method: EXTRACTION

Lab Method ID(s): A-IC-01

| Method Reference   | Modified From | Analytical Method | Preparation Method |
|--------------------|---------------|-------------------|--------------------|
| SM 4110 B          | Yes           | Yes               | No                 |
| Parameter          |               |                   |                    |
| Chloride           |               |                   |                    |
| Nitrate (NO3)      |               |                   |                    |
| Nitrite (NO2)      |               |                   |                    |
| Sulphate (Sulfate) |               |                   |                    |

070 - Total Metals

Field of Accreditation: Environmental

Matrix: Solids [Biosolid, Soil]

Analytical Method: ICP/MS

Preparation Method: DIGESTION

Lab Method ID(s): D-ICPMS-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| EPA 6020B        | Yes           | Yes               | No                 |
| Parameter        |               |                   |                    |
| Antimony         |               |                   |                    |
| Arsenic          |               |                   |                    |
| Selenium         |               |                   |                    |
| Silver           |               |                   |                    |
| Thallium         |               |                   |                    |
| Uranium          |               |                   |                    |

071 - Total Metals

Field of Accreditation: Environmental

Matrix: Water [Liquid Biosolid, Wastewater]

Analytical Method: ICP/MS

Preparation Method: DIGESTION

Lab Method ID(s): D-ICPMS-01

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| EPA 6020         | Yes           | Yes               | No                 |
| Parameter        |               |                   |                    |
| Antimony         |               |                   |                    |
| Arsenic          |               |                   |                    |
| Barium           |               |                   |                    |
| Beryllium        |               |                   |                    |
| Cadmium          |               |                   |                    |
| Chromium         |               |                   |                    |
| Cobalt           |               |                   |                    |
| Copper           |               |                   |                    |
| Lead             |               |                   |                    |
| Molybdenum       |               |                   |                    |
| Selenium         |               |                   |                    |
| Silver           |               |                   |                    |
| Vanadium         |               |                   |                    |

086 - pH

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: AUTOMATED PH METER

Preparation Method:

OSDWA<sup>†</sup>

Lab Method ID(s): A-PH-02

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| SM 4500-H+ B     | Yes           | Yes               | No                 |
| Parameter        |               |                   |                    |
| pH               |               |                   |                    |

087 - Conductivity

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: AUTOMATED CONDUCTIVITY METER

Preparation Method:

OSDWA<sup>†</sup>

Lab Method ID(s): A-COND-02

| Method Reference    | Modified From | Analytical Method | Preparation Method |
|---------------------|---------------|-------------------|--------------------|
| SM 2510 B           | Yes           | Yes               | No                 |
| Parameter           |               |                   |                    |
| Conductivity (25°C) |               |                   |                    |

088 - Alkalinity

|                                          |               |                     |                    |                    |
|------------------------------------------|---------------|---------------------|--------------------|--------------------|
| Field of Accreditation: Environmental    |               | Matrix: Water       |                    | OSDWA <sup>†</sup> |
| Analytical Method: AUTOMATED TITRIMETRIC |               | Preparation Method: |                    |                    |
| Lab Method ID(s): A-ALK-03               |               |                     |                    |                    |
| Method Reference                         | Modified From | Analytical Method   | Preparation Method |                    |
| SM 2320 B                                | Yes           | Yes                 | No                 |                    |
| Parameter                                |               |                     |                    |                    |
| Alkalinity (pH 4.5)                      |               |                     |                    |                    |

090 - Extractable Anions

|                                            |               |                          |                    |
|--------------------------------------------|---------------|--------------------------|--------------------|
| Field of Accreditation: Environmental      |               | Matrix: Solids           |                    |
| Analytical Method: ION CHROMATOGRAPHY (IC) |               | Preparation Method: TCLP |                    |
| Lab Method ID(s): A-IC-01                  |               |                          |                    |
| Method Reference                           | Modified From | Analytical Method        | Preparation Method |
| EPA 1311                                   | Yes           | No                       | Yes                |
| SM 4110 B                                  | Yes           | Yes                      | No                 |
| Parameter                                  |               |                          |                    |
| Nitrate                                    |               |                          |                    |
| Nitrite (NO2)                              |               |                          |                    |

091 - Extractable Metals

|                                           |               |                          |                    |
|-------------------------------------------|---------------|--------------------------|--------------------|
| Field of Accreditation: Environmental     |               | Matrix: Solids           |                    |
| Analytical Method: ICP/OES                |               | Preparation Method: TCLP |                    |
| Lab Method ID(s): D-ICP-01, TCLP_SPLP-001 |               |                          |                    |
| Method Reference                          | Modified From | Analytical Method        | Preparation Method |
| EPA 1311                                  | Yes           | No                       | Yes                |
| SM 3120 B                                 | Yes           | Yes                      | No                 |
| Parameter                                 |               |                          |                    |
| Arsenic                                   |               |                          |                    |
| Barium                                    |               |                          |                    |
| Beryllium                                 |               |                          |                    |
| Boron                                     |               |                          |                    |
| Cadmium                                   |               |                          |                    |
| Chromium                                  |               |                          |                    |
| Lead                                      |               |                          |                    |
| Nickel                                    |               |                          |                    |
| Silver                                    |               |                          |                    |
| Zinc                                      |               |                          |                    |

092 - Extractable Metals

|                                             |               |                          |                    |
|---------------------------------------------|---------------|--------------------------|--------------------|
| Field of Accreditation: Environmental       |               | Matrix: Solids           |                    |
| Analytical Method: ICP/MS                   |               | Preparation Method: TCLP |                    |
| Lab Method ID(s): D-ICPMS-01, TCLP_SPLP-001 |               |                          |                    |
| Method Reference                            | Modified From | Analytical Method        | Preparation Method |
| EPA 1311                                    | Yes           | No                       | Yes                |
| EPA 200.8                                   | Yes           | Yes                      | No                 |
| Parameter                                   |               |                          |                    |
| Antimony                                    |               |                          |                    |
| Arsenic                                     |               |                          |                    |
| Selenium                                    |               |                          |                    |
| Uranium                                     |               |                          |                    |

093 - Extractable Metals

|                                                         |               |                          |                    |
|---------------------------------------------------------|---------------|--------------------------|--------------------|
| Field of Accreditation: Environmental                   |               | Matrix: Solids           |                    |
| Analytical Method: COLD VAPOUR ATOMIC ABSORPTION (CVAA) |               | Preparation Method: TCLP |                    |
| Lab Method ID(s): D-HG-02                               |               |                          |                    |
| Method Reference                                        | Modified From | Analytical Method        | Preparation Method |
| EPA 1311                                                | Yes           | No                       | Yes                |
| SM 3112 B                                               | Yes           | Yes                      | No                 |
| Parameter                                               |               |                          |                    |
| Mercury                                                 |               |                          |                    |

094 - Hexavalent Chromium

|                                       |               |                       |                    |
|---------------------------------------|---------------|-----------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Solids [Soil] |                    |
| Analytical Method: COLORIMETRIC       |               | Preparation Method:   |                    |
| Lab Method ID(s): D-CRVI-02           |               |                       |                    |
| Method Reference                      | Modified From | Analytical Method     | Preparation Method |
| EPA 3060A                             | Yes           | Yes                   | No                 |
| EPA 7196A                             | Yes           | Yes                   | No                 |
| Parameter                             |               |                       |                    |
| Hexavalent Chromium                   |               |                       |                    |

095 - Hexavalent Chromium

|                                       |               |                     |                    |
|---------------------------------------|---------------|---------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Water       |                    |
| Analytical Method: COLORIMETRIC       |               | Preparation Method: |                    |
| Lab Method ID(s): D-CRVI-01           |               |                     |                    |
| Method Reference                      | Modified From | Analytical Method   | Preparation Method |
| ON MECP E3056                         | Yes           | Yes                 | No                 |
| Parameter                             |               |                     |                    |
| Hexavalent Chromium                   |               |                     |                    |

096 - Flashpoint

|                                                  |               |                            |                    |
|--------------------------------------------------|---------------|----------------------------|--------------------|
| Field of Accreditation: Environmental            |               | Matrix: Solids [Ash, Soil] |                    |
| Analytical Method: CLOSED CUP FLASH POINT TESTER |               | Preparation Method:        |                    |
| Lab Method ID(s): C-FPCC-01                      |               |                            |                    |
| Method Reference                                 | Modified From | Analytical Method          | Preparation Method |
| ASTM D93                                         | Yes           | Yes                        | No                 |
| Parameter                                        |               |                            |                    |
| Flashpoint                                       |               |                            |                    |

098 - Boron (Hot Water Soluble)

|                                       |               |                                |                    |
|---------------------------------------|---------------|--------------------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Solids [Soil]          |                    |
| Analytical Method: ICP/OES            |               | Preparation Method: EXTRACTION |                    |
| Lab Method ID(s): D-ICP-02            |               |                                |                    |
| Method Reference                      | Modified From | Analytical Method              | Preparation Method |
| ON MECP E3470                         | No            | Yes                            | No                 |
| Parameter                             |               |                                |                    |
| Boron                                 |               |                                |                    |

099 - Conductivity

|                                       |               |                                 |                    |
|---------------------------------------|---------------|---------------------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Solids [Sediment, Soil] |                    |
| Analytical Method: CONDUCTIVITY METER |               | Preparation Method: EXTRACTION  |                    |
| Lab Method ID(s): A-COND-03           |               |                                 |                    |
| Method Reference                      | Modified From | Analytical Method               | Preparation Method |
| ON MECP E3530                         | Yes           | Yes                             | No                 |
| SM 2510 B                             | Yes           | Yes                             | No                 |
| Parameter                             |               |                                 |                    |
| Conductivity                          |               |                                 |                    |

100 - pH

|                                       |               |                                         |                    |
|---------------------------------------|---------------|-----------------------------------------|--------------------|
| Field of Accreditation: Environmental |               | Matrix: Solids [Sediment, Sludge, Soil] |                    |
| Analytical Method: PH METER           |               | Preparation Method: EXTRACTION          |                    |
| Lab Method ID(s): A-PH-03             |               |                                         |                    |
| Method Reference                      | Modified From | Analytical Method                       | Preparation Method |
| ON MECP E3530                         | Yes           | Yes                                     | No                 |
| SM 4500-H+                            | Yes           | Yes                                     | No                 |
| Parameter                             |               |                                         |                    |
| pH                                    |               |                                         |                    |

109 - Extractable Metals

|                                       |  |                |  |
|---------------------------------------|--|----------------|--|
| Field of Accreditation: Environmental |  | Matrix: Solids |  |
|---------------------------------------|--|----------------|--|

Analytical Method: ICP/MS

Preparation Method: MSPLP

Lab Method ID(s): D-ICPMS-01, TCLP\_SPLP-001

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| EPA 200.8        | No            | Yes               | No                 |
| ON MECP E9003    | No            | No                | Yes                |

- Parameter**
- Antimony
  - Arsenic
  - Barium
  - Beryllium
  - Cadmium
  - Chromium
  - Cobalt
  - Copper
  - Lead
  - Molybdenum
  - Nickel
  - Selenium
  - Silver
  - Thallium
  - Uranium
  - Vanadium

110 - Extractable Metals

Field of Accreditation: Environmental

Matrix: Solids

Analytical Method: ICP/OES

Preparation Method: SPLP

Lab Method ID(s): D-ICP-01, TCLP\_SPLP-001

| Method Reference | Modified From | Analytical Method | Preparation Method |
|------------------|---------------|-------------------|--------------------|
| ON MECP E9003    | No            | No                | Yes                |
| SM 3120 B        | No            | Yes               | No                 |

- Parameter**
- Barium
  - Beryllium
  - Boron
  - Cadmium
  - Chromium
  - Cobalt
  - Copper
  - Molybdenum
  - Nickel
  - Vanadium
  - Zinc

† “OSDWA” indicates the appendix is used for the analysis of Ontario drinking water samples, which is subject to the rules and related regulations under the Ontario “Safe Drinking Water Act” (2002).

The list of tests and measurement capabilities for which a laboratory is accredited can change at any time due to circumstances such as scope extensions, voluntary withdrawal of tests by the laboratory and suspension. Scopes are published by the CALA via the Internet at <https://directory.cala.ca/> (<https://directory.cala.ca/>).