

Municipality of Kugaaruk

Environmental Monitoring Program and  
Quality Assurance/Quality Control Plan

Prepared for:  
Nunavut Water Board

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## **1.0 Introduction**

The water and waste disposal facilities in the Municipality of Kugaaruk are operated under Nunavut Water Board (NWB) License 3BM-PEL1929 issued on September 18, 2019. 3BM-PEL 1929 expires September 17, 2029. The license requires the Municipality to conduct a monitoring program, which includes regular water quality sampling and reporting. As required by the license, this Quality Assurance/Quality Control Plan (QA/QC Plan) has been prepared to achieve the following objectives:

- To ensure proper sampling practices.
- To ensure proper laboratory analyses
- To be accompanied by an acceptance letter from a laboratory accredited by the Canadian Association for Laboratory Accreditation INC. (CALA).

This document describes the procedures and protocols to be followed when conducting environmental sampling under the monitoring program. Although the QA/QC Plan is submitted to the Nunavut Water Board (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 license requires Municipality personnel to adhere to these procedures, which should be applied to all water quality samples taken by the Municipality. This document applied to the infrastructure as it currently is. Any updates to the infrastructure will require this document to be updated.

## 2.0 Environmental Monitoring Program

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 Monitoring Program Stations for Water License*

<b>Station</b>	<b>Description</b>	<b>Status</b>
PEL-1	Raw water supply at Kugajuk River prior to treatment.	<b><u>Active:</u></b> Daily measurement of water volume pumped from the river to the reservoirs
PEL-2	Raw Sewage from pumpout truck	<b><u>Active:</u></b> Daily volume measurement
PEL-3-1	Effluent Discharge from Lagoon to settlement pond.	<b><u>Active:</u></b> Quality Prior to Decanting
PEL-3-2	Effluent Discharge from settlement pond to wetland area.	<b><u>Active:</u></b> Quality Prior to Decanting
PEL-4	Effluent Final Discharge Point from wetland to Ocean	<b><u>Active:</u></b> Quality monthly (June/July to August/September)
PEL-6	Run-off from the Solid Waste Disposal Facilities	<b><u>Active:</u></b> Quality during periods of run-off or seepage
PEL-7	Monitoring well located up gradient of the Solid Waste Disposal Facility (Metal Dump)	<b><u>Removed:</u></b> (Quality)
PEL-8-1	Monitoring well located down gradient of the Solid Waste Facilities	<b><u>Removed:</u></b> (Quality)
PEL-8-2	Monitoring well located down gradient of the Solid Waste Disposal Facilities	<b><u>Removed:</u></b> (Quality)
PEL-9-1	Monitoring well located down gradient of the Solid Waste Disposal Facilities (Metal Dump)	<b><u>Removed:</u></b> (Quality)
PEL-9-2	Run-off from the Solid Waste Disposal Facilities (Metal Dump)	<b><u>Active:</u></b> Quality during periods of run-off or seepage
PEL-10-1	Monitoring well (optional) located down gradient of the Solid Waste Facilities	<b><u>Removed:</u></b> (Quality)
PEL-10-2	Monitoring well (optional) located down gradient of the Solid Waste Disposal Facilities	<b><u>Removed:</u></b> (Quality)

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*Table 2 Water Quality Parameters*

Station	Water Quality Parameters	
PEL-3-1 PEL-3-2 PEL-4	<ul style="list-style-type: none"> <li>• Total Alkalinity</li> <li>• Total Phenols</li> <li>• BOD</li> <li>• Chloride</li> <li>• Conductivity</li> <li>• Fecal Coliforms</li> <li>• Total Hardness</li> <li>• Total Mercury</li> <li>• Nitrate-Nitrite</li> <li>• Amonia Nitrogen</li> <li>• Oil and Grease</li> <li>• Sulfate</li> <li>• Total Aluminium</li> <li>• Total Arsenic</li> <li>• Total Cadmium</li> </ul>	<ul style="list-style-type: none"> <li>• Total Chromium</li> <li>• Total Cobalt</li> <li>• Total Copper</li> <li>• Total Iron</li> <li>• Total Lead</li> <li>• Calcium</li> <li>• Magnesium</li> <li>• Total Manganese</li> <li>• Total Nickel</li> <li>• Potassium</li> <li>• Sodium</li> <li>• Total Zinc</li> <li>• Total Organic Carbon</li> <li>• Total Suspended Solids</li> <li>• pH</li> </ul>
Station	Water Quality Parameters	
PEL-6 PEL-9	<ul style="list-style-type: none"> <li>• pH</li> <li>• Total Suspended Solids</li> <li>• Total Alkalinity</li> <li>• Total Phenols</li> <li>• Conductivity</li> <li>• Total Hardness</li> <li>• Nitrate-Nitrite</li> <li>• Amonia Nitrogen</li> <li>• Oil and Grease</li> <li>• Sulfate</li> <li>• Total Arsenic</li> <li>• Total Cadmium</li> <li>• Total Nickel</li> <li>• Total Mercury</li> </ul>	<ul style="list-style-type: none"> <li>• Total Chromium</li> <li>• Total Copper</li> <li>• Total Iron</li> <li>• Total Lead</li> <li>• Calcium</li> <li>• Magnesium</li> <li>• Sodium</li> <li>• Potassium</li> <li>• TPH (Total Petroleum Hydrocarbons)</li> <li>• PAH (Polycyclic Aromatic Hydrocarbons)</li> <li>• BTEX (Benzene, Toluene, Ethylbenzene, Xylene)</li> </ul>

Additional sampling and analysis may be requested by an CIRNA Inspector or the NWB.

### **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.



*Figure 1 Kugaaruk Water License Sampling Locations*

#### **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 A. The laboratory shall be contacted at least one month prior to the sampling event to ensure that containers are available for sampling.

#### **3.3 Field Sample Log**

The individual collecting the samples shall record the following at each location at the time of sampling:

- Date of sampling
- Time of sampling
- Weather conditions

- Monitoring Station Number (i.e., PEL-3-1, PEL-3-2, etc.)
- Results of any field measurements.
- Sampler shall also indicate if sample used preservatives.
- Any unusual conditions
- 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 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 4°C 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.
- 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**

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.

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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. Where 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**

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., PEL-3-1)
- Date and time of collection
- Parameter to be analyzed.
- Preservatives
- Project number identifier
- Bottle number 1 of \_\_\_\_.

**3.7 Sample Preservation**

To obtain good results from a sampling program, time 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 4°C. 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 4°C. 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.

### **3.9 Water Volume and Water Level Measurements**

The NWB license includes measuring the monthly and annual volume of water pumped from Wolf Creek (PEL-1). This can be accomplished by:

- The flow meter on the intake pipe

The NWB license includes (PEL-2) monitoring the volume of raw sewage from the pump-out truck. The volume can be accomplished by:

- The sensor's fill level indicator and display on the truck

## **4.0 Quality Assurance and Quality Control**

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

### **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 (Wilson, 1995). 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.
- 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 and Trip Blanks**

Field Blanks are samples that the lab uses to identify any environmental impacts caused during sample collection or sample transportation. Field Blanks shall accompany the sampler into the field, labelled as field blanks, preserved in the field and submitted to the laboratory with the field samples. Trip Blanks are a blank solution put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection. At least one trip blank per sampling event will be used. QA/QC samples should make up at least 10% of total samples collected.

#### **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**

The water licence requires that all analyses be performed by a laboratory that is accredited according to ISO/IEC Standard 17025. All laboratories that are accredited by the Canadian Association for Laboratory Accreditation Inc. (CALAI) meet this standard. As required by the water licence, a letter from an accredited laboratory is attached accepting the quality assurance and quality control plan for the Municipality of Kugaaruk as outlined in this report (Appendix C).

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.

### **5.0 Laboratory Analysis and Reporting**

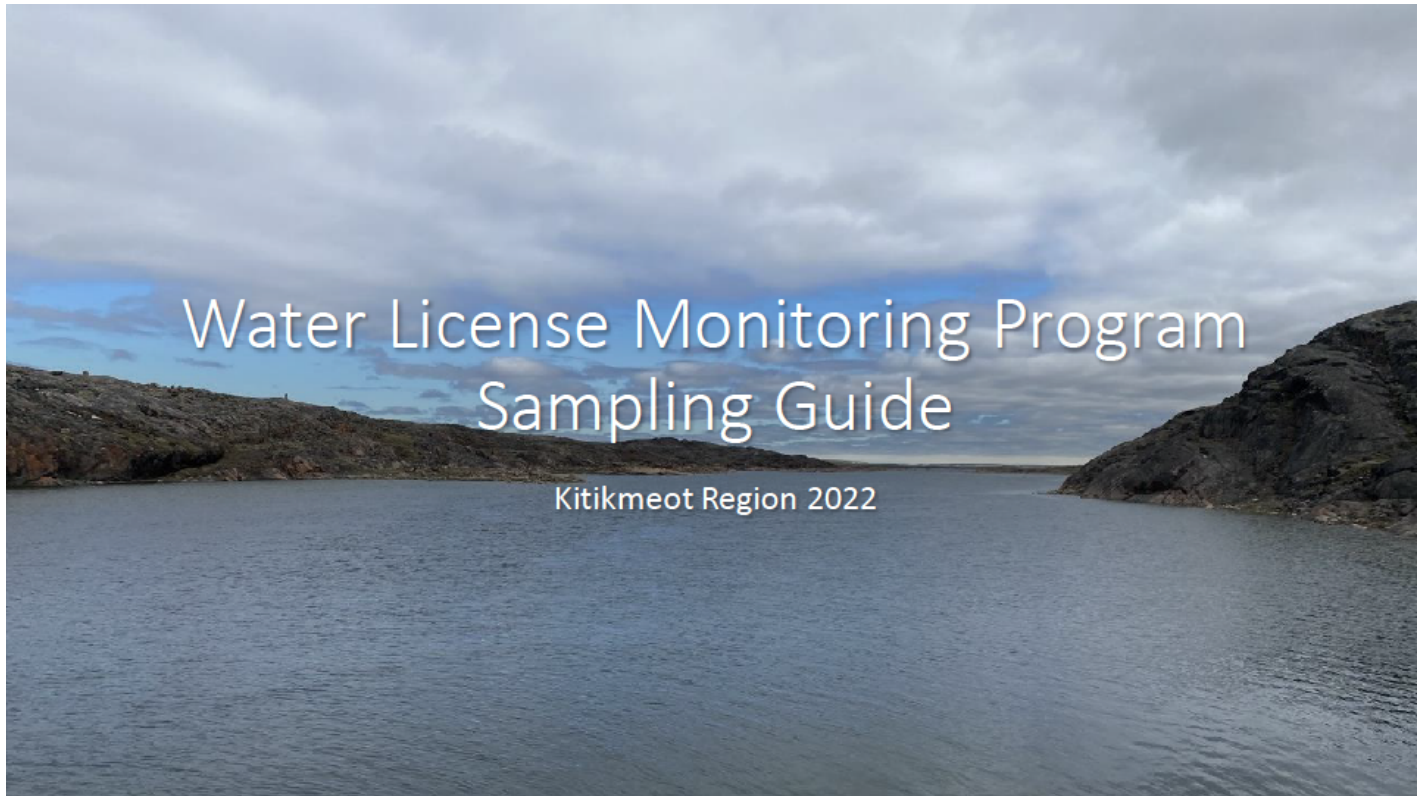
The laboratory will perform the analysis of all samples as outlined herein. The results shall be received by the Municipality within the time frame agreed to with the laboratory. The results shall contain the limits of detection used for analysis of each parameter as supplied by the laboratory. The Municipality 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
- Sewage Treatment Facility Operations and Maintenance Plan

These reports will need to be updated upon NWB approval of this plan.

## **Appendix A**

# **Water License Monitoring Program Sampling Guide**



# Equipment Needed:

- ☐ Field Sheet
- ☐ Sampling Bottles
- ☐ Cooler
- ☐ Frozen Ice Packs
- ☐ Permanent Marker
- ☐ Rubber Gloves
- ☐ Map of Sampling Sites
- ☐ Garbage Bags
- ☐ Shipping Label
- ☐ Field Log

# 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.

# Instructions:

9. Do not rinse bottles when sampling if bottles contain preservatives (ie . Nutrients, Oil & Grease, BTX F1, F2-F4, PAH).

10. Fill 40ml Glass vial to the top, without rinsing, and without bubbles.

11. Put bottles in cooler with ice/icepacks.

12. Write your name, the date, the time of sampling, and sign the Field Sheet. Seal the Field Sheet in plastic bag and place in the cooler. Tape shipping label to cooler.

13. Send samples to lab as soon as possible.

14. Wash your hands when you are done handling samples.

15. Notify the lab that the sample was shipped, waybill #, and what time it is expected to arrive. Provide the MTO with the waybill # at [mcole1@gov.nu.ca](mailto:mcole1@gov.nu.ca)



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# Field Log

## Field Log

Name of Sampler(s): \_\_\_\_\_

Date of Sampling: \_\_\_\_\_

Time of Sampling: \_\_\_\_\_

Monitoring Station Number: \_\_\_\_\_

GPS Coordinates: N \_\_\_\_° \_\_\_\_' \_\_\_\_" W \_\_\_\_° \_\_\_\_' \_\_\_\_"

Weather Conditions: \_\_\_\_\_

### Samples:

- |   |  |
|---|--|
| <input type="checkbox"/> 500 mL BOD                           | <input type="checkbox"/> 60 mL Metals + Pres                 |
| <input type="checkbox"/> 500 mL Routine                       | <input type="checkbox"/> 3 x 40 mL BTEX, F1 Vials + Pres     |
| <input type="checkbox"/> 500 mL CBOD                          | <input type="checkbox"/> 2 x 100 mL Amber F2-F4 Vials + Pres |
| <input type="checkbox"/> 40 mL Glass Mercury Vial + Pres      | <input type="checkbox"/> 2 x 250 mL Amber PAH + Pres         |
| <input type="checkbox"/> 100 mL Amber Nutrients + Pres        | <b>Other:</b>  |
| <input type="checkbox"/> 100 mL Amber Phenols + Pres          | <input type="checkbox"/> _____                               |
| <input type="checkbox"/> 250 mL Sterile Bacteria Bottle       | <input type="checkbox"/> _____                               |
| <input type="checkbox"/> 2 x 250 mL Amber Oil & Grease + Pres | <input type="checkbox"/> _____                               |

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

\_\_\_\_\_


\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Field Sheet:



Government of Northwest Territories  
 Gouvernement des Territoires du Nord-Ouest

### TAIGA ENVIRONMENTAL LABORATORY – FIELD SHEET

4601–52 Avenue, Yellowknife, NT X1A 2L9 • Tel: (867) 767-9225 • Fax: (867) 930-8740 • email: [taiga@gov.nt.ca](mailto:taiga@gov.nt.ca)

**Send Results and Invoice to:**  
(Please notify if results or invoice are to be sent to different locations)  
 Company/Agency: **Hamlet**  
 Address:  
 City/Town: **Hamlet**  
 Province/Territory: **Nunavut**      Postal Code: **X0B XXX**  
 Phone: **867-xxx-xxx**      Fax:  
 E-mail: [mcole1@gov.nu.ca](mailto:mcole1@gov.nu.ca)  
 Signature: SIGN HERE

Laboratory Use Only

Batch No: \_\_\_\_\_

Client Project No: \_\_\_\_\_

Date Collected: DATE HERE      Time Collected: TIME HERE

Sampler: YOUR NAME HERE

Location: **Hamlet Sewage**

Rush Required: ☐ Yes      ☒ No

Note: Analysis may be subcontracted without prior notice.  
 See reverse for how to complete form and sampling protocols.

Laboratory Use Only

Date Received: \_\_\_\_\_      Received By: \_\_\_\_\_

Comments: \_\_\_\_\_

WATER SAMPLES

Sample Type <small>(fresh water, sewage, waste water, potable, ground water, salt water, etc.)</small>	Solid waste runoff	Sewage Lagoon	Final Discharge
Client Sample ID (as it should appear on final report)	X-1	X-3A	X-4
TAIGA Sample ID (Laboratory Use Only)			

Routine

Bottle Type and Parameter		[V] PLEASE CHECK PARAMETERS REQUESTED BELOW:														
Routine	pH, Conductivity, Alkalinity	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> Cond	<input checked="" type="checkbox"/> Alk	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> Cond	<input checked="" type="checkbox"/> Alk	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> Cond	<input checked="" type="checkbox"/> Alk	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> Cond	<input checked="" type="checkbox"/> Alk			
	Individual Anions      Suite <input type="checkbox"/>	<input checked="" type="checkbox"/> Cl <sup>-</sup>	<input checked="" type="checkbox"/> SO <sub>4</sub> <sup>2-</sup>	<input checked="" type="checkbox"/> F <sup>-</sup>	<input checked="" type="checkbox"/> NO <sub>2</sub> -N	<input checked="" type="checkbox"/> NO <sub>3</sub> -N	<input checked="" type="checkbox"/> Cl <sup>-</sup>	<input checked="" type="checkbox"/> SO <sub>4</sub> <sup>2-</sup>	<input checked="" type="checkbox"/> F <sup>-</sup>	<input checked="" type="checkbox"/> NO <sub>2</sub> -N	<input checked="" type="checkbox"/> NO <sub>3</sub> -N	<input checked="" type="checkbox"/> Cl <sup>-</sup>	<input checked="" type="checkbox"/> SO <sub>4</sub> <sup>2-</sup>	<input checked="" type="checkbox"/> F <sup>-</sup>	<input checked="" type="checkbox"/> NO <sub>2</sub> -N	<input checked="" type="checkbox"/> NO <sub>3</sub> -N
	Total Nitrite (NO <sub>2</sub> ) + Nitrate (NO <sub>3</sub> )	<input checked="" type="checkbox"/> NO <sub>2</sub> -N + NO <sub>3</sub> -N			<input checked="" type="checkbox"/> NO <sub>2</sub> -N + NO <sub>3</sub> -N			<input checked="" type="checkbox"/> NO <sub>2</sub> -N + NO <sub>3</sub> -N			<input checked="" type="checkbox"/> NO <sub>2</sub> -N + NO <sub>3</sub> -N					
	Individual Cations      Suite <input type="checkbox"/>	<input checked="" type="checkbox"/> Ca	<input checked="" type="checkbox"/> Mg	<input checked="" type="checkbox"/> Na	<input checked="" type="checkbox"/> K	<input checked="" type="checkbox"/> Ca	<input checked="" type="checkbox"/> Mg	<input checked="" type="checkbox"/> Na	<input checked="" type="checkbox"/> K	<input checked="" type="checkbox"/> Ca	<input checked="" type="checkbox"/> Mg	<input checked="" type="checkbox"/> Na	<input checked="" type="checkbox"/> K			
	Hardness (Calculated)	<input checked="" type="checkbox"/> Hardness			<input checked="" type="checkbox"/> Hardness			<input checked="" type="checkbox"/> Hardness			<input checked="" type="checkbox"/> Hardness					
	Reactive Silica	<input type="checkbox"/> SiO <sub>2</sub>			<input type="checkbox"/> SiO <sub>2</sub>			<input type="checkbox"/> SiO <sub>2</sub>			<input type="checkbox"/> SiO <sub>2</sub>					
	Colour	<input type="checkbox"/> True			<input type="checkbox"/> Apparent			<input type="checkbox"/> True			<input type="checkbox"/> Apparent					
	Laboratory Use Only	Received: _____			Received: _____			Received: _____			Received: _____					
	Chlorine: Total, Residual	<input type="checkbox"/> T.O <input type="checkbox"/> R.O			<input type="checkbox"/> T.O <input type="checkbox"/> R.O			<input type="checkbox"/> T.O <input type="checkbox"/> R.O			<input type="checkbox"/> T.O <input type="checkbox"/> R.O					
	Chemical Oxygen Demand	<input type="checkbox"/> COD			<input type="checkbox"/> COD			<input type="checkbox"/> COD			<input type="checkbox"/> COD					

Ship  
To

This package contains **TIME SENSITIVE** material and requires  
**IMMEDIATE DELIVERY/PICK-UP.**

**TAIGA ENVIRONMENTAL LABORATORY'S HOURS OF OPERATION ARE  
FROM 8 AM TO 4:30 PM.**

Please call **867-765-6645** during hours of operation, and after hours, please call  
**867-444-8378** for after hours delivery and/or pick-up.

Taiga Environmental Laboratory  
4601 52<sup>nd</sup> Avenue  
Yellowknife, Northwest Territories  
X1A 2L9  
867-765-6645

Please keep refrigerated at 4°C

Date Sampled: \_\_\_\_\_

Time Sampled: \_\_\_\_\_

Taiga Environmental Laboratory  
Shipping Label - Time Sensitive  
Revision 3 Effective Date 15-June-14

Page 1 of 1  
Form ID: FOR S001 File ID: 551-4.7.1  
FOR S001 - Shipping Label - Time Sensitive

## Nutrients:

- Black dot on lid
- Rinse bottle 3 times with sample
- Fill to the top and cap bottle
- Keep cool at 4 °C



## Routine:

- Green dot on lid
- Rinse bottle 3 times with sample
- Fill to top and cap bottle
- Keep cool at 4 °C



## Total Metals and Dissolved Metals :

- Red dot on lid
- Rinse bottle 3 times with sample
- Fill to shoulder and cap bottle
- Keep cool at 4°C



## Cyanide:

- Labelled Cyanide
- Rinse bottle 3 times with sample
- Fill to top and cap bottle



## F2-F4:

- 1 L brown glass bottle with white plastic lid
- Do NOT rinse
- Fill to top and cap
- Keep cool at 4°C



## PAH's:

- Do NOT rinse
- Fill to the shoulder and cap



## **Appendix B**

### **Sampling Log**

## Field Log

Name of Sampler(s): \_\_\_\_\_

Date of Sampling: \_\_\_\_\_

Time of Sampling: \_\_\_\_\_

Monitoring Station Number: \_\_\_\_\_

GPS Coordinates: N \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "      W \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "

Weather Conditions: \_\_\_\_\_

### Samples:

- |  |  |
|--|--|
| <input type="checkbox"/> Routine Bottle (Green Dot)        | <input type="checkbox"/> 1L Amber Glass Bottle (F2-F4)     |
| <input type="checkbox"/> Nutrient Bottle (Black Dot)       | <input type="checkbox"/> 2x small Amber Glass Bottle (PAH) |
| <input type="checkbox"/> 100mL Plastic Cyanide Bottle      | <input type="checkbox"/> Other _____                       |
| <input type="checkbox"/> Total Metals Bottle (Red Dot)     | <input type="checkbox"/> Other _____                       |
| <input type="checkbox"/> Dissolved Metals Bottle (Red Dot) | <input type="checkbox"/> Other _____                       |
| <input type="checkbox"/> 2 x 40mL Glass vial (THM)         | <input type="checkbox"/> Other _____                       |
| <input type="checkbox"/> 2 x 40mL Glass vial (BTEX)        | <input type="checkbox"/> Other _____                       |
| <input type="checkbox"/> 2 x 40mL Glass vial (F1)          | <input type="checkbox"/> Other _____                       |
| <input type="checkbox"/> 2 x 40mL Glass Vial (HAA)         |  |

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

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# Appendix C

## Laboratory Approval of QA/QC

## Municipality of Kugaaruk

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

March 2022



Madeline Cole  
Municipal Technical Officer  
Community and Government Services  
Cambridge Bay, NU X0B 0C0

**Re: Water License 3BM-PEL 1929**  
**Quality Assurance Quality Control Plan**  
**Hamlet of Kugaaruk, NU**

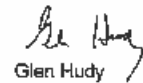
**Submitted: March 03, 2022**

**Reviewed: March 09, 2022**

Thank you for the submission of the Quality Assurance and Quality Control Plan prepared for Hamlet of Kugaaruk. As per the board requirements in granting a license, the Hamlet of Kugaaruk QA/QC plan has been reviewed and found to be complete. Approval of the proposal is hereby granted.

If you have any questions or require further information, please do not hesitate to contact me at (867) 767-8235 x53154 or via email at [Glen\\_Hudy@gov.nt.ca](mailto:Glen_Hudy@gov.nt.ca)

Sincerely,



Glen Hudy  
Chemist, Quality Assurance  
Analyst under the Northwest Territories Act