

## ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**YEAR BEING REPORTED: 2021**

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-KUG2030 issued to the Municipality of Kugluktuk.

- a) **Tabular summaries of all data generated under the “Monitoring Program”;**
- b) **The daily, monthly and annual quantities in cubic metres of fresh Water obtained at the Water Supply Facility and/or for all purposes under the licence;**
- c) **The monthly and annual quantities in cubic metres of sewage Waste discharged; and the monthly and yearly quantities of every type of Waste accepted at the Solid Waste Facilities;**

Attached are quantities of water used as reported by the Municipality and the estimated discharge of sewage waste based on quantities used.

<b>Month Reported</b>	<b>Quantity of Water Obtained from all sources (L)</b>	<b>Quantity of Sewage Waste Discharged (Estimated, L)</b>
<b>January</b>	5807323.2	Same
<b>February</b>	5372286.9	Same
<b>March</b>	5690679.3	Same
<b>April</b>	5456919.0	Same
<b>May</b>	5295967.1	Same
<b>June</b>	5254698.4	Same
<b>July</b>	5582412.4	Same
<b>August</b>	5629976.4	Same
<b>September</b>	5678189.3	Same
<b>October</b>	5631307.3	Same
<b>November</b>	5617039.8	Same
<b>December</b>	5437334.6	Same
<b>ANNUAL TOTAL</b>	<b>66926551.03</b>	<b>Same</b>

Note: Monthly sewage discharge volume is considered as equal to the monthly water consumption volume.

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**d) Summary of modifications and/or major maintenance work carried out on the Water Supply Facility and Waste Disposal Facilities, including all associated structures;**

- June 13, 2021, ice intruded further on shore than typical, damaging the old intake pump and sweeping the intake vault off its skids. Photos are included in Appendix E. June 14, 2021, the old intake pump was working again and the vault had been restored on its skids. There are two new intake lines. One which stopped working shortly after installation, and one which shuts down for most of the year due to salt intrusion. There is a current project underway to increase the reliability functionality of the new intake lines. Refer to section h).
- July 12, 2021, the land beneath the old intake pump house was found eroded over the weekend. Photos are included in Appendix E. The eroded area was filled in with new material and continues to be monitored.
- November 14, 2021, the main water intake pump seized due to depreciation. A spare pump was utilized until a replacement was installed a few weeks later.

**e) A list of unauthorized discharges and summary of follow-up action taken;**

- No unauthorized discharges for the infrastructure under license 3BM-KUG2030 occurred in 2021.

**f) A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;**

- No abandonment and restoration work completed during 2021.

**g) Any Addendum with updates or revisions for manuals and plans (including *Operations and Maintenance Manuals/Plans*) as required by changes in operation and/or technology;**

- There was no Addendum with updates or revisions for manuals and plans in 2021.

**h) A summary of any studies or reports requested by the Board that relate to the use of Water and Waste disposal or restoration, and a brief description of any future studies planned;**

- The main pipeline into the water treatment plant has 2 separate raw water intake pipeline branches. The original intake was installed in 1980 and had its pipeline realigned in 2000. The new intake that was installed down river in 2014 has two lines, one that completely failed shortly after installation and one that is prone to salt intrusion such that it cannot be used for most of the year. Currently Kugluktuk relies on the old intake to draw water for most of the year. An assessment was completed in 2020 to understand the failure determine how to make

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the new intake functional and reliable.

- A contract to develop issue-for-tender drawings for the repairs on the 2014 water intake lines was awarded in October 2021 with drawings expected in 2022. The 2020 *Raw Water Pipeline Assessment* report will be submitted to NWB as part of the 2021 Annual Report. The proposed modifications and the accompanying drawings will be submitted once available, at least 60-days prior to construction.
- i) **A summary of any inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Waste disposal, Water use or reclamation activities;**
  - There were no inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Waste disposal, Water use or reclamation activities.
- j) **Any other details on Water or Waste deposit requested by the Board by November 1 of the year being reported.**
  - There were no other details on Water or Waste deposit requested by the board by November 2021.

### ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- KUG-3A is the compliance point for this licence, which represents partially treated effluent at the outlet of the lagoon. KUG-4 at the outfall of the wetland treatment area is a more appropriate compliance point since it represents fully treated effluent. Samples at KUG-4 are below the recommended Nunavut technology based effluent parameters of CBOD/TSS 100/120 mg/L for all samples. The BOD<sub>5</sub> limit at KUG-3A was exceeded in June.

### FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- As per the 2020 CIRNAC Inspection, the Inspector noted - The License Holder must work with the Government of Nunavut to come up with a permanent solution to the ongoing Leakage of the Sewage Lagoon.
- A contract to develop a business case to assess the leak in the east berm and recommend remedial actions began in May 2021. A field investigation took place from June 28-July 12, 2021, that included drilling 11 boreholes in the lagoon berms, the installation of thermistors, reading thermistors previously installed in the berms, sampling of leaks, and inspecting the site. The resulting business case report that summarizes findings and provides repair recommendations

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is expected to be complete in April 2022. The final report will be submitted to NWB once complete. Funding for future phases of this project is not yet secured.

### **List of Appendices**

**Appendix A: KUG-3 Effluent Quality Limits – 1 page**

**Appendix B: Laboratory Certificate of Analysis**

- **Certificate of Analysis 06/17/2021 - 13 pages**
- **Certificate of Analysis 07/06/2021 - 17 pages**
- **Certificate of Analysis 08/09/2021 - 14 pages**
- **Certificate of Analysis 09/20/2021 – 14 pages**

**Appendix C: Hazardous Materials Spill Database, Kugluktuk 2021 – 1 page**

**Appendix D: Kugluktuk 2021 Sampling Summary – 2 pages**

**Appendix E: Photos of incidents requiring Maintenance**

**Appendix F : CIRNAC Inspection Report - 1 pages**

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## Appendix A: KUG-3 and KUG-5 Effluent Quality Limits

### 3BM-KUG2030 Kugluktuk Monitoring Program Results 2021 for Effluent Quality

Parameter	Maximum concentration of Any Grab Sample	KUG-3A			
		June 17	July 06	Aug 09	Sept 20
BOD	120 mg/L	160	34	71	24
Total Suspended Solids	180 mg/L	22	102	42	60
Fecal Coliforms	1x10 <sup>6</sup> CFU/100mL	35000	<1000	<1000	<1000
Oil + Grease	No visible sheen	Non-Visible	Non-Visible	Non-Visible	Non-Visible
pH	between 6 and 9	7.04	7.28	7.3	7.23

Parameter	Maximum concentration of Any Grab Sample	KUG-5			
		June 17	July 06	August 09	Sept 20
pH	between 6 and 9	7.25	7.58	7.45	7.88
Total Suspended Solids	15 mg/L	328	10	14	46
Oil + Grease	5 mg/L and no visible sheen	Non-Visible	Non-Visible	Non-Visible	Non-Visible
Lead (Dissolved)	0.001 mg/L	-	-	-	-
Phenols	0.02 mg/L	-	<0.0010	<0.0010	-
Benzene	0.370 mg/L	-	<0.00050	<0.00050	<0.00050
Toluene	0.002 mg/L	-	<0.00050	<0.00050	<0.00050
Ethyl-benzene	0.09 mg/L	-	<0.00050	<0.00050	<0.00050

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## Appendix B: Laboratory Certificate of Analysis



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

### - FINAL REPORT -

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**Prepared For:** Hamlet of Kugluktuk

**Address:** P.O. Box 271  
Kugluktuk, NU, X0B 0E0

**Attn:** Mark Franche

**Facsimile:** 867-982-3060

**Final report has been reviewed and approved by:**

**Glen Hudy**  
Quality Assurance Officer

#### NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**Report Date:** Monday, June 28, 2021  
**Print Date:** Monday, June 28, 2021

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-3A

**Taiga Sample ID:** 001

**Client Project:** Kugluktuk Sewage and Waste  
**Sample Type:** Decant Sewage  
**Received Date:** 18-Jun-21  
**Sampling Date:** 17-Jun-21  
**Sampling Time:**  
**Location:** Lagoon inside, wetland, and facilities  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	46.8	0.005	mg/L	18-Jun-21	SM4500-NH3:G	
Biochemical Oxygen Demand	160	2	mg/L	19-Jun-21	SM5210:B	
CBOD	113	2	mg/L	19-Jun-21	SM5210:B	
Organic Carbon, Total	96.3	0.5	mg/L	23-Jun-21	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO3)	162	0.4	mg/L	18-Jun-21	SM2320:B	
Conductivity, Specific (@25C)	498	0.4	µS/cm	18-Jun-21	SM2510:B	
pH	7.04		pH units	18-Jun-21	SM4500-H:B	
Solids, Total Suspended	22	3	mg/L	19-Jun-21	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	7.1	0.1	mg/L	18-Jun-21	SM4110:B	
Hardness	41.3	0.7	mg/L	18-Jun-21	SM4110:B	
Magnesium	5.7	0.1	mg/L	18-Jun-21	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.02	0.01	mg/L	18-Jun-21	SM4110:B	

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4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**210891**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3A**

Taiga Sample ID: **001**

Potassium	21.3	0.1	mg/L	18-Jun-21	SM4110:B
Sodium	23.2	0.1	mg/L	18-Jun-21	SM4110:B
Sulphate	4	1	mg/L	18-Jun-21	SM4110:B

### Microbiology

Coliforms, Fecal	35000	1000	CFU/100mL	18-Jun-21	SM9222:D
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### Organics

Oil and Grease, visible	Non-visible			18-Jun-21	Visual Exam
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### Subcontracted Organics

Phenols, Total		0.001	mg/L		AB ENV.06537
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### Trace Metals, Total

Arsenic	0.4	0.2	µg/L	24-Jun-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	24-Jun-21	EPA200.8
Chromium	0.4	0.1	µg/L	24-Jun-21	EPA200.8
Cobalt	0.4	0.1	µg/L	24-Jun-21	EPA200.8
Iron	314	5	µg/L	24-Jun-21	EPA200.8
Lead	0.4	0.1	µg/L	24-Jun-21	EPA200.8
Mercury	0.03	0.01	µg/L	24-Jun-21	EPA200.8
Nickel	1.5	0.1	µg/L	24-Jun-21	EPA200.8
Zinc	27.9	5	µg/L	24-Jun-21	EPA200.8

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**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-4

**Taiga Sample ID:** 002

**Client Project:** Kugluktuk Sewage and Waste  
**Sample Type:** Final Discharge  
**Received Date:** 18-Jun-21  
**Sampling Date:** 17-Jun-21  
**Sampling Time:**  
**Location:** Lagoon inside, wetland, and facilities  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.655	0.005	mg/L	18-Jun-21	SM4500-NH3:G	
Biochemical Oxygen Demand	2	2	mg/L	19-Jun-21	SM5210:B	
CBOD	3	2	mg/L	19-Jun-21	SM5210:B	
Organic Carbon, Total	5.4	0.5	mg/L	23-Jun-21	SM5310:B	
Phosphorous, Total	0.073	0.002	mg/L	23-Jun-21	SM4500-P:D	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	39.3	0.4	mg/L	18-Jun-21	SM2320:B	
Conductivity, Specific (@25C)	505	0.4	µS/cm	18-Jun-21	SM2510:B	
pH	7.00		pH units	18-Jun-21	SM4500-H:B	
Solids, Total Suspended	14	3	mg/L	19-Jun-21	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	8.2	0.1	mg/L	18-Jun-21	SM4110:B	
Chloride	117	0.7	mg/L	18-Jun-21	SM4110:B	
Hardness	89.2	0.7	mg/L	18-Jun-21	SM4110:B	
Magnesium	16.7	0.1	mg/L	18-Jun-21	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.08	0.01	mg/L	18-Jun-21	SM4110:B	

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Taiga Batch No.:  
**210891**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **002**

Potassium	5.1	0.1	mg/L	18-Jun-21	SM4110:B
Sodium	71.4	0.1	mg/L	18-Jun-21	SM4110:B
Sulphate	17	1	mg/L	18-Jun-21	SM4110:B
<b><u>Microbiology</u></b>					
Coliforms, Fecal	< 10	10	CFU/100mL	18-Jun-21	SM9222:D
<b><u>Organics</u></b>					
Oil and Grease, visible	Non-visible			18-Jun-21	Visual Exam
<b><u>Trace Metals, Total</u></b>					
Arsenic	0.6	0.2	µg/L	24-Jun-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	24-Jun-21	EPA200.8
Chromium	0.4	0.1	µg/L	24-Jun-21	EPA200.8
Cobalt	0.6	0.1	µg/L	24-Jun-21	EPA200.8
Iron	1330	5	µg/L	24-Jun-21	EPA200.8
Lead	0.3	0.1	µg/L	24-Jun-21	EPA200.8
Mercury	< 0.01	0.01	µg/L	24-Jun-21	EPA200.8
Nickel	2.1	0.1	µg/L	24-Jun-21	EPA200.8
Zinc	< 5.0	5	µg/L	24-Jun-21	EPA200.8

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Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-3 Leak

**Taiga Sample ID:** 003

**Client Project:** Kugluktuk Sewage and Waste  
**Sample Type:** Leak Sewage  
**Received Date:** 18-Jun-21  
**Sampling Date:** 17-Jun-21  
**Sampling Time:**  
**Location:** Lagoon inside, wetland, and facilities  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	13.0	0.005	mg/L	18-Jun-21	SM4500-NH3:G	
Biochemical Oxygen Demand	5	2	mg/L	19-Jun-21	SM5210:B	
CBOD	6	2	mg/L	19-Jun-21	SM5210:B	
Organic Carbon, Total	14.5	0.5	mg/L	23-Jun-21	SM5310:B	
Phosphorous, Total	1.49	0.002	mg/L	23-Jun-21	SM4500-P:D	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	95.5	0.4	mg/L	18-Jun-21	SM2320:B	
Conductivity, Specific (@25C)	590	0.4	µS/cm	18-Jun-21	SM2510:B	
pH	7.82		pH units	18-Jun-21	SM4500-H:B	
Solids, Total Suspended	312	3	mg/L	19-Jun-21	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	13.4	0.1	mg/L	18-Jun-21	SM4110:B	
Chloride	109	0.7	mg/L	18-Jun-21	SM4110:B	
Hardness	103	0.7	mg/L	18-Jun-21	SM4110:B	
Magnesium	17.0	0.1	mg/L	18-Jun-21	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.70	0.01	mg/L	18-Jun-21	SM4110:B	

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Taiga Batch No.:  
**210891**

## - CERTIFICATE OF ANALYSIS -

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Client Sample ID: **KUG-3 Leak**

Taiga Sample ID: **003**

Potassium	8.8	0.1	mg/L	18-Jun-21	SM4110:B
Sodium	66.4	0.1	mg/L	18-Jun-21	SM4110:B
Sulphate	12	1	mg/L	18-Jun-21	SM4110:B
<b><u>Microbiology</u></b>					
Coliforms, Fecal	< 1,000	1000	CFU/100mL	18-Jun-21	SM9222:D
<b><u>Organics</u></b>					
Oil and Grease, visible	Non-visible			18-Jun-21	Visual Exam
<b><u>Trace Metals, Total</u></b>					
Arsenic	6.0	0.2	µg/L	24-Jun-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	24-Jun-21	EPA200.8
Chromium	8.2	0.1	µg/L	24-Jun-21	EPA200.8
Cobalt	5.0	0.1	µg/L	24-Jun-21	EPA200.8
Iron	11200	5	µg/L	24-Jun-21	EPA200.8
Lead	4.0	0.1	µg/L	24-Jun-21	EPA200.8
Mercury	0.02	0.01	µg/L	24-Jun-21	EPA200.8
Nickel	11.3	0.1	µg/L	24-Jun-21	EPA200.8
Zinc	17.1	5	µg/L	24-Jun-21	EPA200.8

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Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-2

**Taiga Sample ID:** 004

**Client Project:** Kugluktuk Sewage and Waste  
**Sample Type:** Metal Dump Run  
**Received Date:** 18-Jun-21  
**Sampling Date:** 17-Jun-21  
**Sampling Time:**  
**Location:** Kugluktuk Sites  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.006	0.005	mg/L	18-Jun-21	SM4500-NH3:G	
Biochemical Oxygen Demand	5	2	mg/L	19-Jun-21	SM5210:B	
CBOD	6	2	mg/L	19-Jun-21	SM5210:B	
Organic Carbon, Total	16.3	0.5	mg/L	23-Jun-21	SM5310:B	
Phosphorous, Total	0.096	0.002	mg/L	23-Jun-21	SM4500-P:D	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO3)	102	0.4	mg/L	18-Jun-21	SM2320:B	
Conductivity, Specific (@25C)	1090	0.4	µS/cm	18-Jun-21	SM2510:B	
pH	7.87		pH units	18-Jun-21	SM4500-H:B	
Solids, Total Suspended	34	3	mg/L	19-Jun-21	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	125	0.1	mg/L	18-Jun-21	SM4110:B	
Chloride	230	0.7	mg/L	18-Jun-21	SM4110:B	
Hardness	462	0.7	mg/L	18-Jun-21	SM4110:B	
Magnesium	36.5	0.1	mg/L	18-Jun-21	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.41	0.01	mg/L	18-Jun-21	SM4110:B	

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Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID: KUG-2**

**Taiga Sample ID: 004**

Potassium	6.8	0.1	mg/L	18-Jun-21	SM4110:B
Sodium	33.3	0.1	mg/L	18-Jun-21	SM4110:B
Sulphate	73	1	mg/L	18-Jun-21	SM4110:B
<b><u>Microbiology</u></b>					
Coliforms, Fecal	< 1	1	CFU/100mL	18-Jun-21	SM9222:D
<b><u>Trace Metals, Total</u></b>					
Arsenic	1.3	0.2	µg/L	24-Jun-21	EPA200.8
Cadmium	0.4	0.1	µg/L	24-Jun-21	EPA200.8
Chromium	3.0	0.1	µg/L	24-Jun-21	EPA200.8
Cobalt	1.6	0.1	µg/L	24-Jun-21	EPA200.8
Iron	2460	5	µg/L	24-Jun-21	EPA200.8
Lead	2.0	0.1	µg/L	24-Jun-21	EPA200.8
Mercury	0.01	0.01	µg/L	24-Jun-21	EPA200.8
Nickel	4.9	0.1	µg/L	24-Jun-21	EPA200.8
Zinc	243	5	µg/L	24-Jun-21	EPA200.8

**ReportDate:** Monday, June 28, 2021  
**Print Date:** Monday, June 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

**Client Project:** Kugluktuk Sewage and Waste  
**Sample Type:** Solid Waste Run  
**Received Date:** 18-Jun-21  
**Sampling Date:** 17-Jun-21  
**Sampling Time:**  
**Location:** Kugluktuk Sites  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.028	0.005	mg/L	18-Jun-21	SM4500-NH3-G	
Biochemical Oxygen Demand	3	2	mg/L	19-Jun-21	SM5210-B	
CBOD	3	2	mg/L	19-Jun-21	SM5210-B	
Organic Carbon, Total	21.0	0.5	mg/L	23-Jun-21	SM5310-B	
Phosphorous, Total	0.565	0.002	mg/L	23-Jun-21	SM4500-P-D	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO3)	158	0.4	mg/L	18-Jun-21	SM2320-B	
Conductivity, Specific (@25C)	1240	0.4	µS/cm	18-Jun-21	SM2510-B	
pH	7.25		pH units	18-Jun-21	SM4500-H-B	
Solids, Total Suspended	328	3	mg/L	19-Jun-21	SM2540-D	
<b><u>Major Ions</u></b>						
Calcium	139	0.1	mg/L	18-Jun-21	SM4110-B	
Chloride	81.1	0.7	mg/L	18-Jun-21	SM4110-B	
Hardness	495	0.7	mg/L	18-Jun-21	SM4110-B	
Magnesium	36.3	0.1	mg/L	18-Jun-21	SM4110-B	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Jun-21	SM4110-B	

**Report Date:** Monday, June 28, 2021  
**Print Date:** Monday, June 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**210891**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **005**

Potassium	21.5	0.1	mg/L	18-Jun-21	SM4110:B
Sodium	84.6	0.1	mg/L	18-Jun-21	SM4110:B
Sulphate	380	1	mg/L	18-Jun-21	SM4110:B

### Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	18-Jun-21	SM9222:D
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### Organics

Benzene		0.002	mg/L		EPA8260B	16
Ethylbenzene		0.002	mg/L		EPA8260B	16
F2: C10-C16		0.2	mg/L		EPA8015B	16
F3: C16-C34		0.2	mg/L		EPA8015B	16
F4: C34-C50		0.2	mg/L		EPA8015B	16
Hydrocarbons, Total Extractable		0.2	mg/L		EPA8015B	16
Hydrocarbons, Total Purgeable		0.3	mg/L		EPA8015	16
Oil and Grease, visible	Non-visible			18-Jun-21	Visual Exam	
Toluene		0.002	mg/L		EPA8260B	16
Xylenes		0.002	mg/L		EPA8260B	16

### Trace Metals, Total

Arsenic	22.2	0.2	µg/L	24-Jun-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	24-Jun-21	EPA200.8
Chromium	3.1	0.1	µg/L	24-Jun-21	EPA200.8
Cobalt	3.6	0.1	µg/L	24-Jun-21	EPA200.8
Iron	54200	5	µg/L	24-Jun-21	EPA200.8
Lead	1.4	0.1	µg/L	24-Jun-21	EPA200.8
Mercury	0.02	0.01	µg/L	24-Jun-21	EPA200.8
Nickel	7.8	0.1	µg/L	24-Jun-21	EPA200.8

ReportDate: Monday, June 28, 2021  
Print Date: Monday, June 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

Zinc	15.8	5	µg/L	24-Jun-21	EPA200.8
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**ReportDate:** Monday, June 28, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**210891**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

## - DATA QUALIFIERS -

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### *Data Qualifier Descriptions:*

**16** *Test requested but no sample bottle received*

**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** Monday, June 28, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - FINAL REPORT -

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**Prepared For:** Hamlet of Kugluktuk

**Address:** P.O. Box 271  
Kugluktuk, NU X0B 0E0

**Attn:** Mark Franche

**Facsimile:** 867-982-3060

**Final report has been reviewed and approved by:**

Glen Hudy  
Quality Assurance Officer

### NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-2

**Taiga Sample ID:** 001

**Client Project:**  
**Sample Type:** SWF Discharge  
**Received Date:** 07-Jul-21  
**Sampling Date:** 06-Jul-21  
**Sampling Time:** 9:25  
**Location:** Kugluktuk Sewage  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.042	0.005	mg/L	07-Jul-21	SM4500-NH3:G	
Biochemical Oxygen Demand	3	2	mg/L	07-Jul-21	SM5210:B	
CBOD	4	2	mg/L	07-Jul-21	SM5210:B	
Organic Carbon, Total	21.8	0.5	mg/L	08-Jul-21	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	105	0.4	mg/L	07-Jul-21	SM2320:B	
Conductivity, Specific (@25C)	1970	0.4	µS/cm	07-Jul-21	SM2510:B	
pH	8.09		pH units	07-Jul-21	SM4500-H:B	
Solids, Total Dissolved	1880	10	mg/L	08-Jul-21	SM2540:C	
Solids, Total Suspended	32	3	mg/L	08-Jul-21	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	247	0.6	mg/L	08-Jul-21	SM4110:B	
Chloride	486	4.2	mg/L	08-Jul-21	SM4110:B	
Hardness	866	4.2	mg/L	08-Jul-21	SM4110:B	

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-2**

Taiga Sample ID: **001**

Magnesium	60.4	0.6	mg/L	08-Jul-21	SM4110:B
Nitrate as Nitrogen	< 0.06	0.06	mg/L	08-Jul-21	SM4110:B
Nitrate+Nitrite as Nitrogen	< 0.06	0.06	mg/L	08-Jul-21	SM4110:B
Nitrite as Nitrogen	< 0.06	0.06	mg/L	08-Jul-21	SM4110:B
Potassium	11.1	0.6	mg/L	08-Jul-21	SM4110:B
Sodium	58.4	0.6	mg/L	08-Jul-21	SM4110:B
Sulphate	122	6	mg/L	08-Jul-21	SM4110:B

### Microbiology

Coliforms, Fecal	2	1	CFU/100mL	07-Jul-21	SM9222:D
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### Organics

Oil and Grease, visible	Non-visible			09-Jul-21	Visual Exam
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### Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	13-Jul-21	AB ENV.06537
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### Trace Metals, Total

Aluminum	202	5	µg/L	21-Jul-21	EPA200.8
Arsenic	0.9	0.2	µg/L	21-Jul-21	EPA200.8
Barium	186	0.1	µg/L	21-Jul-21	EPA200.8
Cadmium	0.2	0.1	µg/L	21-Jul-21	EPA200.8
Chromium	0.8	0.1	µg/L	21-Jul-21	EPA200.8
Cobalt	0.5	0.1	µg/L	21-Jul-21	EPA200.8
Copper	8.1	0.2	µg/L	21-Jul-21	EPA200.8
Iron	504	5	µg/L	21-Jul-21	EPA200.8
Lead	0.9	0.1	µg/L	21-Jul-21	EPA200.8
Manganese	104	0.1	µg/L	21-Jul-21	EPA200.8
Mercury	0.03	0.01	µg/L	21-Jul-21	EPA200.8

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** **KUG-2**

**Taiga Sample ID:** **001**

Nickel	3.5	0.1	µg/L	21-Jul-21	EPA200.8
Zinc	295	5	µg/L	21-Jul-21	EPA200.8

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **002**

Client Project:  
Sample Type: Truck to Lagoon  
Received Date: 07-Jul-21  
Sampling Date: 06-Jul-21  
Sampling Time: 9:46  
Location: Kugluktuk Sewage  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	58.2	0.005	mg/L	07-Jul-21	SM4500-NH3-G	
Biochemical Oxygen Demand	133	2	mg/L	07-Jul-21	SM5210-B	
CBOD	124	2	mg/L	07-Jul-21	SM5210-B	
Organic Carbon, Total	106	0.5	mg/L	08-Jul-21	SM5310-B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	216	0.4	mg/L	07-Jul-21	SM2320-B	
Conductivity, Specific (@25C)	645	0.4	µS/cm	07-Jul-21	SM2510-B	
pH	7.45		pH units	07-Jul-21	SM4500-H-B	
Solids, Total Dissolved	234	10	mg/L	08-Jul-21	SM2540-C	
Solids, Total Suspended	54	3	mg/L	08-Jul-21	SM2540-D	
<b><u>Major Ions</u></b>						
Calcium	11.7	1.1	mg/L	08-Jul-21	SM4110-B	
Chloride	34.2	0.7	mg/L	08-Jul-21	SM4110-B	
Hardness	56.8	7.7	mg/L	08-Jul-21	SM4110-B	
Magnesium	6.7	1.1	mg/L	08-Jul-21	SM4110-B	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	08-Jul-21	SM4110-B	

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **002**

Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	08-Jul-21	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	08-Jul-21	SM4110:B
Potassium	30.2	1.1	mg/L	08-Jul-21	SM4110:B
Sodium	32.3	1.1	mg/L	08-Jul-21	SM4110:B
Sulphate	8	1	mg/L	08-Jul-21	SM4110:B

### Microbiology

Coliforms, Fecal	53000	1000	CFU/100mL	07-Jul-21	SM9222:D
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### Organics

Oil and Grease, visible	Non-visible			09-Jul-21	Visual Exam
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### Subcontracted Organics

Phenols, Total	0.2950	0.01	mg/L	13-Jul-21	AB ENV.06537
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### Trace Metals, Total

Aluminum	101	5	µg/L	21-Jul-21	EPA200.8
Arsenic	0.5	0.2	µg/L	21-Jul-21	EPA200.8
Barium	3.4	0.1	µg/L	21-Jul-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	21-Jul-21	EPA200.8
Chromium	0.4	0.1	µg/L	21-Jul-21	EPA200.8
Cobalt	0.5	0.1	µg/L	21-Jul-21	EPA200.8
Copper	30.2	0.2	µg/L	21-Jul-21	EPA200.8
Iron	341	5	µg/L	21-Jul-21	EPA200.8
Lead	0.4	0.1	µg/L	21-Jul-21	EPA200.8
Manganese	33.6	0.1	µg/L	21-Jul-21	EPA200.8
Mercury	0.03	0.01	µg/L	21-Jul-21	EPA200.8
Nickel	1.8	0.1	µg/L	21-Jul-21	EPA200.8
Zinc	30.1	5	µg/L	21-Jul-21	EPA200.8

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

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## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** **KUG-3**

**Taiga Sample ID:** **002**

**ReportDate:** Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-3A

**Taiga Sample ID:** 003

**Client Project:**  
**Sample Type:** Final Discharge  
**Received Date:** 07-Jul-21  
**Sampling Date:** 06-Jul-21  
**Sampling Time:** 9:46  
**Location:** Kugluktuk Sewage  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	71.7	0.005	mg/L	07-Jul-21	SM4500-NH3-G	
Biochemical Oxygen Demand	34	2	mg/L	07-Jul-21	SM5210-B	
CBOD	28	2	mg/L	07-Jul-21	SM5210-B	
Organic Carbon, Total	47.5	0.5	mg/L	08-Jul-21	SM5310-B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	520	0.4	mg/L	07-Jul-21	SM2320-B	
Conductivity, Specific (@25C)	2030	0.4	µS/cm	07-Jul-21	SM2510-B	
pH	7.28		pH units	07-Jul-21	SM4500-H-B	
Solids, Total Dissolved	890	10	mg/L	08-Jul-21	SM2540-C	
Solids, Total Suspended	102	3	mg/L	08-Jul-21	SM2540-D	
<b><u>Major Ions</u></b>						
Calcium	58.2	0.1	mg/L	08-Jul-21	SM4110-B	
Chloride	278	0.7	mg/L	08-Jul-21	SM4110-B	
Hardness	356	0.7	mg/L	08-Jul-21	SM4110-B	
Magnesium	51.1	0.1	mg/L	08-Jul-21	SM4110-B	
Nitrate as Nitrogen	5.00	0.01	mg/L	08-Jul-21	SM4110-B	

**Report Date:** Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID: KUG-3A**

**Taiga Sample ID: 003**

Nitrate+Nitrite as Nitrogen	5.79	0.01	mg/L	08-Jul-21	SM4110:B
Nitrite as Nitrogen	0.79	0.01	mg/L	08-Jul-21	SM4110:B
Potassium	40.0	0.1	mg/L	08-Jul-21	SM4110:B
Sodium	186	0.1	mg/L	08-Jul-21	SM4110:B
Sulphate	29	1	mg/L	08-Jul-21	SM4110:B

### Microbiology

Coliforms, Fecal	< 1,000	1000	CFU/100mL	07-Jul-21	SM9222:D
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### Organics

Oil and Grease, visible	Non-visible			09-Jul-21	Visual Exam
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### Subcontracted Organics

Phenols, Total	0.0022	0.001	mg/L	13-Jul-21	AB ENV.06537
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### Trace Metals, Total

Aluminum	363	5	µg/L	21-Jul-21	EPA200.8
Arsenic	14.7	0.2	µg/L	21-Jul-21	EPA200.8
Barium	211	0.1	µg/L	21-Jul-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	21-Jul-21	EPA200.8
Chromium	3.3	0.1	µg/L	21-Jul-21	EPA200.8
Cobalt	4.2	0.1	µg/L	21-Jul-21	EPA200.8
Copper	8.4	0.2	µg/L	21-Jul-21	EPA200.8
Iron	27200	5	µg/L	21-Jul-21	EPA200.8
Lead	1.5	0.1	µg/L	21-Jul-21	EPA200.8
Manganese	2770	0.1	µg/L	21-Jul-21	EPA200.8
Mercury	0.02	0.01	µg/L	21-Jul-21	EPA200.8
Nickel	19.5	0.1	µg/L	21-Jul-21	EPA200.8
Zinc	6.4	5	µg/L	21-Jul-21	EPA200.8

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

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## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** **KUG-3A**

**Taiga Sample ID:** **003**

**ReportDate:** Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **004**

Client Project:  
Sample Type: Wetland Outfall  
Received Date: 07-Jul-21  
Sampling Date: 06-Jul-21  
Sampling Time: 9:09  
Location: Kugluktuk Sewage  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.262	0.005	mg/L	07-Jul-21	SM4500-NH3-G	
Biochemical Oxygen Demand	2	2	mg/L	07-Jul-21	SM5210-B	
CBOD	< 2	2	mg/L	07-Jul-21	SM5210-B	
Organic Carbon, Total	6.8	0.5	mg/L	08-Jul-21	SM5310-B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	60.2	0.4	mg/L	07-Jul-21	SM2320-B	
Conductivity, Specific (@25C)	344	0.4	µS/cm	07-Jul-21	SM2510-B	
pH	7.60		pH units	07-Jul-21	SM4500-H-B	
Solids, Total Dissolved	172	10	mg/L	08-Jul-21	SM2540-C	
Solids, Total Suspended	14	3	mg/L	08-Jul-21	SM2540-D	
<b><u>Major Ions</u></b>						
Calcium	14.3	0.1	mg/L	08-Jul-21	SM4110-B	
Chloride	60.8	0.7	mg/L	08-Jul-21	SM4110-B	
Hardness	84.9	0.7	mg/L	08-Jul-21	SM4110-B	
Magnesium	12.0	0.1	mg/L	08-Jul-21	SM4110-B	
Nitrate as Nitrogen	0.66	0.01	mg/L	08-Jul-21	SM4110-B	

Report Date: Sunday, July 25, 2021  
Print Date: Wednesday, July 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID: KUG-4**

**Taiga Sample ID: 004**

Nitrate+Nitrite as Nitrogen	0.81	0.01	mg/L	08-Jul-21	SM4110:B
Nitrite as Nitrogen	0.15	0.01	mg/L	08-Jul-21	SM4110:B
Potassium	2.9	0.1	mg/L	08-Jul-21	SM4110:B
Sodium	38.1	0.1	mg/L	08-Jul-21	SM4110:B
Sulphate	6	1	mg/L	08-Jul-21	SM4110:B

### Microbiology

Coliforms, Fecal	80	10	CFU/100mL	07-Jul-21	SM9222:D
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### Organics

Oil and Grease, visible	Non-visible			09-Jul-21	Visual Exam
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### Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	13-Jul-21	AB ENV.06537
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### Trace Metals, Total

Aluminum	373	5	µg/L	21-Jul-21	EPA200.8
Arsenic	0.6	0.2	µg/L	21-Jul-21	EPA200.8
Barium	19.5	0.1	µg/L	21-Jul-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	21-Jul-21	EPA200.8
Chromium	0.9	0.1	µg/L	21-Jul-21	EPA200.8
Cobalt	0.4	0.1	µg/L	21-Jul-21	EPA200.8
Copper	1.9	0.2	µg/L	21-Jul-21	EPA200.8
Iron	1180	5	µg/L	21-Jul-21	EPA200.8
Lead	0.3	0.1	µg/L	21-Jul-21	EPA200.8
Manganese	73.4	0.1	µg/L	21-Jul-21	EPA200.8
Mercury	< 0.01	0.01	µg/L	21-Jul-21	EPA200.8
Nickel	1.9	0.1	µg/L	21-Jul-21	EPA200.8
Zinc	< 5.0	5	µg/L	21-Jul-21	EPA200.8

ReportDate: Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** **KUG-4**

**Taiga Sample ID:** **004**

**ReportDate:** Sunday, July 25, 2021  
**Print Date:** Wednesday, July 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **005**

Client Project:  
Sample Type: Landfarm Runoff  
Received Date: 07-Jul-21  
Sampling Date: 06-Jul-21  
Sampling Time: 9:30  
Location: Kugluktuk Sewage  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.020	0.005	mg/L	07-Jul-21	SM4500-NH3-G	
Biochemical Oxygen Demand	2	2	mg/L	07-Jul-21	SM5210-B	
CBOD	3	2	mg/L	07-Jul-21	SM5210-B	
Organic Carbon, Total	19.7	0.5	mg/L	08-Jul-21	SM5310-B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	238	0.4	mg/L	07-Jul-21	SM2320-B	
Conductivity, Specific (@25C)	2070	0.4	µS/cm	07-Jul-21	SM2510-B	
pH	7.58		pH units	07-Jul-21	SM4500-H-B	
Solids, Total Dissolved	1450	10	mg/L	08-Jul-21	SM2540-C	
Solids, Total Suspended	10	3	mg/L	08-Jul-21	SM2540-D	
<b><u>Major Ions</u></b>						
Calcium	199	0.6	mg/L	08-Jul-21	SM4110-B	
Chloride	205	4.2	mg/L	08-Jul-21	SM4110-B	
Hardness	755	4.2	mg/L	08-Jul-21	SM4110-B	
Magnesium	62.9	0.6	mg/L	08-Jul-21	SM4110-B	
Nitrate as Nitrogen	< 0.06	0.06	mg/L	08-Jul-21	SM4110-B	

Report Date: Sunday, July 25, 2021  
Print Date: Wednesday, July 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211079**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **005**

Nitrate+Nitrite as Nitrogen	< 0.06	0.06	mg/L	08-Jul-21	SM4110:B
Nitrite as Nitrogen	< 0.06	0.06	mg/L	08-Jul-21	SM4110:B
Potassium	34.5	0.6	mg/L	08-Jul-21	SM4110:B
Sodium	191	0.6	mg/L	08-Jul-21	SM4110:B
Sulphate	571	6	mg/L	08-Jul-21	SM4110:B

### Microbiology

Coliforms, Fecal	2	1	CFU/100mL	07-Jul-21	SM9222:D	88
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### Organics

Oil and Grease, visible	Non-visible			09-Jul-21	Visual Exam
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### Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	13-Jul-21	EPA 5021	
Ethylbenzene	< 0.00050	0.0005	mg/L	13-Jul-21	EPA 5021	
F1: C6-C10	< 0.10	0.1	mg/L	13-Jul-21	CCME CWS PHC	
F2: C10-C16		0.3	mg/L		EPA3510	16
F3: C16-C34		0.3	mg/L		EPA3510	16
F4: C34-C50		0.3	mg/L		EPA3510	16
Phenols, Total	< 0.0010	0.001	mg/L	13-Jul-21	AB ENV.06537	
Toluene	< 0.00050	0.0005	mg/L	13-Jul-21	EPA 5021	
Xylenes	< 0.00075	0.00075	mg/L	13-Jul-21	EPA 5021	

### Trace Metals, Total

Aluminum	189	5	µg/L	21-Jul-21	EPA200.8
Arsenic	3.1	0.2	µg/L	21-Jul-21	EPA200.8
Barium	73.5	0.1	µg/L	21-Jul-21	EPA200.8
Cadmium	< 0.1	0.1	µg/L	21-Jul-21	EPA200.8
Chromium	0.9	0.1	µg/L	21-Jul-21	EPA200.8

ReportDate: Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID: KUG-5**

**Taiga Sample ID: 005**

Cobalt	0.9	0.1	µg/L	21-Jul-21	EPA200.8
Copper	1.5	0.2	µg/L	21-Jul-21	EPA200.8
Iron	7540	5	µg/L	21-Jul-21	EPA200.8
Lead	0.2	0.1	µg/L	21-Jul-21	EPA200.8
Manganese	410	0.1	µg/L	21-Jul-21	EPA200.8
Mercury	0.02	0.01	µg/L	21-Jul-21	EPA200.8
Nickel	4.4	0.1	µg/L	21-Jul-21	EPA200.8
Zinc	< 5.0	5	µg/L	21-Jul-21	EPA200.8

**ReportDate:** Sunday, July 25, 2021  
**Print Date:** Wednesday, July 28, 2021

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211079**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

## - DATA QUALIFIERS -

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### *Data Qualifier Descriptions:*

- 16 *Test requested but no sample bottle received*
- 88 *Samples analysed past holding time, as per client request.*

**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** Sunday, July 25, 2021  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - FINAL REPORT -

Prepared For: Hamlet of Kugluktuk

Address: P.O. Box 271  
Kugluktuk, NU, X0B 0E0

Attn: Mark Franche

Facsimile: 867-982-3060

Final report has been reviewed and approved by:

Glen Hudry  
Quality Assurance Officer

### NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Client Project:  
Sample Type: SWF Discharge  
Received Date: 10-Aug-21  
Sampling Date: 09-Aug-21  
Sampling Time: 9:00  
Location: Kugluktuk Sewage  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.030	0.005	mg/L	12-Aug-21	TEL068	
Biochemical Oxygen Demand	4	2	mg/L	10-Aug-21	TEL019	
CBOD	4	2	mg/L	10-Aug-21	TEL019	
Organic Carbon, Total	21.9	0.5	mg/L	11-Aug-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	104	0.4	mg/L	10-Aug-21	TEL060	
Conductivity, Specific (@25C)	2140	0.4	µS/cm	10-Aug-21	TEL039	
pH	8.18		pH units	10-Aug-21	TEL058	
Solids, Total Dissolved	1560	10	mg/L	10-Aug-21	TEL009	
Solids, Total Suspended	6	3	mg/L	10-Aug-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	548	0.7	mg/L	11-Aug-21	TEL055	
Nitrate as Nitrogen	0.15	0.01	mg/L	11-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	0.15	0.01	mg/L	11-Aug-21	TEL055	

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055
Sulphate	150	1	mg/L	11-Aug-21	TEL055
<u>Microbiology</u>					
Coliforms, Fecal	3	1	CFU/100mL	10-Aug-21	TEL017
<u>Organics</u>					
Oil and Grease, visible	Non-visible			10-Aug-21	Visual Exam
<u>Subcontracted Inorganics</u>					
Calcium	176	0.05	mg/L	18-Aug-21	EPA200.2
Hardness	766	0.5	mg/L	18-Aug-21	EPA200.2
Magnesium	79.2	0.005	mg/L	18-Aug-21	EPA200.2
Potassium	9.19	0.05	mg/L	18-Aug-21	EPA200.2
Sodium	136	0.05	mg/L	18-Aug-21	EPA200.2
<u>Subcontracted Organics</u>					
Phenols, Total	< 0.0010	0.001	mg/L	16-Aug-21	AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	61.6	5	µg/L	24-Aug-21	TEL035
Arsenic	0.9	0.2	µg/L	24-Aug-21	TEL035
Cadmium	0.2	0.1	µg/L	24-Aug-21	TEL035
Chromium	0.8	0.1	µg/L	24-Aug-21	TEL035
Cobalt	0.3	0.1	µg/L	24-Aug-21	TEL035
Copper	7.6	0.2	µg/L	24-Aug-21	TEL035
Iron	374	5	µg/L	24-Aug-21	TEL035
Lead	0.8	0.1	µg/L	24-Aug-21	TEL035
Manganese	115	0.1	µg/L	24-Aug-21	TEL035
Mercury	0.03	0.01	µg/L	24-Aug-21	TEL035

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

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Client Sample ID: KUG-2

Taiga Sample ID: 001

Nickel	3.0	0.1	µg/L	24-Aug-21	TFL035
Zinc	449	5	µg/L	24-Aug-21	TFL035

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

Client Project:

Sample Type: Truck to Lagoon

Received Date: 10-Aug-21

Sampling Date: 09-Aug-21

Sampling Time: 9:00

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	49.6	0.005	mg/L	13-Aug-21	TEL068	
Biochemical Oxygen Demand	28	2	mg/L	10-Aug-21	TEL019	
COD	28	2	mg/L	10-Aug-21	TEL019	
Organic Carbon, Total	41.1	0.5	mg/L	11-Aug-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	197	0.4	mg/L	10-Aug-21	TEL060	
Conductivity, Specific (@25C)	606	0.4	µS/cm	10-Aug-21	TEL059	
pH	8.03		pH units	10-Aug-21	TEL058	
Solids, Total Dissolved	212	10	mg/L	10-Aug-21	TEL009	
Solids, Total Suspended	150	3	mg/L	10-Aug-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	41.2	0.7	mg/L	11-Aug-21	TEL055	
Nitrate as Nitrogen	0.02	0.01	mg/L	11-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	0.02	0.01	mg/L	11-Aug-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Sulphate	12	1	mg/L	11-Aug-21	TEL055	

Report Date: October-26-21

Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

### Microbiology

Coliforms, Fecal	14000	1000	CTU/100mL	10-Aug-21	TEL017
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### Organics

Oil and Grease, visible	Non-visible			10-Aug-21	Visual Exam
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### Subcontracted Inorganics

Calcium	9.78	0.05	mg/L	18-Aug-21	EPA200.2
Hardness	45.6	0.5	mg/L	18-Aug-21	EPA200.2
Magnesium	5.15	0.005	mg/L	18-Aug-21	EPA200.2
Potassium	19.3	0.05	mg/L	18-Aug-21	EPA200.2
Sodium	39.0	0.05	mg/L	18-Aug-21	EPA200.2

### Subcontracted Organics

Phenols, Total	< 0.0100	0.0100	mg/L	16-Aug-21	AB ENV.06537	207
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### Trace Metals, Total

Aluminum	150	5	µg/L	24-Aug-21	TEL035
Arsenic	0.5	0.2	µg/L	24-Aug-21	TEL035
Cadmium	< 0.1	0.1	µg/L	24-Aug-21	TEL035
Chromium	0.6	0.1	µg/L	24-Aug-21	TEL035
Cobalt	0.5	0.1	µg/L	24-Aug-21	TEL035
Copper	29.6	0.2	µg/L	24-Aug-21	TEL035
Iron	371	5	µg/L	24-Aug-21	TEL035
Lead	0.4	0.1	µg/L	24-Aug-21	TEL035
Manganese	35.1	0.1	µg/L	24-Aug-21	TEL035
Mercury	0.11	0.01	µg/L	24-Aug-21	TEL035
Nickel	2.0	0.1	µg/L	24-Aug-21	TEL035
Zinc	28.1	5	µg/L	24-Aug-21	TEL035

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-32nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211408**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-3A

**Taiga Sample ID:** 003

**Client Project:**

**Sample Type:** Final Discharge

**Received Date:** 10-Aug-21

**Sampling Date:** 09-Aug-21

**Sampling Time:** 9:00

**Location:** Kugluktuk Sewage

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	81.0	0.005	mg/L	13-Aug-21	TEL068	
Biochemical Oxygen Demand	71	2	mg/L	10-Aug-21	TEL019	
CKOD	72	2	mg/L	10-Aug-21	TEL019	
Organic Carbon, Total	79.4	0.5	mg/L	11-Aug-21	TEL083	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	453	0.4	mg/L	10-Aug-21	TEL060	
Conductivity, Specific (@25C)	1620	0.4	µS/cm	10-Aug-21	TEL059	
pH	7.30		pH units	10-Aug-21	TEL058	
Solids, Total Dissolved	672	10	mg/L	10-Aug-21	TEL009	
Solids, Total Suspended	42	3	mg/L	10-Aug-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	200	0.7	mg/L	11-Aug-21	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Sulphate	13	1	mg/L	11-Aug-21	TEL055	

**Report Date:** October-26-21

**Print Date:** October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

### Microbiology

Coliforms, Fecal	< 1,000	1000	CFU/100mL	10-Aug-21	TEL017
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### Organics

Oil and Grease, visible	Non-visible			10-Aug-21	Visual Exam
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### Subcontracted Inorganics

Calcium	37.1	0.05	mg/L	18-Aug-21	EPA200.2
Hardness	<del>222</del>	0.5	mg/L	18-Aug-21	EPA200.2
Magnesium	31.3	0.005	mg/L	18-Aug-21	EPA200.2
Potassium	26.9	0.05	mg/L	18-Aug-21	EPA200.2
Sodium	139	0.05	mg/L	18-Aug-21	EPA200.2

### Subcontracted Organics

Phenols, Total	< 0.0100	0.0100	mg/L	16-Aug-21	AB ENV.06537	207
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### Trace Metals, Total

Aluminum	150	5	µg/L	24-Aug-21	TEL035
Arsenic	11.2	0.2	µg/L	24-Aug-21	TEL035
Cadmium	< 0.1	0.1	µg/L	24-Aug-21	TEL035
Chromium	3.1	0.1	µg/L	24-Aug-21	TEL035
Cobalt	3.9	0.1	µg/L	24-Aug-21	TEL035
Copper	20.5	0.2	µg/L	24-Aug-21	TEL035
Iron	16200	5	µg/L	24-Aug-21	TEL035
Lead	2.4	0.1	µg/L	24-Aug-21	TEL035
Manganese	2180	0.1	µg/L	24-Aug-21	TEL035
Mercury	0.01	0.01	µg/L	24-Aug-21	TEL035
Nickel	24.3	0.1	µg/L	24-Aug-21	TEL035
Zinc	< 5.0	5	µg/L	24-Aug-21	TEL035

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
271408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Client Project:

Sample Type: Wetland Outfall

Received Date: 10-Aug-21

Sampling Date: 09-Aug-21

Sampling Time: 9:00

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	18.7	0.005	mg/L	13-Aug-21	TEL068	
Biochemical Oxygen Demand	22	2	mg/L	10-Aug-21	TEL019	
CBOD	8	2	mg/L	10-Aug-21	TEL019	
Organic Carbon, Total	26.2	0.5	mg/L	11-Aug-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	146	0.4	mg/L	10-Aug-21	TEL060	
Conductivity, Specific (@25C)	848	0.4	µS/cm	10-Aug-21	TEL059	
pH	7.93		pH units	10-Aug-21	TEL058	
Solids, Total Dissolved	404	10	mg/L	10-Aug-21	TEL009	
Solids, Total Suspended	48	3	mg/L	10-Aug-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	153	0.7	mg/L	11-Aug-21	TEL055	
Nitrate as Nitrogen	1.15	0.01	mg/L	11-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	1.15	0.01	mg/L	11-Aug-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Sulphate	21	1	mg/L	11-Aug-21	TEL055	

Report Date: October-26-21

Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID: KUG-4**

**Taiga Sample ID: 004**

**Microbiology**

Coliforms, Fecal	970	IU	CFU/100mL	10-Aug-21	TEL017
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**Organics**

Oil and Grease, visible	Non-visible			10-Aug-21	Visual Exam
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**Subcontracted Inorganics**

Calcium	19.7	0.05	mg/L	18-Aug-21	EPA200.2
Hardness	127	0.5	mg/L	18-Aug-21	EPA200.2
Magnesium	19.2	0.005	mg/L	18-Aug-21	EPA200.2
Potassium	12.1	0.05	mg/L	18-Aug-21	EPA200.2
Sodium	93.7	0.05	mg/L	18-Aug-21	EPA200.2

**Subcontracted Organics**

Phenols, Total	< 0.0100	0.0100	mg/L	16-Aug-21	AB ENV 06537 207
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**Trace Metals, Total**

Aluminum	58.3	5	µg/L	24-Aug-21	TEL035
Arsenic	1.5	0.2	µg/L	24-Aug-21	TEL035
Cadmium	< 0.1	0.1	µg/L	24-Aug-21	TEL035
Chromium	0.6	0.1	µg/L	24-Aug-21	TEL035
Cobalt	0.9	0.1	µg/L	24-Aug-21	TEL035
Copper	9.9	0.2	µg/L	24-Aug-21	TEL035
Iron	1320	5	µg/L	24-Aug-21	TEL035
Lead	0.2	0.1	µg/L	24-Aug-21	TEL035
Manganese	311	0.1	µg/L	24-Aug-21	TEL035
Mercury	0.02	0.01	µg/L	24-Aug-21	TEL035
Nickel	4.8	0.1	µg/L	24-Aug-21	TEL035
Zinc	< 5.0	5	µg/L	24-Aug-21	TEL035

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
 4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
 Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

**Client Project:**

**Sample Type:** Landfarm Runoff

**Received Date:** 10-Aug-21

**Sampling Date:** 09-Aug-21

**Sampling Time:** 9:00

**Location:** Kugluktuk Sewage

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.120	0.005	mg/L	12-Aug-21	TEL068	
Biochemical Oxygen Demand	5	2	mg/L	10-Aug-21	TEL019	
COD	3	2	mg/L	10-Aug-21	TEL019	
Organic Carbon, Total	20.5	0.5	mg/L	11-Aug-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	283	0.4	mg/L	10-Aug-21	TEL060	
Conductivity, Specific (@25C)	2620	0.4	µS/cm	10-Aug-21	TEL059	
pH	7.45		pH units	10-Aug-21	TEL058	
Solids, Total Dissolved	1740	10	mg/L	10-Aug-21	TEL009	
Solids, Total Suspended	14	3	mg/L	10-Aug-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	332	0.7	mg/L	11-Aug-21	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	11-Aug-21	TEL055	
Sulphate	705	1	mg/L	11-Aug-21	TEL055	

**Report Date:** October 26-21

**Print Date:** October 26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

### Microbiology

Coliforms, Fecal	< 1	?	CFU/100mL	10-Aug-21	TEL017
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### Organics

Oil and Grease, visible	Non-visible			10-Aug-21	Visual Exam
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### Subcontracted Inorganics

Calcium	222	0.05	mg/L	18-Aug-21	EPA200.2
Hardness	904	0.5	mg/L	18-Aug-21	EPA200.2
Magnesium	84.9	0.005	mg/L	18-Aug-21	EPA200.2
Potassium	40.6	0.05	mg/L	18-Aug-21	EPA200.2
Sodium	265	0.05	mg/L	18-Aug-21	EPA200.2

### Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	14-Aug-21	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	14-Aug-21	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	14-Aug-21	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	16-Aug-21	EPA3510
F3: C16-C24	< 0.30	0.3	mg/L	16-Aug-21	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	16-Aug-21	EPA3510
Phenols, Total	< 0.0010	0.001	mg/L	16-Aug-21	AB ENV.06537
Toluene	< 0.00050	0.0005	mg/L	14-Aug-21	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	14-Aug-21	EPA 5021

### Trace Metals, Total

Aluminum	24.1	5	µg/L	24-Aug-21	TEL035
Arsenic	1.1	0.2	µg/L	24-Aug-21	TEL035
Cadmium	< 0.1	0.1	µg/L	24-Aug-21	TEL035
Chromium	0.4	0.1	µg/L	24-Aug-21	TEL035

Report Date: October-26-21  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
211408

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

Cobalt	0.6	0.1	µg/L	24-Aug-21	TEL035
Copper	0.5	0.2	µg/L	24-Aug-21	TEL035
Iron	1560	5	µg/L	24-Aug-21	TEL035
Lead	< 0.1	0.1	µg/L	24-Aug-21	TEL035
Manganese	490	0.1	µg/L	24-Aug-21	TEL035
Mercury	< 0.01	0.01	µg/L	24-Aug-21	TEL035
Nickel	4.6	0.1	µg/L	24-Aug-21	TEL035
Zinc	< 5.0	5	µg/L	24-Aug-21	TEL035

Report Date: October-26-21  
Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No:  
211408

## - CERTIFICATE OF ANALYSIS -

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Client Sample ID: KUG-5

Taiga Sample ID: 1005

## - DATA QUALIFIERS -

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### *Data Qualifier Descriptions:*

207 *Detection limit adjusted due to sample matrix effects*

\*Taiga analytical methods are based on the following standard analytical methods

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

Report Date: October-26-21

Print Date: October-26-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - FINAL REPORT -

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**Prepared For:** Hamlet of Kugluktuk

**Address:** P.O. Box 271  
Kugluktuk, NU, X0B 0E0

**Attn:** Mark Franche

**Facsimile:** 867-982-3060

**Final report has been reviewed and approved by:**

**Glen Hudy**  
**Quality Assurance Officer**

### NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** October-15-21  
**Print Date:** *October-15-21*

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-2

**Taiga Sample ID:** 001

**Client Project:**  
**Sample Type:** SWF Discharge  
**Received Date:** 21-Sep-21  
**Sampling Date:** 20-Sep-21  
**Sampling Time:** 9:37  
**Location:** Kugluktuk Sewage  
**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	0.028	0.005	mg/L	21-Sep-21	TEL068	
Biochemical Oxygen Demand	< 2	2	mg/L	21-Sep-21	TEL019	
CBOD	< 2	2	mg/L	21-Sep-21	TEL019	
Organic Carbon, Total	13.1	0.5	mg/L	24-Sep-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO3)	133	0.4	mg/L	21-Sep-21	TEL060	
Conductivity, Specific (@25C)	864	0.4	µS/cm	21-Sep-21	TEL059	
pH	8.21		pH units	21-Sep-21	TEL058	
Solids, Total Dissolved	550	10	mg/L	22-Sep-21	TEL009	
Solids, Total Suspended	6	3	mg/L	22-Sep-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	173	0.7	mg/L	21-Sep-21	TEL055	
Nitrate as Nitrogen	0.42	0.01	mg/L	21-Sep-21	TEL055	
Nitrate+Nitrite as Nitrogen	0.42	0.01	mg/L	21-Sep-21	TEL055	

**ReportDate:** October-15-21  
**Print Date:** October-15-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211845**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID: KUG-2**

**Taiga Sample ID: 001**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Sep-21	TEL055
Sulphate	41	1	mg/L	21-Sep-21	TEL055
<b><u>Microbiology</u></b>					
Coliforms, Fecal	< 1	1	CFU/100mL	21-Sep-21	TEL017
<b><u>Organics</u></b>					
Oil and Grease, visible	Non-visible			21-Sep-21	Visual Exam
<b><u>Subcontracted Inorganics</u></b>					
Calcium	57.9	0.05	mg/L	05-Oct-21	EPA200.2
Hardness	264	0.5	mg/L	05-Oct-21	EPA200.2
Magnesium	29.1	0.005	mg/L	05-Oct-21	EPA200.2
Potassium	3.22	0.05	mg/L	05-Oct-21	EPA200.2
Sodium	66.2	0.05	mg/L	05-Oct-21	EPA200.2
<b><u>Subcontracted Organics</u></b>					
Phenols, Total	0.0010	0.001	mg/L	28-Sep-21	AB ENV.06537
<b><u>Trace Metals, Total</u></b>					
Aluminum	184	5	µg/L	29-Sep-21	TEL035
Arsenic	0.7	0.2	µg/L	29-Sep-21	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Sep-21	TEL035
Chromium	0.6	0.1	µg/L	29-Sep-21	TEL035
Cobalt	0.2	0.1	µg/L	29-Sep-21	TEL035
Copper	16.4	0.2	µg/L	29-Sep-21	TEL035
Iron	280	5	µg/L	29-Sep-21	TEL035
Lead	0.3	0.1	µg/L	29-Sep-21	TEL035
Manganese	40.5	0.1	µg/L	29-Sep-21	TEL035
Mercury	0.02	0.01	µg/L	29-Sep-21	TEL035

ReportDate: October-15-21  
Print Date: *October-15-21*

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** KUG-2

**Taiga Sample ID:** 001

Nickel	1.4	0.1	µg/L	29-Sep-21	TEL035
Zinc	183	5	µg/L	29-Sep-21	TEL035

**ReportDate:** October-15-21  
**Print Date:** October-15-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-3

**Taiga Sample ID:** 002

**Client Project:**

**Sample Type:** Truck to Lagoon

**Received Date:** 21-Sep-21

**Sampling Date:** 20-Sep-21

**Sampling Time:** 9:13

**Location:** Kugluktuk Sewage

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	43.6	0.005	mg/L	21-Sep-21	TEL068	
Biochemical Oxygen Demand	47	2	mg/L	21-Sep-21	TEL019	
CBOD	44	2	mg/L	21-Sep-21	TEL019	
Organic Carbon, Total	84.2	0.5	mg/L	24-Sep-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	197	0.4	mg/L	21-Sep-21	TEL060	
Conductivity, Specific (@25C)	612	0.4	µS/cm	21-Sep-21	TEL059	
pH	7.56		pH units	21-Sep-21	TEL058	
Solids, Total Dissolved	236	10	mg/L	22-Sep-21	TEL009	
Solids, Total Suspended	102	3	mg/L	22-Sep-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	44.6	0.7	mg/L	21-Sep-21	TEL055	
Nitrate as Nitrogen	0.03	0.01	mg/L	21-Sep-21	TEL055	
Nitrate+Nitrite as Nitrogen	0.03	0.01	mg/L	21-Sep-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Sep-21	TEL055	
Sulphate	15	1	mg/L	21-Sep-21	TEL055	

**ReportDate:** October-15-21

**Print Date:** October-15-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211845**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **002**

### Microbiology

Coliforms, Fecal	74000	1000	CFU/100mL	21-Sep-21	TEL017	20
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### Organics

Oil and Grease, visible	Non-visible			21-Sep-21	Visual Exam	
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### Subcontracted Inorganics

Calcium	11.1	0.05	mg/L	05-Oct-21	EPA200.2	
Hardness	47.6	0.5	mg/L	05-Oct-21	EPA200.2	
Magnesium	4.84	0.005	mg/L	05-Oct-21	EPA200.2	
Potassium	17.8	0.05	mg/L	05-Oct-21	EPA200.2	
Sodium	38.9	0.05	mg/L	05-Oct-21	EPA200.2	

### Subcontracted Organics

Phenols, Total	< 0.0100	0.01	mg/L	28-Sep-21	AB ENV.06537	207
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### Trace Metals, Total

Aluminum	312	5	µg/L	29-Sep-21	TEL035	
Arsenic	0.8	0.2	µg/L	29-Sep-21	TEL035	
Cadmium	< 0.1	0.1	µg/L	29-Sep-21	TEL035	
Chromium	0.8	0.1	µg/L	29-Sep-21	TEL035	
Cobalt	0.6	0.1	µg/L	29-Sep-21	TEL035	
Copper	36.4	0.2	µg/L	29-Sep-21	TEL035	
Iron	477	5	µg/L	29-Sep-21	TEL035	
Lead	0.6	0.1	µg/L	29-Sep-21	TEL035	
Manganese	44.9	0.1	µg/L	29-Sep-21	TEL035	
Mercury	0.04	0.01	µg/L	29-Sep-21	TEL035	
Nickel	2.2	0.1	µg/L	29-Sep-21	TEL035	
Zinc	61.6	5	µg/L	29-Sep-21	TEL035	

ReportDate: October-15-21  
Print Date: *October-15-21*

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-3A

**Taiga Sample ID:** 003

**Client Project:**

**Sample Type:** Final Discharge

**Received Date:** 21-Sep-21

**Sampling Date:** 20-Sep-21

**Sampling Time:** 9:44

**Location:** Kugluktuk Sewage

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	72.4	0.005	mg/L	21-Sep-21	TEL068	
Biochemical Oxygen Demand	24	2	mg/L	21-Sep-21	TEL019	
CBOD	22	2	mg/L	21-Sep-21	TEL019	
Organic Carbon, Total	51.9	0.5	mg/L	24-Sep-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	459	0.4	mg/L	21-Sep-21	TEL060	
Conductivity, Specific (@25C)	1630	0.4	µS/cm	21-Sep-21	TEL059	
pH	7.23		pH units	21-Sep-21	TEL058	
Solids, Total Dissolved	678	10	mg/L	22-Sep-21	TEL009	
Solids, Total Suspended	60	3	mg/L	22-Sep-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	218	0.7	mg/L	21-Sep-21	TEL055	
Nitrate as Nitrogen	0.26	0.01	mg/L	21-Sep-21	TEL055	
Nitrate+Nitrite as Nitrogen	0.26	0.01	mg/L	21-Sep-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Sep-21	TEL055	
Sulphate	19	1	mg/L	21-Sep-21	TEL055	

**Report Date:** October-15-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211845**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3A**

Taiga Sample ID: **003**

### Microbiology

Coliforms, Fecal	< 1,000	1000	CFU/100mL	21-Sep-21	TEL017
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### Organics

Oil and Grease, visible	Non-visible			21-Sep-21	Visual Exam
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### Subcontracted Inorganics

Calcium	38.1	0.05	mg/L	05-Oct-21	EPA200.2
Hardness	225	0.5	mg/L	05-Oct-21	EPA200.2
Magnesium	31.6	0.005	mg/L	05-Oct-21	EPA200.2
Potassium	24.0	0.05	mg/L	05-Oct-21	EPA200.2
Sodium	142	0.05	mg/L	05-Oct-21	EPA200.2

### Subcontracted Organics

Phenols, Total	0.1290	0.01	mg/L	28-Sep-21	AB ENV.06537	224
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### Trace Metals, Total

Aluminum	89.3	5	µg/L	29-Sep-21	TEL035
Arsenic	13.0	0.2	µg/L	29-Sep-21	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Sep-21	TEL035
Chromium	2.8	0.1	µg/L	29-Sep-21	TEL035
Cobalt	2.7	0.1	µg/L	29-Sep-21	TEL035
Copper	6.8	0.2	µg/L	29-Sep-21	TEL035
Iron	17000	5	µg/L	29-Sep-21	TEL035
Lead	1.4	0.1	µg/L	29-Sep-21	TEL035
Manganese	2190	0.1	µg/L	29-Sep-21	TEL035
Mercury	0.01	0.01	µg/L	29-Sep-21	TEL035
Nickel	18.2	0.1	µg/L	29-Sep-21	TEL035
Zinc	< 5.0	5	µg/L	29-Sep-21	TEL035

ReportDate: October-15-21  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-4

**Taiga Sample ID:** 004

**Client Project:**

**Sample Type:** Wetland outfall

**Received Date:** 21-Sep-21

**Sampling Date:** 20-Sep-21

**Sampling Time:** 9:54

**Location:** Kugluktuk Sewage

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	9.70	0.005	mg/L	21-Sep-21	TEL068	
Biochemical Oxygen Demand	14	2	mg/L	21-Sep-21	TEL019	
CBOD	3	2	mg/L	21-Sep-21	TEL019	
Organic Carbon, Total	17.9	0.5	mg/L	24-Sep-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	148	0.4	mg/L	21-Sep-21	TEL060	
Conductivity, Specific (@25C)	1030	0.4	µS/cm	21-Sep-21	TEL059	
pH	7.68		pH units	21-Sep-21	TEL058	
Solids, Total Dissolved	548	10	mg/L	22-Sep-21	TEL009	
Solids, Total Suspended	26	3	mg/L	22-Sep-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	208	0.7	mg/L	21-Sep-21	TEL055	
Nitrate as Nitrogen	1.37	0.01	mg/L	21-Sep-21	TEL055	
Nitrate+Nitrite as Nitrogen	1.37	0.01	mg/L	21-Sep-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Sep-21	TEL055	
Sulphate	34	1	mg/L	21-Sep-21	TEL055	

**ReportDate:** October-15-21

**Print Date:** October-15-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211845**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **004**

### Microbiology

Coliforms, Fecal	80	10	CFU/100mL	21-Sep-21	TEL017
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### Organics

Oil and Grease, visible	Non-visible			21-Sep-21	Visual Exam
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### Subcontracted Inorganics

Calcium	31.1	0.05	mg/L	05-Oct-21	EPA200.2
Hardness	195	0.5	mg/L	05-Oct-21	EPA200.2
Magnesium	28.5	0.005	mg/L	05-Oct-21	EPA200.2
Potassium	8.24	0.05	mg/L	05-Oct-21	EPA200.2
Sodium	110	0.05	mg/L	05-Oct-21	EPA200.2

### Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	28-Sep-21	AB ENV.06537
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### Trace Metals, Total

Aluminum	47.1	5	µg/L	29-Sep-21	TEL035
Arsenic	0.9	0.2	µg/L	29-Sep-21	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Sep-21	TEL035
Chromium	0.5	0.1	µg/L	29-Sep-21	TEL035
Cobalt	1.0	0.1	µg/L	29-Sep-21	TEL035
Copper	3.1	0.2	µg/L	29-Sep-21	TEL035
Iron	1590	5	µg/L	29-Sep-21	TEL035
Lead	0.1	0.1	µg/L	29-Sep-21	TEL035
Manganese	497	0.1	µg/L	29-Sep-21	TEL035
Mercury	< 0.01	0.01	µg/L	29-Sep-21	TEL035
Nickel	4.5	0.1	µg/L	29-Sep-21	TEL035
Zinc	< 5.0	5	µg/L	29-Sep-21	TEL035

ReportDate: October-15-21  
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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

**Client Project:**

**Sample Type:** Landfarm Runoff

**Received Date:** 21-Sep-21

**Sampling Date:** 20-Sep-21

**Sampling Time:** 9:25

**Location:** Kugluktuk Sewage

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	3.54	0.005	mg/L	21-Sep-21	TEL068	
Biochemical Oxygen Demand	3	2	mg/L	21-Sep-21	TEL019	
CBOD	5	2	mg/L	21-Sep-21	TEL019	
Organic Carbon, Total	33.8	0.5	mg/L	24-Sep-21	TEL033	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	227	0.4	mg/L	21-Sep-21	TEL060	
Conductivity, Specific (@25C)	4050	0.4	µS/cm	21-Sep-21	TEL059	
pH	7.88		pH units	21-Sep-21	TEL058	
Solids, Total Dissolved	3310	10	mg/L	22-Sep-21	TEL009	
Solids, Total Suspended	46	3	mg/L	22-Sep-21	TEL008	
<b><u>Major Ions</u></b>						
Chloride	334	0.7	mg/L	21-Sep-21	TEL055	
Nitrate as Nitrogen	1.36	0.01	mg/L	21-Sep-21	TEL055	
Nitrate+Nitrite as Nitrogen	1.36	0.01	mg/L	21-Sep-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Sep-21	TEL055	
Sulphate	1810	1	mg/L	21-Sep-21	TEL055	

**ReportDate:** October-15-21

**Print Date:** October-15-21

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**211845**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **005**

### Microbiology

Coliforms, Fecal	tntc	1	CFU/100mL	21-Sep-21	TEL017	86
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### Organics

F2: C10-C16	< 0.2	0.2	mg/L	28-Sep-21	TEL067
F3: C16-C34	< 0.2	0.2	mg/L	28-Sep-21	TEL067
F4: C34-C50	< 0.2	0.2	mg/L	28-Sep-21	TEL067
Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	28-Sep-21	TEL067
Oil and Grease, visible	Non-visible			21-Sep-21	Visual Exam

### Subcontracted Inorganics

Calcium	440	0.05	mg/L	05-Oct-21	EPA200.2
Hardness	1540	0.5	mg/L	05-Oct-21	EPA200.2
Magnesium	106	0.005	mg/L	05-Oct-21	EPA200.2
Potassium	126	0.05	mg/L	05-Oct-21	EPA200.2
Sodium	332	0.05	mg/L	05-Oct-21	EPA200.2

### Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	02-Oct-21	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	02-Oct-21	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	02-Oct-21	CCME CWS PHC
Toluene	< 0.00050	0.0005	mg/L	02-Oct-21	EPA 5021
Xylenes	< 0.00075	0.00075	mg/L	02-Oct-21	EPA 5021

### Trace Metals, Total

Aluminum	154	5	µg/L	29-Sep-21	TEL035
Arsenic	1.5	0.2	µg/L	29-Sep-21	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Sep-21	TEL035
Chromium	0.8	0.1	µg/L	29-Sep-21	TEL035

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID: KUG-5**

**Taiga Sample ID: 005**

Cobalt	1.4	0.1	µg/L	29-Sep-21	TEL035
Copper	6.1	0.2	µg/L	29-Sep-21	TEL035
Iron	593	5	µg/L	29-Sep-21	TEL035
Lead	0.6	0.1	µg/L	29-Sep-21	TEL035
Manganese	421	0.1	µg/L	29-Sep-21	TEL035
Mercury	< 0.01	0.01	µg/L	29-Sep-21	TEL035
Nickel	11.2	0.1	µg/L	29-Sep-21	TEL035
Zinc	10.4	5	µg/L	29-Sep-21	TEL035

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# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**211845**

## - CERTIFICATE OF ANALYSIS -

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**Client Sample ID:** KUG-5

**Taiga Sample ID:** 005

## - DATA QUALIFIERS -

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### *Data Qualifier Descriptions:*

- 20 *Possible matrix interference, reported result uncertain.*
- 207 *Detection limit adjusted due to sample matrix effects*
- 224 *Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*
- 86 *Too numerous to count. Unable to repeat analysis at higher dilution. Holding time exceeded.*

**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** October-15-21  
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**ANNUAL REPORT  
FOR THE MUNICIPALITY OF KUGLUKTUK**

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**Appendix C: Hazardous Materials Spill Database, Kugluktuk 2021**

No unauthorized discharges for the infrastructure under license 3BM-KUG2030 occurred in 2021.



**ANNUAL REPORT  
FOR THE MUNICIPALITY OF KUGLUKTUK**

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**Appendix D: Kugluktuk 2021 Sampling Summary**

# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

Parameter	Unit	KUG-2				KUG-3			
		June 17	July 06	Aug 09	Sept 20	June 17	July 06	Aug 09	Sept 20
BOD	mg/l	5	3	4	<2	5	133		24
CBOD	mg/L	6	4	4	<2	6	124	28	22
TSS	mg/L	34	32	6	6	312	54	150	102
Fecal Coliforms	CFU/100ml	<1	2	3	<1	<1,000	53000	14000	74000
pH	pH	7.87	8.09	8.18	8.21	7.82	7.45	8.03	7.56
Conductivity	µS/cm	1090	1970	2140	864	590	645	606	612
Nitrate-Nitrite	mg/L								
Oil and Grease	Visibility	-	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible
Magnesium	mg/L	36.5	60.4	79.2	29.1	17.0	6.7	5.15	4.84
Calcium	mg/L	125	247	176	57.9	13.4	11.7	9.78	11.1
Sodium	mg/L	33.3	58.4	136	66.2	66.4	32.3	39.0	38.9
Potassium	mg/L	6.8	11.1	9.19	3.22	8.8	30.2	19.3	17.8
Chloride	mg/L	230	486	548	173	109	34.2	41.2	44.6
Sulphate	mg/L	73	122	150	41	12	8	12	15
Total Hardness	mg/L	462	866	766	264	103	56.8	45.6	47.6
Total Alkalinity	mg/L	102	105	104	133	95.5	216	197	197
Ammonia Nitrogen	mg/L	0.006	0.042	0.030	0.028	13.0	58.2	49.6	43.6
Total Cadmium	µg/L	0.4	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Total Cobalt	µg/L	1.6	0.5	0.3	0.2	5.0	0.5	0.5	0.6
Total Chromium	µg/L	3.0	0.8	0.8	0.6	8.2	0.4	0.6	0.8
Total Copper	µg/L	-	8.1	7.6	16.4		30.2	29.6	36.4
Total Aluminum	µg/L	-	202	61.6	184		101	150	312
Total Mercury	µg/L	0.01	0.03	0.03	0.02	0.02	0.03	0.11	0.04
Total Zinc	µg/L	243	295	449	183	17.1	30.1	28.1	61.6
Total Iron	µg/L	2460	504	374	280	11200	341	371	477
Total Manganese	µg/L	-	104	115	40.5	-	33.6	35.1	44.9
Total Nickel	µg/L	4.9	3.5	3.0	1.4	11.3	1.8	2.0	2.2
Total Lead	µg/L	2.0	0.9	0.8	0.3	4.0	0.4	0.4	0.6
Total Arsenic	µg/L	1.3	0.9	0.9	0.7	6.0	0.5	0.5	0.8
Total Organic Carbon	mg/L	16.3	21.8	21.9	13.1	14.5	106	41.1	84.2

# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

Parameter	Unit	KUG-3A				KUG-4			
		June 17	July 06	Aug 09	Sept 20	June 17	July 06	Aug 09	Sept 20
BOD <sub>5</sub>	mg/L	160	34	71	24	2	2	22	14
CBOD	mg/L	113	28	72	22	3	<2	8	3
TSS	mg/L	22	102	42	60	14	14	48	26
Fecal Coliforms	CFU/100ml	35000	<1000	<1000	<1000	<1	2	3	80
pH	pH	7.04	7.28	7.3	7.23	7.87	8.09	8.18	7.68
Conductivity	µS/cm	498	2030	1620	1630	1090	1970	2140	1030
Nitrate-Nitrite	mg/L	.02	5	<0.01	.26	.08	.81	1.15	
Oil and Grease	Visibility	Non-Visible	Non-Visible	Non-Visible	Non-Visible	-	Non-Visible	Non-Visible	Non-Visible
Magnesium	mg/L	5.7	51.1	31.3	31.6	36.5	60.4	79.2	28.5
Calcium	mg/L	7.1	58.2	37.1	38.1	125	247	176	31.1
Sodium	mg/L	23.2	186	139	142	33.3	58.4	136	110
Potassium	mg/L	21.3	40	26.9	24	6.8	11.1	9.19	8.24
Chloride	mg/L	-	278	200	218	230	486	548	208
Sulphate	mg/L	4	29	13	19	73	122	150	34
Total Hardness	mg/L	41.3	356	222	225	462	866	766	195
Total Alkalinity	mg/L	162	520	453	459	102	105	104	148
Ammonia Nitrogen	mg/L	46.8	71.7	81	72.4	0.006	0.042	0.030	9.70
Total Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	0.4	0.2	0.2	<0.1
Total Cobalt	µg/L	.4	4.2	3.9	2.7	1.6	0.5	0.3	1.0
Total Chromium	µg/L	.4	3.3	3.1	2.8	3.0	0.8	0.8	0.5
Total Copper	µg/L	-	8.4	20.5	6.8	-	8.1	7.6	3.1
Total Aluminum	µg/L	-	363	150	89.3	-	202	61.6	47.1
Total Mercury	µg/L	.03	.02	.01	.01	0.01	0.03	0.03	<0.01
Total Zinc	µg/L	27.9	6.4	<5	<5	243	295	449	<5.0
Total Iron	µg/L	314	27200	16200	170000	2460	504	374	1590
Total Manganese	µg/L	-	2770	2180	2190	-	104	115	497
Total Nickel	µg/L	1.5	19.5	24.3	18.2	4.9	3.5	3.0	4.5
Total Lead	µg/L	.4	1.5	2.4	1.4	2.0	0.9	0.8	0.1
Total Arsenic	µg/L	.4	14.7	11.2	13	1.3	0.9	0.9	0.9
Total Organic Carbon	mg/L	96.3	47.5	79.4	51.9	16.3	21.8	21.9	17.9

# ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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Parameter	Unit	KUG-5			
		June 17	July 06	Aug 09	Sept 20
pH	pH	7.25	7.58	7.45	7.88
TSS	mg/L	328	10	14	46
Conductivity	mg/L	1240	2070	2620	4050
Total Hardness	mg/L	495	755	904	1540
Oil and Grease	mg/L	Non-Visible	Non-visible	Non-Visible	Non-Visible
Nitrate-Nitrite	mg/L				
Total Copper	µg/L	-	1.5	0.5	6.1
Total Mercury	µg/L	0.02	0.02	<0.01	<0.01
Total Zinc	µg/L	15.8	<5.0	<5.0	10.4
Total Chromium	µg/L	3.1	0.9	0.4	0.8
Total Nickel	µg/L	7.8	4.4	4.6	11.2
Total Lead	µg/L	1.4	0.2	<0.1	0.6
Total Arsenic	µg/L	22.2	3.1	1.1	1.5
Total Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1
Benzene	mg/L	-	<0.00050	<0.00050	<0.00050
Toluene	mg/L	-	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L	-	<0.00050	<0.00050	<0.00050
Xylene	mg/L	-	<0.00075	<0.00050	<0.00075
Polychlorinated biphenyls		-	-	-	-

## ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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### Appendix E: Photos of Incidents requiring Maintenance

- 1) June 13, 2021, Ice Intrusion on bank of river



- 2) July 12, 2021, Erosion of land below the pumphouse



**ANNUAL REPORT  
FOR THE MUNICIPALITY OF KUGLUKTUK**

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3)



**ANNUAL REPORT  
FOR THE MUNICIPALITY OF KUGLUKTUK**

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**ANNUAL REPORT  
FOR THE MUNICIPALITY OF KUGLUKTUK**

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**Appendix F: CIRNAC Inspection Report**

The CIRNAC inspection did not take place in 2021.