MUNICIPALITY OF RANKIN INLET

Environmental Monitoring Program and Quality Assurance/Quality Control Plan for Municipal Water Licence

November 2025

Document Control

Date	Document Title	Author	Details
December 2008	Environmental Monitoring Program and Quality Assurance/Quality Control Plan, Hamlet of Rankin Inlet	Nuna Burnside	Previous Manual
April 2025	Environmental Monitoring Program and Quality Assurance/Quality Control Plan, Hamlet of Rankin Inlet	GN-CGS	Previous Manual
(Date of document creation/update)	Municipality of Rankin Inlet Environmental Monitoring Program and Quality Assurance/Quality Control Plan for Municipal Water License	GN-TIN	Updated manual to standard template

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1.0 Introduction

This quality assurance/quality control (QA/QC) plan for sampling and monitoring describes the procedures and protocols to be followed when conducting environmental sampling under the Nunavut Water Board (NWB) Water Licence monitoring program.

Although the QA/QC Plan is submitted to the NWB as a condition of the water license, it is primarily intended to be read, understood, and implemented by Municipality personnel responsible for environmental quality monitoring.

The water licence requires Hamlet personnel to adhere to these procedures, which should be applied to all water quality samples taken by the Hamlet. This document applies to the currently used infrastructure and environmental laboratory, and any changes will require this document to be updated.

Date this plan was prepared: November 2025

Community: Rankin Inlet
Latitude: 62º48’16”N
Longitude: 92º04’16”W

This quality assurance/quality control (QA/QC) plan for sampling and monitoring was created to meet the requirements of the community’s water licence:

Water licence number: 3BM-RAN2025
Issue date: December 21, 2020
Expiry date: December 20, 2025

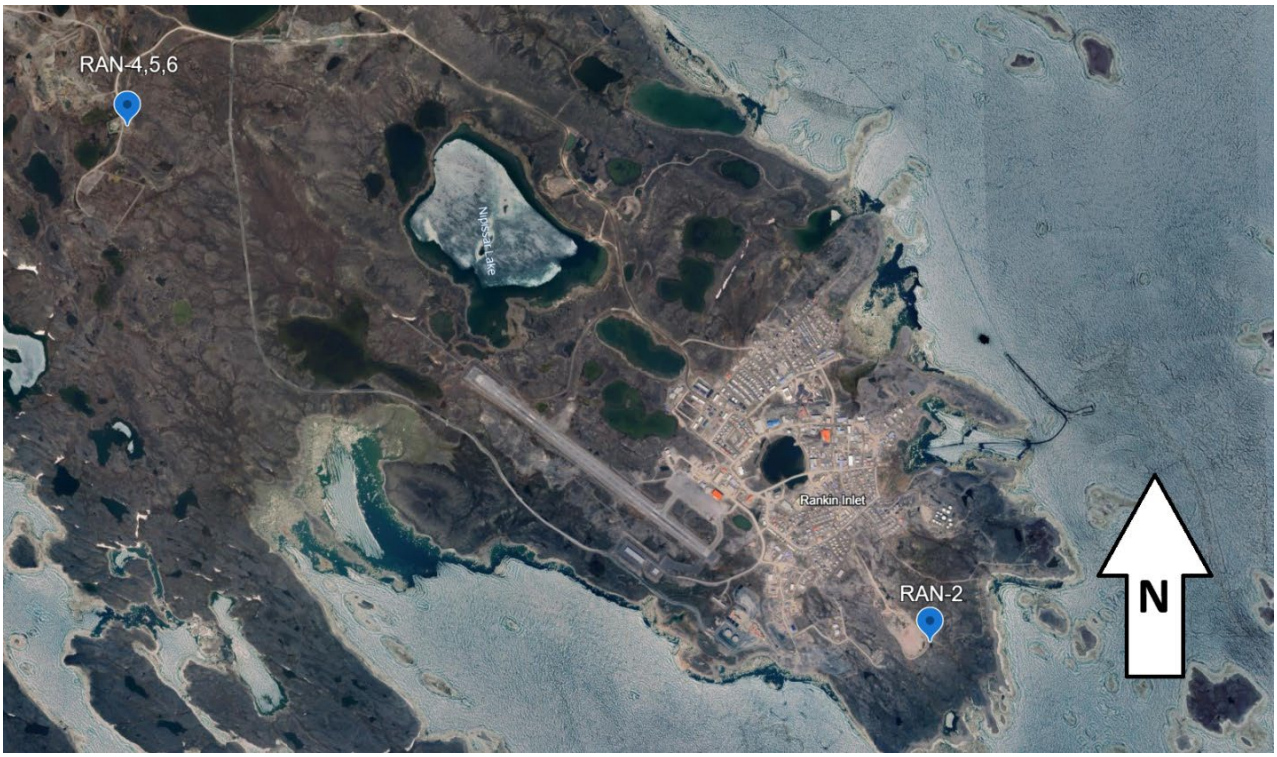


Figure 1: Rankin Inlet Monitoring Locations (Google Earth, 2025)

2.0 Environmental Monitoring and Reporting

Part H of the NWB licence provides specific requirements for the monitoring program. **Table 1** summarises the sampling locations, while **Table 2** details the water quality sampling parameters.

Table 1: Water License Sampling Locations

Monitoring Program Station	Description	Sample Type	Frequency	Status	Coordinates
RAN-1	Unassigned	N/A	N/A	Inactive	N/A
RAN-2	Runoff from the Old Landfill	Leachate, Metals	Monthly (May-August)	Active	Lat: 62°48’00” N Lon: 92°04’25” W
RAN-3	Runoff from the New Landfill	N/A	N/A	Inactive	N/A
RAN-4	Discharge from the Landfarm at the controlled point of release	Leachate, Metals, Hydrocarbons	Once Annually	Actived	Facility Lat: 62°49’48” N Lon: 92°10’15” W
RAN-5	Monitoring well located up gradient of the Landfarm	Leachate, Metals, Hydrocarbons	Once Annually	Active	Facility Lat: 62°49’48” N Lon: 92°10’15” W
RAN-6	Monitoring well located down gradient of the Landfarm	Leachate, Metals, Hydrocarbons	Once Annually	Active	Facility Lat: 62°49’48” N Lon: 92°10’15” W

For monitoring program locations that that are used to collect chemical data for surface water or groundwater, the parameters that will be analyzed are as follows:

Table 2: Water License Sampling Parameters

MONITORING LOCATIONS	PARAMETERS
RAN-2 RAN-4 RAN-5 RAN-6	• Biochemical Oxygen Demand (BOD_5) • Total Suspended Solids (TSS) • Conductivity • Oil and Grease (visual) • Magnesium • Sodium • Chloride • Total Hardness • Ammonia Nitrogen • Total Cadmium • Total Cobalt • Total Chromium • Total Copper • Fecal Coliforms • pH • Nitrate-Nitrite • Total Phenols • Calcium • Potassium • Sulphate • Total Alkalinity • Total Zinc • Total Iron • Total Manganese • Total Nickel • Total Lead • Total Arsenic • Total Aluminum
Additional Parameters For RAN-4 RAN-5 RAN-6	• TPH (Total petroleum Hydrocarbons) • PAH (Polycyclic Aromatic Hydrocarbons) • BTEX (Benzene, Toluene, Ethylbenzene, Xylene)

The environmental lab used to analyze the samples collected for the monitoring program must meet the accreditation requirements outlined in the community's water licence. Proof of environmental lab's accreditation is provided in **Appendix B**.

The address and contact information for the environmental laboratory used for analysis by Rankin Inlet is:

ALS Environmental (Winnipeg):
ALS Canada Ltd.
1329 Niakwa Road East. Unit 12
Winnipeg, MB R2J 3T4
(204) 255-9720
ALSWPClientServices@alsglobal.com

Laboratory analyses shall meet the following standards:

- All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of Standard Methods for the Examination of Water and Wastewater, or by such other methods approved by the Board in writing.
- All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.

Reports will be distributed to the municipality, Government of Nunavut Department of Community and Government Services (GN-TIN), and the Nunavut Water Board.

3.0 Sampling Procedures and Protocols

To ensure quality of the monitoring program, the following procedures and protocols shall be used for field sampling. These methods are consistent with the Standard Methods for the Examination of Water and Wastewater (Eaton et al., 2005) and have been approved by the Nunavut Water Board.

3.1 Sampling Location and Frequency

The monitoring program included in the water license includes specific requirements regarding sampling locations, sampling frequency and parameters to be analyzed. These are provided in **Table 1** and **Table 2**. Monitoring locations are shown in **Figure 1**.

3.2 Sample Container Selection

Sample containers vary in size and material of construction depending on the specific type of analysis to be conducted. Containers to be used shall be obtained directly from the laboratory. The laboratory will provide the correct sizes and types of bottles based on the parameters required. The sample containers for specific analysis are provided in **Appendix C**. The laboratory shall be contacted at least one (1) month prior to the sampling event to ensure that containers are available for sampling.

3.3 Field Sample Log

It is best practice for the individual collecting the samples to record the following at each location at the time of sampling:

- Date of sampling;
- Time of sampling;
- Weather conditions;
- Monitoring Station Number (i.e., RAN-1, RAN-2, etc.);
- Results of any field measurements;
- Sampler shall also indicate if sample used preservatives;
- Any unusual conditions; and
- Any deviation from standard procedures.

An example Sampling Log is included in **Appendix B**.

3.4 General Procedures for Sample Collection

General procedures for sample collection are outlined below. Different laboratories have slightly different bottle requirements and sample handling protocols. Sampling technicians must receive site specific training and laboratory procedures must take precedence over other protocols.

- Sample Locations and Sampling Frequency – The location and frequency of each sampling option has been carefully selected, and is part of site design and layout, as well as the Water Board License. Sampling will follow their requirements. Diversions must be recorded and submitted to the Water Board for approval;
- Preparation – Approximately one (1) month prior to the sampling event the laboratory will be notified, and the required bottles, blanks, and materials assembled. Plans for rapid return of the samples prepared;
- Field Collection – At each sampling station the specified samples will be collected, and field data recorded;
- Handling Storage and Transportation –Appropriate personal protective equipment (gloves, safety glasses, etc.) will be used when handling samples. Samples will be stored a 4ºC and protected from freezing until delivered to the laboratory. Chain of custody for sampling, storage, and delivery must be maintained. Laboratory sample sheets will be filled in as per laboratory protocols; and
- Delivery to Laboratory – Samples will be delivered to the laboratory in the laboratory dictated method and within the hold times specified, as much as possible.

3.5 Surface Water Sampling Procedures

All the samples taken will be grab samples. Samples will normally be taken from natural lakes, streams, treatment ponds, or process streams. Where possible, samples shall be taken from just below the surface to avoid floating debris, which may contaminate the sample.

3.5.1 Freshwater Streams, Surface Drainage, and Wetlands

Guidelines for collecting samples from streams, surface drainage, and wetlands are as follows:

- The samples shall be collected as close to the middle of the stream where water flows freely and is free of debris.
- Samples shall be collected upstream of the sampler.
- After getting into position, the sampler shall wait to allow any stirred sediment that occurred from entering the stream to settle or wash away.

- The sample bottle shall be partially filled with the water to be sampled and rinsed with the lid in place.
- Rinse water shall be emptied downstream of the sampling point, so that stream sediments remain undisturbed.
- Prior to sampling for oil/grease, bacteria, and for any bottles containing preservative, the bottles shall not be rinsed.
- If possible, bottles shall be plunged into the stream to a depth of approximately half the total stream depth and allow it to fill with the mouth of the bottle facing upstream.
- If the stream is too shallow to allow for sample bottle to be filled completely, without disturbing bottom sediment of the streambed, the sampler may use a smaller container that has been properly rinsed to transfer sample to the larger bottle.
- Do not use a smaller sample bottle containing preservatives.
- When taking the sample, sufficient room shall be left to allow for the addition of preservatives, if required.

3.5.2 Lakes or Ponds

When collecting samples from lakes or ponds, the below procedures should be followed:

- Surface sampling shall be collected using the same procedures as streams.
- Sample bottles shall be plunged to approximately 150 mm (6 inches) below the water surface.

3.6 Sample Identification

All samples collected are to be labelled according to standard identification procedures (Name of sampler, time and date of sampling, sample identifier, sampling method and type of sample). Sample labels shall be water-resistant and prepared prior to going into the field. The individual samples will be labelled with the following information:

- Sample ID #;
- Monitoring Station Name (e.g., RAN-2);
- Date and time of collection;
- Parameter to be analyzed;
- Preservatives;
- Project number identifier; and
- Bottle number 1 of ___.

3.7 Sample Preservation

To obtain good results from a sampling program, timing is critical. All samples are to be shipped to the Laboratory that has been contracted to carry out the analysis the same day as they are collected. Samples must be protected from breakage and shall be shipped in an insulated cooler that can be provided by the Laboratory. If samples cannot be shipped until the next day, due to unavoidable events such as weather or mechanical problems with transport aircraft, all samples must be stored in a refrigerator at 4ºC. Samples must not be frozen.

In all cases where samples cannot be delivered to the lab on the same day, specific preservatives must be added to the samples to prevent chemical changes that may alter the concentration of the parameters of interest. The samples must be preserved within two hours of sampling. Usually, samples can be preserved away from the field at the end of the site visit. In most cases, the laboratory can fill the bottles with preservative, and then ship them to the Municipality to be filled and sent back for analysis.

3.8 Sample Transportation

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. Heat, light, and agitation can all impact the water chemistry, and the samples shall be protected from these effects.

Effluent and surface water samples shall be stored and transported at a temperature of 4ºC. Coolers and ice packs need to be available and are usually provided by the laboratory. Upon arrival at the laboratory, samples shall be refrigerated as soon as possible.

4.0 Quality Assurance and Quality Control

Quality Assurance (QA) and Quality Control (QC) are vitally important components of environmental management.

4.1 Quality Assurance

Quality Assurance (QA) is a set of operating principles that, if strictly followed during sample collection and analysis, will produce data of known and defensible quality. As such the accuracy of the analytical results can be stated with a high level of confidence. A high level of quality assurance can be achieved by applying the following principles:

- Personnel involved in water sampling and analysis are well trained;
- Facilities and equipment required for sampling are suitable, well maintained, and always kept clean;
- Standard procedures are developed and implemented for the collection, transportation, and analysis of samples, based on recognized best management practices (BMP);
- Laboratory and field instruments are calibrated according to manufacturers recommendations or recognized as good operating practice; and
- Supplies used in sampling and analysis are of consistent high quality and are not expired.

4.2 Quality Control

Quality Control (QC) is a set of specific procedures used to measure the quality of the data produced and correct deficiencies in the sampling or analyses, as they occur. Quality control is used by the analyst and sampler to achieve standards of measurement for the three principles components of quality: precision, accuracy, and reliability.

Most commercial laboratories undertake QA/QC procedures with the volume of sample sent for analysis. Reports are usually provided with the Certificates of Analysis. It is recommended that the suggested QA/QC protocols by the laboratory be followed.

To ensure that the monitoring program maintains accepted quality control, field blanks and duplicate samples should be collected. These samples are collected and analyzed for the sample parameters listed in the monitoring program in the license as part of a quality control check on monitoring activities.

4.2.1 Field Blanks

Field Blanks are samples that the lab uses to identify any environmental impacts caused during sample collection or sample transportation. Field Blanks sent by the lab shall accompany the sampler into the field, labelled as field blanks, preserved in the field, and submitted to the laboratory with the field samples.

4.2.2 Replicate or Duplicate Samples

Replicate or duplicate samples involves collecting more than one sample for a given sampling station subject to specific analysis. Standard procedures used for the routine sampling shall be applied. The replicate or duplicate samples are useful in identifying problems with accuracy and sampling methods.

4.3 Lab Accreditation

Analytical methods and accreditation are usually dictated by the guideline criteria being followed. In most cases, the guideline criteria are the Canadian Environmental Quality Guidelines (CCME, 2007). These guidelines specify bottles, hold times, preservatives, sampling protocols, as well as lab accreditation, and analytical methodologies. These guidelines or equivalent standard will be used. Prior to any sampling, this information should be reviewed to ensure consistency with regulation and standards. Laboratory accreditation is included in **Appendix B**.

5.0 Laboratory Analysis and Reporting

The laboratory will perform the analysis of all samples as outlined herein. The results shall be received by the Municipality within the time frame agreed to with the laboratory. The results shall contain the limits of detection used for analysis of each parameter as supplied by the laboratory. The Municipality may request clarification of the analysis by contacting the NWB Technical Advisor and a review of the analysis will be provided upon request. The laboratory results are compared to the limits of the Water Licence for each parameter, and/or to other comparative criteria such as the Canadian Environment Water Quality Guidelines. Results of the monitoring program are reported in the Annual Report as required in the water license. The Annual Report must be submitted by March 31 of the year following the calendar year for which the report has been submitted. The content of the Annual Report and Guideline Criteria is outlined in the following documents:

- Solid Waste Management Facility Operations and Maintenance Plan;

Appendix A

Chain of Custody Form

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 14 -

Page ____ of ____

Report To	**Report Format / Distribution**	**Select Service Level Below** (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	**R** ☐ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Quality Control (QC) Report with Report ☐ Yes ☐ No	**P** ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	☐ Criteria on Report - provide details below if box checked	**E** ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
	Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	**E2** ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	Email 1 or Fax	Specify Date Required for E2,E or P:
	Email 2	**Analysis Request**
Invoice To Same as Report To ☐ Yes ☐ No	**Invoice Distribution**	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	Email 1 or Fax	
Contact:	Email 2	
Project Information	**Oil and Gas Required Fields (client use)**	
ALS Quote #:	Approver ID: / Cost Center:	
Job #:	GL Account: / Routing Code:	
PO / AFE:	Activity Code:	
LSD:	Location:	
ALS Lab Work Order # (lab use only)	**ALS Contact:** / **Sampler:**	

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers

Drinking Water (DW) Samples[1] (client use)	**Special Instructions / Specify Criteria to add on report (client Use)**
Are samples taken from a Regulated DW System? ☐ Yes ☐ No **Are samples for human drinking water use?** ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INIITIAL COOLER TEMPERATURES ºC			FINAL COOLER TEMPERATURES ºC		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Appendix B

Laboratory Accreditation

Canadian Association for Laboratory Accreditation Inc.

Certificate of Accreditation

ALS Environmental (Winnipeg)
ALS Canada Ltd.
1329 Niakwa Road East
Unit 12
Winnipeg, Manitoba

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Accreditation No.: 1001442
Issued On: 2/7/2025
Accreditation Date: 1/3/2005
Expiry Date: 8/7/2027

President and CEO

This certificate is the property of the Canadian Association for Laboratory Accreditation Inc. and must be returned on request; reproduction must follow policy in place at date of issue.
For the specific tests to which this accreditation applies, please refer to the laboratory's scope of accreditation at www.cala.ca.

CALA Scope of Accreditation

Laboratory Name: ALS Environmental (Winnipeg)

Client ID: 1001442

Parent Institution: ALS Canada Ltd.

Address: 1329 Niakwa Road East, Unit 12, Winnipeg, Manitoba, R2J 3T4

Contact: Ms. Samantha Kee

Email: samantha.kee@alsglobal.com; alswpquality@alsglobal.com

Phone: (204) 255-9745

Fax: (204) 255-9721

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

Clients Served: All Interested Parties

Revised On: 09/19/2025

Valid To: 12/03/2027

CALA is committed to Canada's anti-spam legislation (CASL) (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.

001 - Alkalinity

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: TITRIMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1028

Method Reference	Modified From	Analytical Method	Preparation Method
SM 2320 B	Yes	Yes	No

Parameter
Alkalinity (pH 4.5)

003 - Conductivity

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: CONDUCTIVITY METER

Preparation Method:

Lab Method ID(s): WP-TM-1028

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

Parameter
Conductivity (25˚C)

014 - Solids

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: GRAVIMETRIC

Preparation Method:

Lab Method ID(s): NA-TM-1004, NA-TM-1008, WP-TM-1014

Method Reference	Modified From	Analytical Method	Preparation Method
SM 2540 B	Yes	Yes	No
SM 2540 C	Yes	Yes	No
SM 2540 D	Yes	Yes	No
SM 2540 E	Yes	Yes	No

Parameter
Fixed Suspended Solids
Total Dissolved Solids
Total Solids (TS)
Total Suspended Solids
Volatile Suspended Solids

015 - Biochemical Oxygen Demand (BOD)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: DISSOLVED OXYGEN METER (DO)

Preparation Method:

Lab Method ID(s): NA-TM-1202

Method Reference	Modified From	Analytical Method	Preparation Method
SM 5210 B	Yes	Yes	No

Parameter
BOD (5 day)
CBOD (5 day)

017 - Daphnia magna

Field of Accreditation: Environmental

Matrix: Water [Wastewater]

Analytical Method: ACUTE LETHALITY (SURVIVAL)

Preparation Method:

Lab Method ID(s): WP-TM-1401

Method Reference	Modified From	Analytical Method	Preparation Method
EPS 1/RM/11	No	Yes	No
EPS 1/RM/14	No	Yes	No

Parameter
Daphnia LC50 (48 h)
Daphnia Single Concentration (48h)

019 - pH

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: PH METER

Preparation Method:

Lab Method ID(s): WP-TM-1028

Method Reference	Modified From	Analytical Method	Preparation Method
SM 4500-H+	Yes	Yes	No

Parameter
pH

025 - Fecal (Thermotolerant) Coliforms

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: MEMBRANE FILTRATION (M-FC)

Preparation Method:

Lab Method ID(s): WP-TM-1218

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

Parameter
Fecal (Thermotolerant) Coliforms

038 - Carbon

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: INFRARED SPECTROSCOPY (IR)

Preparation Method:

Lab Method ID(s): WP-TM-1029, NA-TM-1203

Method Reference	Modified From	Analytical Method	Preparation Method
SM 5310 B	Yes	Yes	No

Parameter
Inorganic Carbon
Organic Carbon
Total Carbon (calculation)

039 - Coliforms

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: QUANTI-TRAY (COLILERT)

Preparation Method:

Lab Method ID(s): NA-TM-1300

Method Reference	Modified From	Analytical Method	Preparation Method
IDEXX	Yes	Yes	No
SM 9223 B	Yes	Yes	No

Parameter
Escherichia coli
Total Coliforms

041 - Heterotrophic Plate Count (HPC)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: POUR PLATE

Preparation Method:

Lab Method ID(s): NA-TM-1301

Method Reference	Modified From	Analytical Method	Preparation Method
SM 9215 B	Yes	Yes	No

Parameter
Heterotrophic Plate Count (HPC)

049 - Rainbow Trout

Field of Accreditation: Environmental

Matrix: Water [Wastewater]

Analytical Method: ACUTE LETHALITY (SURVIVAL)

Preparation Method:

Lab Method ID(s): WP-TM-1402

Method Reference	Modified From	Analytical Method	Preparation Method
EPS 1/RM/13	No	Yes	No
EPS 1/RM/9	No	Yes	No

Parameter
Single Concentration (96h)
Trout LC50 (96 h)

050 - Microtox

Field of Accreditation: Environmental

Matrix: Water [Wastewater]

Analytical Method: BIOLUMINESCENCE

Preparation Method:

Lab Method ID(s): WP-TM-1403

Method Reference	Modified From	Analytical Method	Preparation Method
EPS 1/RM/24	No	Yes	No

Parameter
Microtox (30min.)
Microtox (5min.)
Microtox IC50 (15 min)

053 - Cryptosporidium and Giardia

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: IMMUNOMAGNETIC SEPARATION/IMMONUOFLIOURESCENCE ASSAY (IMS/FA)

Preparation Method: FILTRATION

Lab Method ID(s): WP-TM-1212

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 1623	Yes	Yes	No

Parameter
Cryptosporidium Enumeration
Giardia Enumeration

055 - Mould

Field of Accreditation: Environmental

Matrix: Air

Analytical Method: MICROSCOPY

Preparation Method: CULTURE

Lab Method ID(s): WP-TM-1703

Method Reference	Modified From	Analytical Method	Preparation Method
INTRODUCTION TO FOOD-BOURNE FUNGI	Yes	Yes	No

Parameter
Biocontaminant Identification
Biocontaminant Quantitation

056 - Dissolved Metals

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: ICP/MS

Preparation Method:

Lab Method ID(s): NA-TM-1002, NA-TP-2002, NA-TP-2007

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 200.2	Yes	Yes	No
EPA 6020	Yes	Yes	No

Parameter
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Calcium
Cesium
Chromium
Cobalt
Copper

Parameter
Iron
Lead
Lithium
Magnesium
Manganese
Molybdenum
Nickel
Phosphorus
Potassium
Rubidium
Selenium
Silicon
Silver
Sodium
Strontium
Sulphur (Sulfur)
Tellurium
Thallium
Thorium
Tin
Titanium
Tungsten
Uranium
Vanadium
Zinc
Zirconium

060 - Chemical Oxygen Demand (COD)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLORIMETRIC

Preparation Method: DIGESTION

Lab Method ID(s): NA-TM-1201

Method Reference	Modified From	Analytical Method	Preparation Method
SM 5220 D	Yes	Yes	No

Parameter
COD

068 - Turbidity

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: TURBIDIMETRIC

Preparation Method:

Lab Method ID(s): NA-TM-1007

Method Reference	Modified From	Analytical Method	Preparation Method
SM 2130 B	Yes	Yes	No

Parameter
Turbidity

075 - Benthic Organisms

Field of Accreditation: Environmental

Matrix: Solids [Sediment]

Analytical Method: MICROSCOPY

Preparation Method:

Lab Method ID(s): WP-TM-1301

Method Reference	Modified From	Analytical Method	Preparation Method
SM 10500	Yes	Yes	No

Parameter
Benthos Enumeration
Benthos Identification

076 - Phytoplankton and Zooplankton

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: MICROSCOPY

Preparation Method:

Lab Method ID(s): WP-TM-1302

Method Reference	Modified From	Analytical Method	Preparation Method
SM 10200	Yes	Yes	No

Parameter
Phytoplankton Enumeration
Phytoplankton Identification

Parameter
Zooplankton Enumeration
Zooplankton Identification

088 - Dissolved Oxygen

Field of Accreditation: Environmental
Matrix: Water

Analytical Method: IODOMETRIC TITRATION/AZIDE MODIFICATION
Preparation Method:

Lab Method ID(s): WP-TM-1018

Method Reference	Modified From	Analytical Method	Preparation Method
SM 4500-O C	Yes	Yes	No

Parameter
Dissolved Oxygen (DO)

090 - Microcystins

OSDWA†

Field of Accreditation: Environmental
Matrix: Water

Analytical Method: ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA)
Preparation Method:

Lab Method ID(s): WP-TM-1104

Method Reference	Modified From	Analytical Method	Preparation Method
ENVIROLOGIX MANUAL	No	Yes	No
TOXICON MANUAL	No	Yes	No

Parameter
Microcystins

093 - Pseudomonas aeruginosa

Field of Accreditation: Environmental
Matrix: Water

Analytical Method: MEMBRANE FILTRATION (MPAC)
Preparation Method:

Lab Method ID(s): WP-TM-1215

Method Reference	Modified From	Analytical Method	Preparation Method
SM 9213 E	Yes	Yes	No

Parameter
Pseudomonas aeruginosa (P. aerigunosa)

118 - Legionella

OSDWA†

Field of Accreditation: Environmental
Matrix: Water

Analytical Method: MEMBRANE FILTRATION
Preparation Method:

Lab Method ID(s): NA-TM-1302

Method Reference	Modified From	Analytical Method	Preparation Method
ISO 11731	Yes	Yes	No
SM 9260 J	Yes	Yes	No

Parameter
Legionella-enumeration

130 - Volatile Fatty Acids

Field of Accreditation: Environmental
Matrix: Water

Analytical Method: GC/MS
Preparation Method:

Lab Method ID(s): WP-TM-1105

Method Reference	Modified From	Analytical Method	Preparation Method
ASTM D2908-91	Yes	Yes	No

Parameter
Acetic acid
Butyric acid
Caproic Acid (Hexanoic Acid)
Formic acid
Isobutyric acid
Isovaleric acid
Propionic acid
Valeric acid

132 - Petroleum Hydrocarbons (PHC)

Field of Accreditation: Environmental
Matrix: Water

Analytical Method: GC/FID

Preparation Method: EXTRACTION

Lab Method ID(s): NA-TM-1112, NA-TP-2100

Method Reference	Modified From	Analytical Method	Preparation Method
CCME CWS PETROLEUM HYDROCARBONS IN SOIL - TIER 1 METHOD	No	Yes	No
EPA 3511	Yes	Yes	No
ATLANTIC RBCA GUIDELINES FOR LABORATORIES TIER 1 PETROLEUM HYDROCARBONS METHODS	No	Yes	Yes

Parameter
F2: C10-C16
F3: C16-C34
F4: C34-C50
Hydrocarbons: >C10-C16
Hydrocarbons: >C16-C21
Hydrocarbons: >C21-C32
Hydrocarbons: >C32-C50

134 - Anions

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: ION CHROMATOGRAPHY (IC)

Preparation Method:

Lab Method ID(s): NA-TM-1001

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 300.1	Yes	Yes	No

Parameter
Bromide
Chloride
Fluoride
Nitrate
Nitrite
Sulfate

136 - Colour

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLORIMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1010, WP-WI-3005

Method Reference	Modified From	Analytical Method	Preparation Method
SM 2120 C	Yes	Yes	No

Parameter
True Colour

137 - Silica

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLORIMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1012, WP-WI-3005

Method Reference	Modified From	Analytical Method	Preparation Method
SM 4500-SIO2	Yes	Yes	No

Parameter
Reactive Silica

138 - Volatile Petroleum Hydrocarbons (VPH)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: GC/FID-HEADSPACE

Preparation Method:

Lab Method ID(s): NA-TM-1102, WT-TM-1406

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 5021A	Yes	Yes	No
EPA 8015D	Yes	Yes	No
ATLANTIC RBCA GUIDELINES FOR LABORATORIES TIER 1 PETROLEUM HYDROCARBONS METHODS	No	Yes	Yes

Parameter
F1: C6-C10

139 - Volatile Organic Compounds (VOC)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: GC/MS-HEADSPACE

Preparation Method:

Lab Method ID(s): NA-TM-1102

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 5021A	Yes	Yes	No
EPA 8260	Yes	Yes	No

Parameter

1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethylene
1,1-Dichloropropene
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Dichlorobenzene
1,3-Dichloropropane
1,4-Dichlorobenzene
2,2-Dichloropropane
2-Chlorotoluene
2-Hexanone (Methyl butyl ketone, MBK)
4-Chlorotoluene (p-Chlorotoluene)
4-Isopropyltoluene (p-Cymene)
Acetone (2-Propanone)
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromodichloromethane - Formation Potential
Bromoform
Bromoform - Formation Potential
Bromomethane
Butylbenzene (n-Butylbenzene)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane
Chlorodibromomethane - Formation Potential
Chloroethane (Ethyl chloride)
Chloroform
Chloroform - Formation Potential
Chloromethane (Methyl chloride)
cis-1,2-Dichloroethylene
cis-1,3-Dichloropropene
Dibromomethane
Dichlorodifluoromethane (CFC-12, Freon 12)
Dichloromethane
Ethylbenzene
Ethylene Dibromide
Hexachlorobutadiene (1,1,2,3,4,4-Hexachloro-1,3-butadiene)
Hexane (n-Hexane)
Isopropylbenzene (Cumene)
m,p-Xylene
Methyl ethyl ketone
Methyl isobutyl ketone (MIBK)
Methyl t-butyl ether
o-Xylene
sec-Butylbenzene ((1-Methylpropyl)benzene)
Styrene
tert-Butylbenzene
Tetrachloroethylene
Toluene
trans-1,2-Dichloroethylene
trans-1,3-Dichloropropene
Trichloroethylene

Parameter
Trichlorofluoromethane
Vinyl chloride

140 - Volatile Petroleum Hydrocarbons (VPH)

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: GC/FID-HEADSPACE

Preparation Method: METHANOL EXTRACTION

Lab Method ID(s): NA-TM-1102, NA-TP-2102, WT-TM-1406

Method Reference	Modified From	Analytical Method	Preparation Method
CCME CWS PETROLEUM HYDROCARBONS IN SOIL - TIER 1 METHOD (PERFORMANCE BASED MODIFICATION)	No	Yes	No
ATLANTIC RBCA GUIDELINES FOR LABORATORIES TIER 1 PETROLEUM HYDROCARBONS METHODS	No	Yes	Yes

Parameter
F1: C6-C10

141 - Volatile Organic Compounds (VOC)

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: GC/MS-HEADSPACE

Preparation Method: METHANOL EXTRACTION

Lab Method ID(s): NA-TM-1102, NA-TP-2102

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 5021	Yes	Yes	No
EPA 8260	Yes	Yes	No

Parameter
1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethylene
1,1-Dichloropropene
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Dichlorobenzene
1,3-Dichloropropane
1,4-Dichlorobenzene
2,2-Dichloropropane
2-Chlorotoluene
2-Hexanone (Methyl butyl ketone, MBK)
4-Chlorotoluene (p-Chlorotoluene)
4-Isopropyltoluene (p-Cymene)
Acetone (2-Propanone)
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Butylbenzene (n-Butylbenzene)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroethane (Ethyl chloride)
Chloroethene (Vinyl chloride)
Chloroform
Chloromethane (Methyl chloride)
cis-1,2-Dichloroethylene
cis-1,3-Dichloropropene
Dibromomethane
Dichlorodifluoromethane (CFC-12, Freon 12)
Dichloromethane

Parameter
Ethylbenzene
Ethylene Dibromide
Hexachlorobutadiene (1,1,2,3,4,4-Hexachloro-1,3-butadiene)
Hexane (n-Hexane)
Isopropylbenzene (Cumene)
m,p-Xylene
Methyl ethyl ketone
Methyl isobutyl ketone (MIBK)
Methyl t-butyl ether
o-Xylene
sec-Butylbenzene ((1-Methylpropyl)benzene)
Styrene
tert-Butylbenzene
Tetrachloroethylene
Toluene
trans-1,2-Dichloroethylene
trans-1,3-Dichloropropene
Trichloroethylene
Trichlorofluoromethane

142 - Radon

Field of Accreditation: Environmental

Matrix: Air

Analytical Method: ELECTRET ION CHAMBER

Preparation Method:

Lab Method ID(s): WP-TM-1801

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 402-R-92-004	Yes	Yes	No

Parameter
Radon

144 - Chlorophyll A

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: FLUOROMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1022

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 445.0	No	Yes	No

Parameter
Chlorophyll

147 - Chlorine

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLORIMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1013

Method Reference	Modified From	Analytical Method	Preparation Method
SM 4500-CL G	Yes	Yes	No

Parameter
Free Chlorine
Total Chlorine

148 - Petroleum Hydrocarbons (PHC)

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: GC/FID

Preparation Method:

Lab Method ID(s): NA-TM-1100, NA-TP-2100

Method Reference	Modified From	Analytical Method	Preparation Method
CCME CWS PETROLEUM HYDROCARBONS IN SOIL - TIER 1 METHOD	No	Yes	No
ATLANTIC RBCA GUIDELINES FOR LABORATORIES TIER 1 PETROLEUM HYDROCARBONS METHODS	No	Yes	Yes

Parameter
F2: C10-C16
F3: C16-C34
F4: C34-C50
Hydrocarbons: >C10-C16
Hydrocarbons: >C16-C21
Hydrocarbons: >C21-C32

Parameter
Hydrocarbons: >C32-C50

150 - Petroleum Hydrocarbons (PHC)

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: GRAVIMETRIC

Preparation Method: TUMBLER EXTRACTION

Lab Method ID(s): NA-TM-1100, NA-TP-2100

Method Reference	Modified From	Analytical Method	Preparation Method
CCME CWS PETROLEUM HYDROCARBONS IN SOIL - TIER 1 METHOD	No	Yes	No

Parameter
F4: Gravimetric

151 - Listeria

Field of Accreditation: Food

Matrix: Food [Butter, Cheese, Dairy, Dairy Products (Except Unpasturized Milk for Payment Purposes), Edible Meat Offal, Egg, Milk Powder]

Analytical Method: VISUAL IMMUNOPRECIPITATE ASSAY (VIP)

Preparation Method:

Lab Method ID(s): WP-TM-1202

Method Reference	Modified From	Analytical Method	Preparation Method
AOAC 997.03	No	Yes	No

Parameter
Listeria monocytogenes

152 - Heterotrophic Plate Count (HPC)

Field of Accreditation: Food

Matrix: Food [Butter, Cheese, Dairy, Dairy Products (Except Unpasturized Milk for Payment Purposes), Edible Meat Offal, Egg, Environmental Surface, Milk Powder]

Analytical Method: POUR PLATE

Preparation Method:

Lab Method ID(s): WP-TM-1208

Method Reference	Modified From	Analytical Method	Preparation Method
MFHPB-18	No	Yes	No

Parameter
Heterotrophic Plate Count (HPC)

153 - Coliforms

Field of Accreditation: Food

Matrix: Food [Butter, Cheese, Dairy, Dairy Products (Except Unpasturized Milk for Payment Purposes), Edible Meat Offal, Egg, Milk Powder]

Analytical Method: MOST PROBABLE NUMBER (MPN)

Preparation Method:

Lab Method ID(s): WP-TM-1210

Method Reference	Modified From	Analytical Method	Preparation Method
MFHPB-19	No	Yes	No

Parameter
Escherichia coli (E. coli)
Fecal (Thermotolerant) Coliforms
Total Coliforms

154 - Salmonella

Field of Accreditation: Food

Matrix: Food [Butter, Cheese, Dairy, Dairy Products (Except Unpasturized Milk for Payment Purposes), Edible Meat Offal, Egg, Environmental Surface, Milk Powder]

Analytical Method: SPREAD PLATE

Preparation Method:

Lab Method ID(s): WP-TM-1204

Method Reference	Modified From	Analytical Method	Preparation Method
MFHPB-20	No	Yes	No

Parameter
Salmonella

155 - Staphylococcus aureus

Field of Accreditation: Food

Matrix: Food [Butter, Cheese, Dairy, Dairy Products (Except Unpasturized Milk for Payment Purposes), Edible Meat Offal, Egg, Milk Powder]

Analytical Method: SPREAD PLATE

Preparation Method:

Lab Method ID(s): WP-TM-1207

Method Reference	Modified From	Analytical Method	Preparation Method
MFHPB-21	No	Yes	No

Parameter
Staphylococcus aureus (S. aureus)

156 - Listeria

Field of Accreditation: Food

Matrix: Food [Butter, Cheese, Dairy, Dairy Products (Except Unpasturized Milk for Payment Purposes), Edible Meat Offal, Egg, Environmental Surface, Milk Powder]

Analytical Method: PRESENCE/ABSENCE

Preparation Method:

Lab Method ID(s): WP-TM-1201

Method Reference	Modified From	Analytical Method	Preparation Method
MFHPB-30	No	Yes	No

Parameter
Listeria monocytogenes

161 - Rainbow Trout [pH Stabilization]

Field of Accreditation: Environmental

Matrix: Water [Wastewater]

Analytical Method: ACUTE LETHALITY (SURVIVAL)

Preparation Method:

Lab Method ID(s): WP-TM-1402

Method Reference	Modified From	Analytical Method	Preparation Method
EPS 1/RM/13	No	Yes	No
EPS 1/RM/50	No	Yes	No

Parameter
Single Concentration (96h) - pH Stabilization
Trout LC50 (96h) - pH Stabilization

163 - Mould

Field of Accreditation: Environmental

Matrix: Air

Analytical Method: MICROSCOPY

Preparation Method:

Lab Method ID(s): WP-TM-1704

Method Reference	Modified From	Analytical Method	Preparation Method
ASTM D7391	Yes	Yes	No

Parameter
Biocontaminant Identification
Biocontaminant Quantitation

164 - Phosphorus

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLORIMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1016

Method Reference	Modified From	Analytical Method	Preparation Method
SM 4500-P A	Yes	Yes	No
SM 4500-P B	Yes	Yes	No
SM 4500-P E	Yes	Yes	No

Parameter
Dissolved Phosphate
Phosphate

165 - Phosphorus

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLORIMETRIC

Preparation Method: DIGESTION

Lab Method ID(s): WP-TM-1016

Method Reference	Modified From	Analytical Method	Preparation Method
SM 4500-P A	Yes	Yes	No
SM 4500-P B	Yes	Yes	No
SM 4500-P E	Yes	Yes	No

Parameter
Total Dissolved Phosphorus
Total Inorganic Phosphorus
Total Phosphorus

166 - UV Absorbance and Transmittance

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: SPECTROPHOTOMETRIC

Preparation Method:

Lab Method ID(s): WP-TM-1027

Method Reference	Modified From	Analytical Method	Preparation Method
SM 5910 B	Yes	Yes	No

Parameter
UV Absorbance
UV Transmittance

167 - Fecal (Thermotolerant) Coliforms

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: QUANTI-TRAY (COLILERT)

Preparation Method:

Lab Method ID(s): NA-TM-1300

Method Reference	Modified From	Analytical Method	Preparation Method
SM 9223 B	Yes	Yes	No

Parameter
Fecal (Thermotolerant) Coliforms

168 - Yeast and Mould

Field of Accreditation: Environmental

Matrix: Food

Analytical Method: POUR PLATE

Preparation Method:

Lab Method ID(s): WP-TM-1211

Method Reference	Modified From	Analytical Method	Preparation Method
MFHPB-22	No	Yes	No

Parameter
Moulds
Yeast

169 - Oil and Grease

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: GRAVIMETRIC

Preparation Method: EXTRACTION

Lab Method ID(s): NA-TM-1107

Method Reference	Modified From	Analytical Method	Preparation Method
BC MOE LABORATORY MANUAL SECTION D	No	Yes	No

Parameter
Mineral Oil and Grease
Total Oil and Grease

170 - Moisture

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: GRAVIMETRIC

Preparation Method:

Lab Method ID(s): NA-TM-1200

Method Reference	Modified From	Analytical Method	Preparation Method
CCME CWS PETROLEUM HYDROCARBONS IN SOIL - TIER 1 METHOD	No	Yes	No

Parameter
Percent Moisture

171 - Chlorophyll

Field of Accreditation: Environmental

Matrix: Tissue

Analytical Method: FLUOROMETRIC

Preparation Method: EXTRACTION

Lab Method ID(s): WP-TM-1022

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 445.0	Yes	Yes	No

Parameter
Chlorophyll a

175 - Asbestos

Field of Accreditation: Environmental

Matrix: Air

Analytical Method: PHASE CONTRAST MICROSCOPY (PCM)/FIBRE ANALYSIS

Preparation Method:

Lab Method ID(s): WP-TM-1702

Method Reference	Modified From	Analytical Method	Preparation Method
NIOSH 7400	No	Yes	No

Parameter
Asbestos

176 - Asbestos

Field of Accreditation: Environmental

Matrix: Solids [Bulk]

Analytical Method: POLARIZED LIGHT MICROSCOPY (PLM)

Preparation Method:

Lab Method ID(s): WP-TM-1701

Method Reference	Modified From	Analytical Method	Preparation Method
NIOSH 9002	No	Yes	No

Parameter
Bulk Asbestos

178 - Mould

Field of Accreditation: Environmental

Matrix: Solids [Bulk, Swab]

Analytical Method: MICROSCOPY

Preparation Method: CULTURE

Lab Method ID(s): WP-TM-1703

Method Reference	Modified From	Analytical Method	Preparation Method
INTRODUCTION TO FOOD-BOURNE FUNGI, 5TH ED	No	Yes	No

Parameter
Moulds

180 - Total Metals

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: ICP/MS

Preparation Method: DIGESTION

Lab Method ID(s): NA-TM-1002, NA-TP-2001, NA-TP-2007

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 200.2	No	Yes	No
EPA 6020B	No	Yes	No

Parameter
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Calcium
Cesium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Magnesium
Manganese
Molybdenum
Nickel
Phosphorus
Potassium
Rubidium
Selenium
Silicon
Silver
Sodium
Strontium
Sulphur (Sulfur)
Tellurium
Thallium
Thorium

Parameter
Tin
Titanium
Tungsten
Uranium
Vanadium
Zinc
Zirconium

196 - Mercury

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: COLD VAPOUR ATOMIC ABSORPTION (CVAA)

Preparation Method: DIGESTION

Lab Method ID(s): NA-TM-1005, NA-TP-2002, NA-TP-2012

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 1631E	Yes	Yes	No
EPA 200.2	Yes	Yes	No
SM 3030 B	Yes	Yes	No

Parameter
Mercury

198 - Total Mercury

Field of Accreditation: Environmental

Matrix: Tissue

Analytical Method: COLD VAPOUR ATOMIC ABSORPTION (CVAA)

Preparation Method:

Lab Method ID(s): NA-TM-1005, NA-TP-2006, NA-TP-2012

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 1631E	Yes	Yes	No
EPA 200.3	Yes	Yes	No

Parameter
Mercury

203 - Total Coliforms and Escherichia coli (E.coli)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: MEMBRANE FILTRATION (CHROMOCULT)

Preparation Method:

Lab Method ID(s): NA-TM-1303

Method Reference	Modified From	Analytical Method	Preparation Method
ISO 9308-1	Yes	Yes	No

Parameter
Escherichia coli
Total Coliforms

205 - Total Kjeldahl Nitrogen (TKN)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: FLUOROMETRIC

Preparation Method:

Lab Method ID(s): NA-TM-1006, NA-TP-2015

Method Reference	Modified From	Analytical Method	Preparation Method
FIALAB 100, 2018	Yes	Yes	No

Parameter
Total Kjeldahl Nitrogen

206 - Ammonia

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: FLUOROMETRIC

Preparation Method:

Lab Method ID(s): NA-TM-1009

Method Reference	Modified From	Analytical Method	Preparation Method
FIALAB 100, 2018	Yes	Yes	No

Parameter
Ammonia

207 - Polycyclic Aromatic Hydrocarbons (PAH)

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: GC/MS

Preparation Method: SHAKE EXTRACTION

Lab Method ID(s): NA-TM-1100, NA-TP-2107

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 8270E	Yes	Yes	No
EPA 3570	No	No	Yes

Parameter
1-Methylnaphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Acridine
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b,j)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Perylene
Phenanthrene
Pyrene
Quinoline

208 - Metals

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: ICP/MS

Preparation Method: DIGESTION

Lab Method ID(s): NA-TM-1002, NA-TP-2004, NA-TP-2007

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 200.2	Yes	No	Yes
EPA 6020B	Yes	Yes	No
BC MOE LABORATORY MANUAL, SALM	No	No	Yes

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

209 - Mercury

Field of Accreditation: Environmental

Matrix: Solids [Soil]

Analytical Method: COLD VAPOUR ATOMIC ABSORPTION (CVAA)

Preparation Method:

Lab Method ID(s): NA-TM-1005, NA-TP-2004

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 1631E	Yes	Yes	No
EPA 200.2	Yes	Yes	No

Parameter
Mercury

210 - Polycyclic Aromatic Hydrocarbons (PAH)

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: GC/MS

Preparation Method: SHAKE EXTRACTION

Lab Method ID(s): NA-TM-1112, NA-TP-2109

Method Reference	Modified From	Analytical Method	Preparation Method
EPA 3511	No	Yes	No
EPA 8270D	Yes	Yes	No

Parameter
1-Methylnaphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Acridine
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b,j)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Perylene
Phenanthrene
Pyrene
Quinoline

211 - Enterococci

Field of Accreditation: Environmental

Matrix: Water

Analytical Method: ENZYME SUBSTRATE

Preparation Method:

Lab Method ID(s): WP-TM-1240

Method Reference	Modified From	Analytical Method	Preparation Method
SM 9230 D	Yes	Yes	No
IDEXX	Yes	Yes	No

Parameter
Enterococci

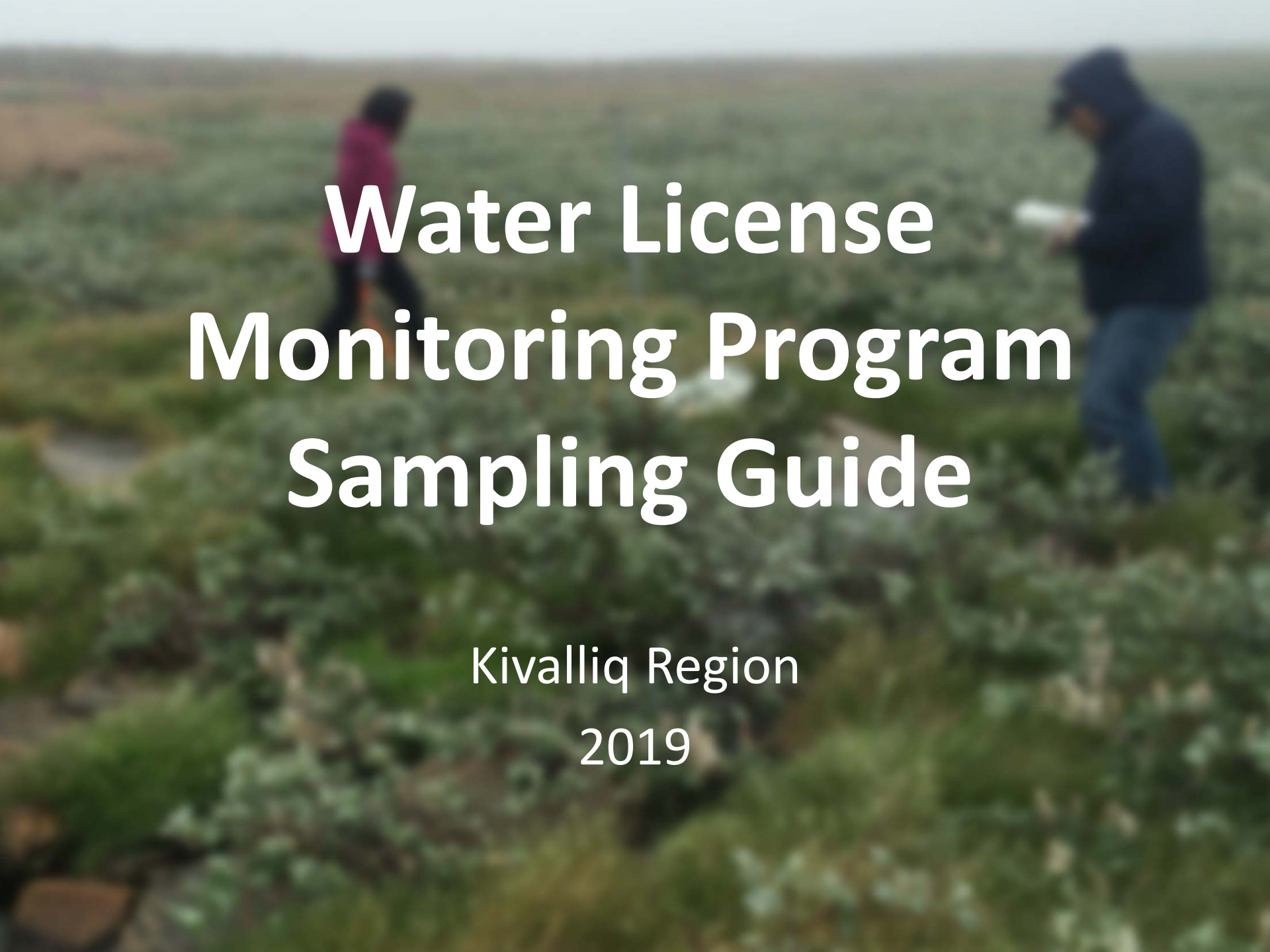
† "OSDWA" indicates the appendix is used for the analysis of Ontario drinking water samples, which is subject to the rules and related regulations under the Ontario "Safe Drinking Water Act" (2002).

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/)

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Appendix C

Wastewater and Leachate Sampling Guide



Water License Monitoring Program Sampling Guide

Kivalliq Region

2019

Equipment Needed:

- Field Log
- Sampling Bottles
- Cooler
- Frozen Ice Packs
- Permanent Marker
- Rubber Gloves
- GPS or map of sampling sites
- Garbage Bags

Instructions

1. Label all bottles prior to going to sampling sites.
2. Begin sampling at the “cleanest” sampling site.
3. Separate bottles into garbage bags by sampling site.
4. Complete Field Log at each sampling site.
5. Put on new pair of gloves at each sampling site.
6. Face bottles upstream when collecting samples in flowing water.
7. Plunge bottle to half depth of water or 15 cm below surface for deeper water, avoid floating debris.
8. Fill bottles partially with water and rinse with lid in place, empty water downstream, repeat 3 times.
9. Do not rinse bottles when sampling if bottles contain preservatives (ie. Nutrients, Oil & Grease, Bacteria, BTX F1, F2-F4, PAH).

Instructions

10. If preservatives are to be added, leave room so there is no overflow.
11. If preservative is already in the bottle, fill slowly so not to wash out preservative.
12. Put bottles in cooler with ice/icepacks.
13. Place Chain of Custody (COC) form in plastic bag and put in cooler.
14. Send samples to lab as soon as possible (must arrive within 24 hours).
15. Wash your hands when you are done handling samples.
16. Notify the lab that the sample was shipped, waybill #, and what time it is expected to arrive.

Field Log

Name of Sampler(s): John Doe

Date of Sampling: *DD/MM/YYYY*

Time of Sampling: *HH:MM*

Monitoring Station Number: *SAM-X*

GPS Coordinates: N *XX* ° *XX* '*XX.X* " W *XX* ° *XX* '*XX.X* "

Weather Conditions: *ie. sunny, cloudy, windy, temperature*

Samples:

- ☐ 500 mL BOD
- ☐ 500 mL Routine
- ☐ 500 mL CBOD
- ☐ 40 mL Glass Mercury Vial + Pres
- ☐ 100 mL Amber Nutrients + Pres
- ☐ 100 mL Amber Phenols + Pres
- ☐ 250 mL Sterile Bacteria Bottle
- ☐ **2 x** 250 mL Amber Oil & Grease + Pres
- ☐ 60 mL Metals + Pres
- ☐ **3 x** 40 mL BTEX, F1 Vials + Pres
- ☐ **2 x** 100 mL Amber F2-F4 Vials + Pres
- ☐ **2 x** 250 mL Amber PAH + Pres

Other:

- ☐ _____
- ☐ _____
- ☐ _____

*Check all bottles used in the sampling procedure

Other Notes: (any unusual conditions, any deviation from standard procedures, reason sample was not taken, etc.)

ie. No water at sampling site

Ship Samples To:

ALS Environmental
1329 Niakwa Road East, Unit 12
Winnipeg, Manitoba
Canada, R2J 3T4

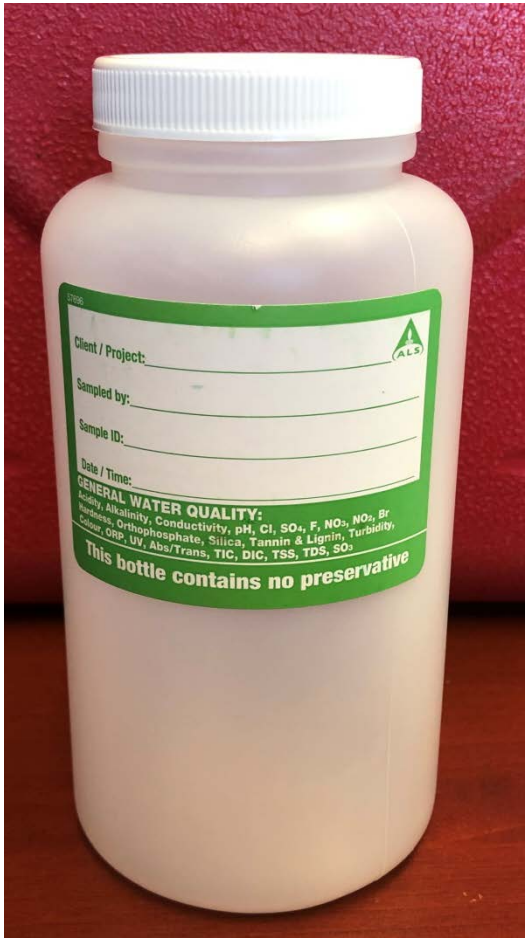
Contact: Daniel Rocha

Phone: (204) 255-9739

Email: daniel.rocha@alsglobal.com

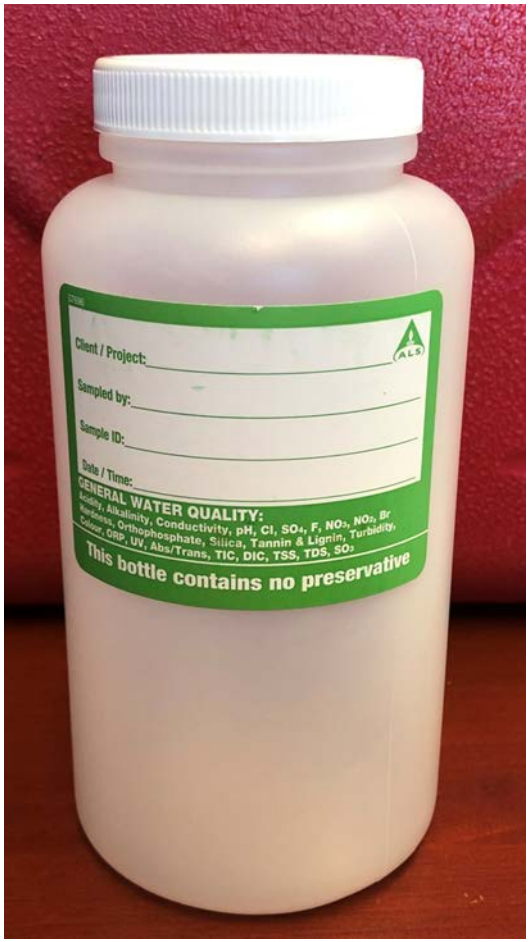
ALSWPClientServices@alsglobal.com

1. BOD (Biochemical Oxygen Demand)



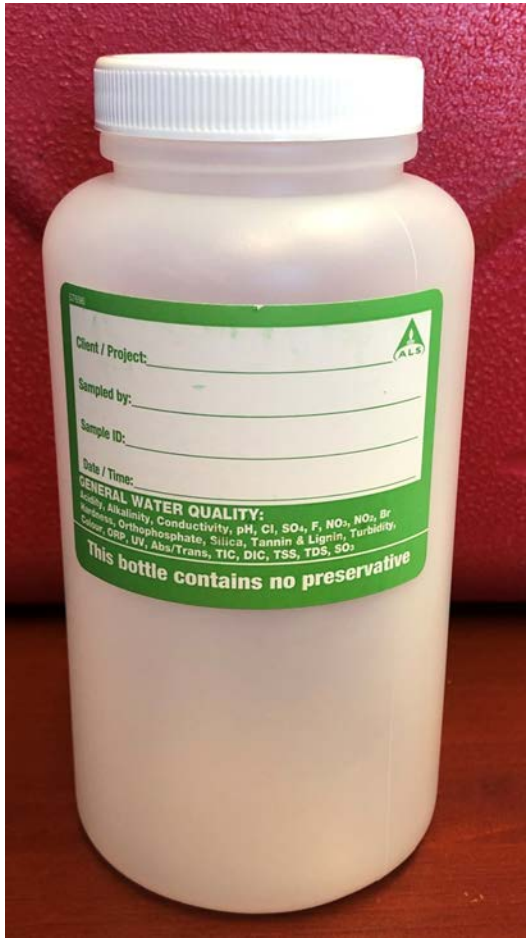
- Use the 500 mL plastic bottle
- Rinse the bottle 3 times
- Fill to 95% capacity
- No preservatives required
- Keep samples cool and return to lab as soon as practical
- Analysis should begin within 24 hours of sampling

2. Routine



- Use the 500 mL clear plastic bottle
- Rinse the bottle 3 times
- Fill to 95% capacity
- No preservatives required
- Keep samples cool and return to lab as soon as practical
- Hold times range from 48 hours to 28 days

3. CBOD



- Use the 500 mL plastic bottle
- Rinse the bottle 3 times
- Fill to 95% capacity
- No preservatives required
- Keep samples cool and return to lab as soon as practical

4. Metals Analysis (Total Metals)



- Use the 60 mL plastic bottle
- Rinse the bottle 3 times
- Fill to near capacity
- Add preservative found in the orange-taped plastic vial
- **CAUTION:** Preservative is a strong acid (3 mL of 20% nitric acid)
- Add entire contents of the vial to the sample
- Cap bottle tightly and invert to mix
- Maximum hold time is 6 months

5. Mercury



- Use the 40 mL clear glass bottle
- Rinse the bottle 3 times
- Fill to 90% capacity
- Add preservative found in the yellow-taped plastic vial
- **CAUTION:** Preservative is a strong acid (0.5 mL of 1:1 hydrochloric acid)
- Add entire contents of the vial to the sample
- Cap bottle tightly and invert to mix
- Maximum hold time is 30 days

6. Nutrient Analysis (Total Nutrients)



- Use the 100 mL Amber bottle
- **DO NOT RINSE THE BOTTLE**
- Fill to 95% capacity
- **CAUTION:** Preservative is a strong acid (1 mL of 1:1 sulphuric acid)
- Cap bottle tightly and invert to mix
- Maximum hold time is 28 days

7. Phenols

******The new phenols bottle looks the same as the nutrients bottle******



- Use the 100 mL glass amber bottle
- **DO NOT RINSE THE BOTTLE**
- Fill to 90% capacity
- **CAUTION:** Preservative is a strong acid (1 mL of 1:1 sulphuric acid)
- Cap bottle tightly and invert to mix
- Maximum hold time is 30 days

8. Bacteria

If the lab did not provide this bottle, put a note on the CoC to subsample from the 500 mL Routine





- This procedure is used for wastewaters and dirty surface waters
- Use the 250 mL sterile container
- Bottles already contain a powder preservative (sodium thiosulphate)
- **DO NOT RINSE THE BOTTLE**
- Uncap bottle (inside of cap must not come into contact with any surfaces)
- Fill bottle to the mark
- Cap bottle tightly and invert to mix
- Keep cool and return to the laboratory as soon as possible
- Analysis should be started within 48 hours

9. Oil and Grease



- Use two 250 mL amber bottles
- **DO NOT RINSE THE BOTTLES**
- Fill to greater than 95% capacity
- **CAUTION:** Preservative is a strong acid
- Cap bottles tightly and invert to mix
- Keep cool, return to lab as soon as possible
- Maximum hold time is 28 days

10. BTEX, F1



- Use three 40 mL clear glass vials for each sample
- Vials already contain tablet preservative (sodium bisulfite)
- **DO NOT RINSE THE VIALS**
- Completely fill the sample vial - there should be no head space (**no bubbles**) at the top of the vial
- This is best done by carefully overfilling the bottle, then capping it
- Invert the vial to verify no air space left in the vial
- If air spaces (bubbles) are present, uncap the bottle and add more of the sample water; recap and recheck to verify no air space
- Keep samples cool and return to laboratory as soon as possible
- Maximum hold time is 5 days

11. F2-F4



- Use two 100 mL glass amber vials for each sample
- Vials already contain tablet preservative (sodium bisulfite)
- **DO NOT RINSE THE BOTTLES**
- **Fill to top of label**
- Cap bottle tightly and invert to mix
- Keep cool and return to the laboratory as soon as possible
- Maximum hold time is 14 days

12. PAH (Polycyclic Aromatic Hydrocarbons)



- Use the two 100 mL amber bottles
- Bottles already contain tablet preservative (sodium bisulfite)
- **DO NOT RINSE THE BOTTLES**
- Fill to greater than 95% capacity
- Cap bottle tightly and invert to mix
- Keep cool and return to the laboratory as soon as possible
- Maximum hold time is 14 days

Appendix D

Field Log

Field Log

Name of Sampler(s): _____

Date of Sampling: _____

Time of Sampling: _____

Monitoring Station Number: _____

GPS Coordinates: N _____°_____’_____” W _____°_____’_____”

Weather Conditions: _____

Samples:

- ☐ 500 mL BOD
- ☐ 500 mL Routine
- ☐ 500 mL CBOD
- ☐ 40 mL Glass Mercury Vial + Pres
- ☐ 100 mL Amber Nutrients + Pres
- ☐ 100 mL Amber Phenols + Pres
- ☐ 250 mL Sterile Bacteria Bottle
- ☐ **2 x** 250 mL Amber Oil & Grease + Pres
- ☐ 60 mL Metals + Pres
- ☐ **3 x** 40 mL BTEX, F1 Vials + Pres
- ☐ **2 x** 100 mL Amber F2-F4 Vials + Pres
- ☐ **2 x** 250 mL Amber PAH + Pres

Other:

- ☐ _____
- ☐ _____
- ☐ _____

Other Notes: (any unusual conditions, any deviation from standard procedures, reason sample was not taken, etc.)

_____

_____

_____

_____

_____