

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

YEAR BEING REPORTED: 2022

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.

Month Reported	Quantity of Water Obtained from all sources (L)	Quantity of Sewage Waste Discharged (Estimated, m³)
January	5556488.97	Same
February	5313467.4	Same
March	5823923.8	Same
April	5570737.2	Same
May	5590250.58	Same
June	5374526.1	Same
July	5459481.0	Same
August	5817669.7	Same
September	5609071.0	Same
October	5814172.1	Same
November	5583889.0	Same
December	5644788.3	Same
ANNUAL TOTAL	67158465.15	Same

Note: Monthly sewage discharge volume is considered 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 10 2022 notification was provided to the board for intended maintenance work at the sewage lagoon site. Intended maintenance included the repair of an existing entrance road to the sewage lagoon, the addition of a dumping site providing reprieve from prevailing winds, and the addition of balusters to increase safety. Maintenance is to the site road and will not impact the Sewage Lagoon, the Lagoon capacity, or the wetland. A copy of the notification is included in Appendix E. Maintenance was not completed in full. Completed maintenance included partial repair on an existing entrance road to the Sewage Lagoon. Gravel was added to the road and the road re-graded. Photos are included in Appendix F.
- e) A list of unauthorized discharges and summary of follow-up action taken;**
- See Appendix C for unauthorized discharges. All follow up actions are being managed by the agencies identified in the table.
- f) A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;**
- There was no abandonment and restoration work completed during 2022.
- 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 2022.
- 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;**
- A contract to develop issue-for-tender drawings for the repairs on the 2014 water intake lines was awarded in October 2021 with drawings developed in 2022. The *2020 Raw Water Pipeline Assessment* report was submitted to NWB as part of the 2021 Annual Report. Funding has been requested to complete the work, if approved it is expected to take place in 2024. The proposed modifications and the accompanying drawings were submitted to NWB in 2023 to confirm that the activities are considered a modification and that a licence amendment was not required. Notification of construction timing will be provided at the 60 day notice period in 2024. Once complete the water supply O&M plan will be updated with as-built drawings stamped and signed by an engineer licenced by NAPEG and submitted to NWB.
- 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**

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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 2022.

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 CBOD limit at KUG-3A was exceeded in June.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- As per the 2020 CIRNAC Inspection, the Inspector noted - The Licence Holder must work with the Gov't 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 options was completed in 2021. Funding to assess options for new lagoon over remediation has been requested for fiscal year 2023/2024.
- KUG-5 – monitoring parameter TSS is inappropriate for contaminated land sampling – likely puddled snowmelt. The landfarm is not actively used and this will be requested to be removed from the licence in the next amendment.

List of Appendices

Appendix A: KUG-3 and KUG-5 Effluent Quality Limits – 1 page

Appendix B: Laboratory Certificate of Analysis

- **Certificate of Analysis 06/20/2022 - 17 pages**
- **Certificate of Analysis 07/25/2022 - 17 pages**
- **Certificate of Analysis 08/15/2022 - 17 pages**

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- Certificate of Analysis 09/25/2022 – 17 pages
- Appendix C: Hazardous Materials Spill Database, Kugluktuk 2022 – 1 page
- Appendix D: Kugluktuk 2022 Sampling Summary – 3 pages
- Appendix E: Photos of incidents requiring Maintenance – 4 pages
- Appendix F: CIRNAC Inspection Report - 1 page

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

3BM-KUG2030 Kugluktuk Monitoring Program Results 2022 for Effluent Quality

Parameter	Maximum concentration of Any Grab Sample	KUG-3			
		June 20	July 25	Aug 15	Sept 15
CBOD	120 mg/L	138	37	49	74
Total Suspended	180 mg/L	18	96	38	144
Fecal Coliforms	1x10 ⁶ CFU/100mL	-	-	<1000	7000
Oil + Grease	No visible sheen	Non-Visible	Non-Visible	Non-Visible	Non-Visible
pH	between 6 and 9	7.20	7.75	7.25	8.20

Parameter	Maximum concentration of Any Grab Sample	KUG-5			
		June 20	July 25	August 15	Sept 15
pH	between 6 and 9	7.22	6.87	7.33	7.77
Total Suspended	15 mg/L	1200	184	10	26
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	<0.0010	<0.0010
Benzene	0.370 mg/L	<0.002	<0.002	<0.002	<0.00050
Toluene	0.002 mg/L	<0.002	<0.002	<0.002	<0.00050
Ethyl-benzene	0.09 mg/L	<0.002	<0.002	<0.002	<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.:
221178

- FINAL REPORT -

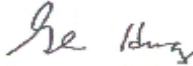
Prepared For: Hamlet of Kugluktuk

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 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: July-06-22
Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **001**

Client Project:
Sample Type: Wetland Outfall
Received Date: 22-Jun-22
Sampling Date: 20-Jun-22
Sampling Time: 10:49
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.744	0.005	mg/L	28-Jun-22	TEL068	
Biochemical Oxygen Demand	4	2	mg/L	22-Jun-22	TEL019	
CBOD	2	2	mg/L	22-Jun-22	TEL019	
Organic Carbon, Total	11.2	0.5	mg/L	28-Jun-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	58.0	0.4	mg/L	22-Jun-22	TEL060	
Conductivity, Specific (@25C)	436	0.4	µS/cm	22-Jun-22	TEL059	
pH	7.67		pH units	22-Jun-22	TEL058	
Solids, Total Dissolved	226	10	mg/L	24-Jun-22	TEL009	
Solids, Total Suspended	< 3	3	mg/L	24-Jun-22	TEL008	
<u>Major Ions</u>						
Calcium	13.6	0.1	mg/L	24-Jun-22	TEL055	
Chloride	91.6	0.7	mg/L	23-Jun-22	TEL055	
Hardness	91.1	0.7	mg/L	24-Jun-22	TEL055	

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Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **001**

Magnesium	13.9	0.1	mg/L	24-Jun-22	TEL055
Nitrate as Nitrogen	1.05	0.01	mg/L	23-Jun-22	TEL055
Nitrate+Nitrite as Nitrogen	1.05	0.01	mg/L	23-Jun-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055
Potassium	3.4	0.1	mg/L	24-Jun-22	TEL055
Sodium	51.6	0.1	mg/L	24-Jun-22	TEL055
Sulphate	14	1	mg/L	23-Jun-22	TEL055

Microbiology

Coliforms, Fecal		1	CFU/100mL	TEL017	105
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Organics

Oil and Grease, visible	Non-visible			22-Jun-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	04-Jul-22	AB ENV.06537
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Trace Metals, Total

Aluminum	54.4	5	µg/L	29-Jun-22	TEL035
Arsenic	0.7	0.2	µg/L	29-Jun-22	TEL035
Barium	12.4	0.1	µg/L	29-Jun-22	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Jun-22	TEL035
Chromium	0.4	0.1	µg/L	29-Jun-22	TEL035
Cobalt	0.4	0.1	µg/L	29-Jun-22	TEL035
Copper	2.5	0.2	µg/L	29-Jun-22	TEL035
Iron	853	5	µg/L	29-Jun-22	TEL035
Lead	< 0.1	0.1	µg/L	29-Jun-22	TEL035
Manganese	98.1	0.1	µg/L	29-Jun-22	TEL035
Mercury	0.01	0.01	µg/L	29-Jun-22	TEL035

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Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 001

Nickel	2.3	0.1	µg/L	29-Jun-22	TEL035
Zinc	< 5.0	5	µg/L	29-Jun-22	TEL035

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

Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 002

Client Project:

Sample Type: Landfarm Runoff

Received Date: 22-Jun-22

Sampling Date: 20-Jun-22

Sampling Time: 9:41

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.190	0.005	mg/L	28-Jun-22	TEL068	
Biochemical Oxygen Demand	7	2	mg/L	22-Jun-22	TEL019	
CBOD	7	2	mg/L	22-Jun-22	TEL019	
Organic Carbon, Total	31.2	0.5	mg/L	28-Jun-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	199	0.4	mg/L	22-Jun-22	TEL060	
Conductivity, Specific (@25C)	1990	0.4	µS/cm	22-Jun-22	TEL059	
pH	7.22		pH units	22-Jun-22	TEL058	
Solids, Total Dissolved	1380	10	mg/L	24-Jun-22	TEL009	
Solids, Total Suspended	1200	3	mg/L	24-Jun-22	TEL008	
<u>Major Ions</u>						
Calcium	220	0.1	mg/L	24-Jun-22	TEL055	
Chloride	124	0.7	mg/L	23-Jun-22	TEL055	
Hardness	832	0.7	mg/L	24-Jun-22	TEL055	
Magnesium	68.9	0.1	mg/L	24-Jun-22	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055	

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Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **002**

Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055
Potassium	36.6	0.1	mg/L	24-Jun-22	TEL055
Sodium	135	0.1	mg/L	24-Jun-22	TEL055
Sulphate	807	1	mg/L	23-Jun-22	TEL055

Microbiology

Coliforms, Fecal		1	CFU/100mL		TEL017
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Organics

Benzene	< 2.0	2	ug/L	27-Jun-22	TEL075
Ethylbenzene	< 2.0	2	ug/L	27-Jun-22	TEL075
F2: C10-C16	< 0.2	0.2	mg/L	29-Jun-22	TEL067
F3: C16-C34	< 0.2	0.2	mg/L	29-Jun-22	TEL067
F4: C34-C50	< 0.2	0.2	mg/L	29-Jun-22	TEL067
Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	29-Jun-22	TEL067
Hydrocarbons, Volatile	< 0.3	0.3	mg/L	27-Jun-22	TEL076
Oil and Grease, visible	Non-visible			22-Jun-22	Visual Exam
Toluene	< 2.0	2	ug/L	27-Jun-22	TEL075
Xylenes	< 2.0	2	ug/L	27-Jun-22	TEL075

Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	04-Jul-22	AB ENV.06537
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Trace Metals, Total

Aluminum	367	5	ug/L	29-Jun-22	TEL035
Arsenic	15.1	0.2	ug/L	29-Jun-22	TEL035
Barium	102	0.1	ug/L	29-Jun-22	TEL035
Cadmium	< 0.1	0.1	ug/L	29-Jun-22	TEL035

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

Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 002

Chromium	3.5	0.1	µg/L	29-Jun-22	TEL035
Cobalt	2.0	0.1	µg/L	29-Jun-22	TEL035
Copper	4.8	0.2	µg/L	29-Jun-22	TEL035
Iron	97300	5	µg/L	29-Jun-22	TEL035
Lead	0.8	0.1	µg/L	29-Jun-22	TEL035
Manganese	363	0.1	µg/L	29-Jun-22	TEL035
Mercury	0.03	0.01	µg/L	29-Jun-22	TEL035
Nickel	6.6	0.1	µg/L	29-Jun-22	TEL035
Zinc	13.3	5	µg/L	29-Jun-22	TEL035

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

Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 003

Client Project:
Sample Type: Water
Received Date: 22-Jun-22
Sampling Date: 20-Jun-22
Sampling Time: 10:57
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.005	0.005	mg/L	28-Jun-22	TEL068	
Biochemical Oxygen Demand	13	2	mg/L	22-Jun-22	TEL019	
CBOD	13	2	mg/L	22-Jun-22	TEL019	
Organic Carbon, Total	28.8	0.5	mg/L	28-Jun-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	77.4	0.4	mg/L	22-Jun-22	TEL060	
Conductivity, Specific (@25C)	783	0.4	µS/cm	22-Jun-22	TEL059	
pH	8.58		pH units	22-Jun-22	TEL058	
Solids, Total Dissolved	532	10	mg/L	24-Jun-22	TEL009	
Solids, Total Suspended	14	3	mg/L	24-Jun-22	TEL008	
<u>Major Ions</u>						
Calcium	78.0	0.1	mg/L	24-Jun-22	TEL055	
Chloride	135	0.7	mg/L	23-Jun-22	TEL055	
Hardness	310	0.7	mg/L	24-Jun-22	TEL055	
Magnesium	28.0	0.1	mg/L	24-Jun-22	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055	

ReportDate: July-06-22
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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Major Ions

Chloride	40.5	0.7	mg/L	18-Aug-22	TEL055
Nitrate as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Sulphate	14	1	mg/L	18-Aug-22	TEL055

Microbiology

Coliforms, Fecal	16000	1000	CFU/100mL	16-Aug-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Aug-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	23-Aug-22	AB ENV.06537
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Trace Metals, Total

Aluminum	35.9	0.6	µg/L	23-Aug-22	TEL035
Arsenic	0.5	0.2	µg/L	23-Aug-22	TEL035
Barium	3.8	0.1	µg/L	23-Aug-22	TEL035
Cadmium	< 0.0	0.04	µg/L	23-Aug-22	TEL035
Chromium	0.3	0.1	µg/L	23-Aug-22	TEL035
Cobalt	0.4	0.1	µg/L	23-Aug-22	TEL035
Copper	19.5	0.2	µg/L	23-Aug-22	TEL035
Iron	200	5	µg/L	23-Aug-22	TEL035
Lead	0.1	0.1	µg/L	23-Aug-22	TEL035
Manganese	32.7	0.1	µg/L	23-Aug-22	TEL035
Mercury	0.05	0.01	µg/L	23-Aug-22	TEL035
Nickel	1.6	0.1	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22

Print Date: August-26-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 003

ReportDate: July-06-22
Print Date: July-09-22

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Taiga Environmental Laboratory
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 004

Client Project:
Sample Type: Water
Received Date: 22-Jun-22
Sampling Date: 20-Jun-22
Sampling Time: 9:34
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	13.3	0.005	mg/L	28-Jun-22	TEL068	
Biochemical Oxygen Demand	9	2	mg/L	22-Jun-22	TEL019	
CBOD	11	2	mg/L	22-Jun-22	TEL019	
Organic Carbon, Total	19.5	0.5	mg/L	28-Jun-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	204	0.4	mg/L	22-Jun-22	TEL060	
Conductivity, Specific (@25C)	884	0.4	µS/cm	22-Jun-22	TEL059	
pH	7.78		pH units	22-Jun-22	TEL058	
Solids, Total Dissolved	424	10	mg/L	24-Jun-22	TEL009	
Solids, Total Suspended	24	3	mg/L	24-Jun-22	TEL008	
<u>Major Ions</u>						
Calcium	36.2	0.1	mg/L	25-Jun-22	TEL055	
Chloride	125	0.7	mg/L	23-Jun-22	TEL055	
Hardness	213	0.7	mg/L	25-Jun-22	TEL055	
Magnesium	29.7	0.1	mg/L	25-Jun-22	TEL055	
Nitrate as Nitrogen	4.93	0.01	mg/L	23-Jun-22	TEL055	

ReportDate: July-06-22
Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 004

Nitrate+Nitrite as Nitrogen	5.31	0.01	mg/L	23-Jun-22	TEL055
Nitrite as Nitrogen	0.38	0.01	mg/L	23-Jun-22	TEL055
Potassium	10.4	0.1	mg/L	25-Jun-22	TEL055
Sodium	75.1	0.1	mg/L	25-Jun-22	TEL055
Sulphate	14	1	mg/L	23-Jun-22	TEL055

Microbiology

Coliforms, Fecal		1	CFU/100mL		TEL017
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105

Organics

Oil and Grease, visible	Non-visible			22-Jun-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	04-Jul-22	AB ENV.06537
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Trace Metals, Total

Aluminum	800	5	µg/L	29-Jun-22	TEL035
Arsenic	4.0	0.2	µg/L	29-Jun-22	TEL035
Barium	79.5	0.1	µg/L	29-Jun-22	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Jun-22	TEL035
Chromium	2.1	0.1	µg/L	29-Jun-22	TEL035
Cobalt	3.0	0.1	µg/L	29-Jun-22	TEL035
Copper	13.0	0.2	µg/L	29-Jun-22	TEL035
Iron	3690	5	µg/L	29-Jun-22	TEL035
Lead	1.0	0.1	µg/L	29-Jun-22	TEL035
Manganese	1190	0.1	µg/L	29-Jun-22	TEL035
Mercury	0.02	0.01	µg/L	29-Jun-22	TEL035
Nickel	9.2	0.1	µg/L	29-Jun-22	TEL035
Zinc	6.0	5	µg/L	29-Jun-22	TEL035

ReportDate: July-06-22

Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

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

Taiga Sample ID: **004**

ReportDate: July-06-22
Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 005

Client Project:
Sample Type: Water
Received Date: 22-Jun-22
Sampling Date: 20-Jun-22
Sampling Time: 9:26
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	52.4	0.005	mg/L	28-Jun-22	TEL068	
Biochemical Oxygen Demand	138	2	mg/L	22-Jun-22	TEL019	
CBOD	138	2	mg/L	22-Jun-22	TEL019	
Organic Carbon, Total	115	0.5	mg/L	28-Jun-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	179	0.4	mg/L	22-Jun-22	TEL060	
Conductivity, Specific (@25C)	562	0.4	µS/cm	22-Jun-22	TEL059	
pH	7.20		pH units	22-Jun-22	TEL058	
Solids, Total Dissolved	174	10	mg/L	24-Jun-22	TEL009	
Solids, Total Suspended	18	3	mg/L	24-Jun-22	TEL008	
<u>Major Ions</u>						
Calcium	7.6	0.1	mg/L	25-Jun-22	TEL055	
Chloride	31.9	0.7	mg/L	23-Jun-22	TEL055	
Hardness	38.2	0.7	mg/L	25-Jun-22	TEL055	
Magnesium	4.6	0.1	mg/L	25-Jun-22	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055	

ReportDate: July-06-22
Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 005

Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	23-Jun-22	TEL055
Potassium	19.4	0.1	mg/L	25-Jun-22	TEL055
Sodium	25.3	0.1	mg/L	25-Jun-22	TEL055
Sulphate	9	1	mg/L	23-Jun-22	TEL055

Microbiology

Coliforms, Fecal		1	CFU/100mL		TEL017
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105

Organics

Oil and Grease, visible	Non-visible			22-Jun-22	Visual Exam
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Subcontracted Organics

Phenols, Total	0.3360	0.01	mg/L	04-Jul-22	AB ENV.06537
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Trace Metals, Total

Aluminum	91.6	5	µg/L	29-Jun-22	TEL035
Arsenic	0.4	0.2	µg/L	29-Jun-22	TEL035
Barium	3.2	0.1	µg/L	29-Jun-22	TEL035
Cadmium	< 0.1	0.1	µg/L	29-Jun-22	TEL035
Chromium	0.5	0.1	µg/L	29-Jun-22	TEL035
Cobalt	0.4	0.1	µg/L	29-Jun-22	TEL035
Copper	29.9	0.2	µg/L	29-Jun-22	TEL035
Iron	308	5	µg/L	29-Jun-22	TEL035
Lead	0.4	0.1	µg/L	29-Jun-22	TEL035
Manganese	32.2	0.1	µg/L	29-Jun-22	TEL035
Mercury	0.02	0.01	µg/L	29-Jun-22	TEL035
Nickel	1.0	0.1	µg/L	29-Jun-22	TEL035
Zinc	29.3	5	µg/L	29-Jun-22	TEL035

ReportDate: July-06-22
Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **005**

ReportDate: July-06-22
Print Date: July-09-22

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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.:
221178

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 005

- DATA QUALIFIERS -

Data Qualifier Descriptions:

105 *Samples received past hold time; analysis not possible.*

*** 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: July-06-22
Print Date: July-09-22

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-9740

Taiga Batch No:
221490

- FINAL REPORT -

Prepared For: Hamlet of Kugluktuk

Address: P.O. Box 271
Kugluktuk, NU, X0B 0B0

Attn: Mark Franche

Facsimile: 867-982-9060

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
 - o Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
 - o Environment Canada
 - o 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: August-11-22
Print Date: August-11-22

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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.:
221680

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Client Project:

Sample Type: SWF Discharge

Received Date: 26-Jul-22

Sampling Date: 25-Jul-22

Sampling Time: 9:44

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	03-Aug-22	TEL068	
Biochemical Oxygen Demand	5	2	mg/L	26-Jul-22	TBL019	
CBOD	5	2	mg/L	26-Jul-22	TBL019	
Organic Carbon, Total	23.5	0.5	mg/L	30-Jul-22	TBL083	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	109	0.4	mg/L	26-Jul-22	TBL060	
Conductivity, Specific (@25C)	1010	0.4	µS/cm	26-Jul-22	TEL059	
pH	7.85		pH units	26-Jul-22	TBL088	
Solids, Total Dissolved	668	10	mg/L	02-Aug-22	TBL009	
Solids, Total Suspended	20	3	mg/L	02-Aug-22	TBL088	
<u>Major Ions</u>						
Calcium	85.7	0.1	mg/L	29-Jul-22	TEL055	
Chloride	183	0.7	mg/L	28-Jul-22	TBL056	
Hardness	377	0.7	mg/L	29-Jul-22	TBL053	

Report Date: August-13-22

Print Date: August-11-22

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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:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2		Taiga Sample ID: 001			
Magnesium	39.5	0.1	mg/L	29-Jul-22	TEL055
Nitrate as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Potassium	6.4	0.1	mg/L	29-Jul-22	TEL055
Sodium	47.7	0.1	mg/L	29-Jul-22	TEL055
Sulphate	113	1	mg/L	28-Jul-22	TEL055
<u>Micobiology</u>					
Coliforms, Fecal	240	1	CFU/100mL	26-Jul-22	TBL017
<u>Organics</u>					
Oil and Grease, visible	Non-visible			26-Jul-22	Visual Exam
<u>Subcontracted Organics</u>					
Phenols, Total	0.0021	0.001	mg/L	06-Aug-22	AB KNV.06537
<u>Trace Metals, Total</u>					
Aluminum	745	0.6	µg/L	04-Aug-22	TBL035
Arsenic	1.4	0.2	µg/L	04-Aug-22	TBL035
Barium	93.4	0.1	µg/L	04-Aug-22	TBL035
Cadmium	0.2	0.04	µg/L	04-Aug-22	TBL035
Chromium	1.4	0.1	µg/L	04-Aug-22	TBL035
Cobalt	1.1	0.1	µg/L	04-Aug-22	TBL035
Copper	9.6	0.2	µg/L	04-Aug-22	TBL035
Iron	1080	5	µg/L	04-Aug-22	TBL035
Lead	2.1	0.1	µg/L	04-Aug-22	TBL035
Manganese	353	0.1	µg/L	04-Aug-22	TBL035
Mercury	0.03	0.01	µg/L	04-Aug-22	TBL035

Report Date: August-11-22
Print Date: August-11-22

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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 2L0
Tel: (867)-767-9669 Fax: (867)-767-6740

Taiga Batch No.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Nickel	4.2	0.1	µg/L	04-Aug-22	TBL035
Zinc	381	0.4	µg/L	04-Aug-22	TBL035

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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TAIGA LABS YK

13:03:05 08-10-2022

5/17



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

Taiga Batch No.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

Client Project:
Sample Type: Truck to Lagoon
Received Date: 26-Jul-22
Sampling Date: 25-Jul-22
Sampling Time: 9:17
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	31.8	0.005	mg/L	03-Aug-22	TEL068	
Biochemical Oxygen Demand	25	2	mg/L	26-Jul-22	TEL019	
CEOD	37	2	mg/L	26-Jul-22	TEL019	
Organic Carbon, Total	64.7	0.5	mg/L	30-Jul-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	165	0.4	mg/L	26-Jul-22	TEL060	
Conductivity, Specific (@25°C)	538	0.4	µS/cm	26-Jul-22	TEL059	
pH	7.75		pH units	26-Jul-22	TEL058	
Solids, Total Dissolved	205	10	mg/L	02-Aug-22	TEL009	
Solids, Total Suspended	96	3	mg/L	02-Aug-22	TEL008	
<u>Major Ions</u>						
Calcium	10.1	0.1	mg/L	29-Jul-22	TEL055	
Chloride	98.7	0.7	mg/L	28-Jul-22	TEL055	
Hardness	46.1	0.7	mg/L	29-Jul-22	TEL055	
Magnesium	8.1	0.1	mg/L	29-Jul-22	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055	

Report Date: August 11-22
Print Date: August 11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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TAIGA LABS YK

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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:
221880

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3			Taiga Sample ID: 002		
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL035
Nitrite as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Potassium	20.3	0.1	mg/L	29-Jul-22	TEL055
Sodium	38.0	0.1	mg/L	29-Jul-22	TEL035
Sulphate	13	1	mg/L	28-Jul-22	TEL055
<u>Microbiology</u>					
Coliforms, Fecal	14000	1000	CFU/100mL	26-Jul-22	TEL017 200
<u>Organics</u>					
Oil and Grease, visible	Not-Visible			25-Jul-22	Visual Exam
<u>Subcontracted Organics</u>					
Phenols, Total	0.0020	0.001	mg/L	08-Aug-22	AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	77.6	0.6	µg/L	04-Aug-22	TEL035
Arsenic	0.6	0.2	µg/L	04-Aug-22	TEL035
Barium	3.4	0.1	µg/L	04-Aug-22	TEL035
Cadmium	< 0.0	0.04	µg/L	04-Aug-22	TEL035
Chromium	0.5	0.1	µg/L	04-Aug-22	TEL035
Cobalt	0.4	0.1	µg/L	04-Aug-22	TEL035
Copper	24.9	0.2	µg/L	04-Aug-22	TEL035
Iron	253	5	µg/L	04-Aug-22	TEL035
Lead	0.3	0.1	µg/L	04-Aug-22	TEL035
Manganese	32.6	0.1	µg/L	04-Aug-22	TEL035
Mercury	0.05	0.01	µg/L	04-Aug-22	TEL035
Nickel	1.7	0.1	µg/L	04-Aug-22	TEL035
Zinc	17.0	0.4	µg/L	04-Aug-22	TEL035

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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Taiga Environmental Laboratory
4601-82nd Ave., Box 1320, Yellowknife, NT X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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08-10-2022

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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.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Client Project:
Sample Type: Final Discharge
Received Date: 26-Jul-22
Sampling Date: 25-Jul-22
Sampling Time: 9:24
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	56.1	0.005	mg/L	03-Aug-22	TEL068	
Biochemical Oxygen Demand	80	2	mg/L	26-Jul-22	TEL019	
COD	79	2	mg/L	26-Jul-22	TEL019	
Organic Carbon, Total	67.7	0.5	mg/L	30-Jul-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	381	0.4	mg/L	26-Jul-22	TEL060	
Conductivity, Specific (@25C)	1420	0.4	µS/cm	26-Jul-22	TEL039	
pH	7.26		pH units	26-Jul-22	TEL068	
Solids, Total Dissolved	610	10	mg/L	02-Aug-22	TEL009	
Solids, Total Suspended	24	3	mg/L	02-Aug-22	TEL008	
<u>Major Ions</u>						
Calcium	34.6	0.1	mg/L	29-Jul-22	TEL055	
Chloride	183	0.7	mg/L	28-Jul-22	TEL055	
Hardness	204	0.7	mg/L	29-Jul-22	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055	

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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TAIGA LABS YK

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08-10-2022

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Taiga Environmental Laboratory
4601-52nd Ave., Box 132D, Yellowknife, NT, X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Nitrate+Nitrite as Nitrogen <small>EXCLUDED AS NITROGEN</small>	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Potassium	28.3	0.1	mg/L	29-Jul-22	TEL055
Sodium	115	0.1	mg/L	29-Jul-22	TEL055
Sulphate	16	1	mg/L	28-Jul-22	TEL055

Microbiology

Coliforms, Fecal	< 1,000	1000	CFU/100mL	26-Jul-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			26-Jul-22	Visual Exam
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Subcontracted Organics

Phenols, Total	0.2870	0.01	mg/L	09-Aug-22	AB ENV.06537 207
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Trace Metals, Total

Aluminium	218	0.6	µg/L	04-Aug-22	TEL035
Arsenic	9.0	0.2	µg/L	04-Aug-22	TEL035
Barium	108	0.1	µg/L	04-Aug-22	TEL035
Cadmium	0.1	0.04	µg/L	04-Aug-22	TEL035
Chromium	2.7	0.1	µg/L	04-Aug-22	TEL035
Cobalt	4.3	0.1	µg/L	04-Aug-22	TEL035
Copper	25.6	0.2	µg/L	04-Aug-22	TEL035
Iron	12900	5	µg/L	04-Aug-22	TEL035
Lead	2.0	0.1	µg/L	04-Aug-22	TEL035
Manganese	2260	0.1	µg/L	04-Aug-22	TEL035
Mercury	0.02	0.01	µg/L	04-Aug-22	TEL035
Nickel	19.9	0.1	µg/L	04-Aug-22	TEL035
Zinc	5.1	0.4	µg/L	04-Aug-22	TEL035

Report Date: August-11-22

Print Date: August-11-22

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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.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Report Date: August-11-22
Print Date: August-17-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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TALGA LABS YK

13:06:46

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11/1/7



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

Talga Batch No.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Talga Sample ID: 004

Client Project:

Sample Type: Wetland Outfall

Received Date: 25-Jul-22

Sampling Date: 25-Jul-22

Sampling Time: 9:52

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.893	0.005	mg/L	03-Aug-22	TEL068	
Biochemical Oxygen Demand	5	2	mg/L	26-Jul-22	TEL019	
CO ₂ D	< 2	2	mg/L	26-Jul-22	TEL019	
Organic Carbon, Total	10.7	0.5	mg/L	30-Jul-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	90.1	0.4	mg/L	26-Jul-22	TEL060	
Conductivity, Specific (@25C)	681	0.4	µS/cm	26-Jul-22	TEL059	
pH	7.50		pH units	26-Jul-22	TEL058	
Solids, Total Dissolved	320	10	mg/L	02-Aug-22	TEL009	
Solids, Total Suspended	< 3	3	mg/L	02-Aug-22	TEL006	
<u>Major Ions</u>						
Calcium	23.8	0.1	mg/L	29-Jul-22	TEL055	
Chloride	124	0.7	mg/L	28-Jul-22	TEL055	
Hardness	140	0.7	mg/L	29-Jul-22	TEL055	
Magnesium	19.6	0.1	mg/L	29-Jul-22	TEL055	
Nitrate as Nitrogen	1.23	0.01	mg/L	28-Jul-22	TEL055	

Report Date: August-11-22

Print Date: August-11-22

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TAIGA LABS YK

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QR-10-7077

12/17



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

Taiga Batch No:
221490

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Nitrate+Nitrite as Nitrogen	1.23	0.01	mg/L	28-Jul-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Potassium	4.0	0.1	mg/L	29-Jul-22	TEL055
Sodium	66.9	0.1	mg/L	29-Jul-22	TEL055
Sulphate	14	1	mg/L	28-Jul-22	TEL055
<u>Microbiology</u>					
Coliforms, Fecal	10	10	CFU/100mL	26-Jul-22	TEL017
<u>Organics</u>					
Oil and Grease, visible	Non-visible			26-Jul-22	Visual Exam
<u>Subcontracted Organics</u>					
Phenols, Total	0.0010	0.001	mg/L	08-Aug-22	AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	72.8	0.6	µg/L	04-Aug-22	TEL035
Arsenic	0.7	0.2	µg/L	04-Aug-22	TEL035
Barium	24.1	0.1	µg/L	04-Aug-22	TEL035
Cadmium	< 0.0	0.04	µg/L	04-Aug-22	TEL035
Chromium	0.3	0.1	µg/L	04-Aug-22	TEL035
Cobalt	0.5	0.1	µg/L	04-Aug-22	TEL035
Copper	2.1	0.2	µg/L	04-Aug-22	TEL035
Iron	813	5	µg/L	04-Aug-22	TEL035
Lead	< 0.1	0.1	µg/L	04-Aug-22	TEL035
Manganese	291	0.1	µg/L	04-Aug-22	TEL035
Mercury	< 0.01	0.01	µg/L	04-Aug-22	TEL035
Nickel	3.2	0.1	µg/L	04-Aug-22	TEL035
Zinc	0.7	0.4	µg/L	04-Aug-22	TEL035

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

8676692718

TAIGA LABS YK

13:07:24

QR-10-2022

12/17



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8749

Taiga Batch No:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Nitrate+Nitrite as Nitrogen	1.23	0.01	mg/L	28-Jul-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	28-Jul-22	TEL055
Potassium	4.0	0.1	mg/L	29-Jul-22	TEL055
Sodium	66.9	0.1	mg/L	29-Jul-22	TEL055
Sulphate	14	1	mg/L	28-Jul-22	TEL055
<u>Microbiology</u>					
Coliforms, Fecal	10	10	CFU/100mL	26-Jul-22	TEL017
<u>Organics</u>					
Oil and Grease, visible	Non-visible			26-Jul-22	Visual Exam
<u>Subcontracted Organics</u>					
Phenols, Total	0.0010	0.001	mg/L	08-Aug-22	AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	72.8	0.6	µg/L	04-Aug-22	TEL035
Arsenic	0.7	0.2	µg/L	04-Aug-22	TEL035
Barium	24.1	0.1	µg/L	04-Aug-22	TEL035
Cadmium	< 0.0	0.04	µg/L	04-Aug-22	TEL035
Chromium	0.3	0.1	µg/L	04-Aug-22	TEL035
Cobalt	0.5	0.1	µg/L	04-Aug-22	TEL035
Copper	2.1	0.2	µg/L	04-Aug-22	TEL035
Iron	813	5	µg/L	04-Aug-22	TEL035
Lead	< 0.1	0.1	µg/L	04-Aug-22	TEL035
Manganese	291	0.1	µg/L	04-Aug-22	TEL035
Mercury	< 0.01	0.01	µg/L	04-Aug-22	TEL035
Nickel	3.2	0.1	µg/L	04-Aug-22	TEL035
Zinc	0.7	0.4	µg/L	04-Aug-22	TEL035

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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TAIGA LABS YK

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08-10-2022

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Taiga Environmental Laboratory
4801-52nd Ave., Box 1320, Yellowknife, NT, X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Report Date: August-11-22
Print Date: August-11-22

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

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TAIGA LABS YK

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16/17



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

Taiga Batch No:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

Chromium	1.5	0.1	µg/L	04-Aug-22	TEL035
Cobalt	4.0	0.1	µg/L	04-Aug-22	TEL035
Copper	2.7	0.2	µg/L	04-Aug-22	TEL035
Iron	17100	5	µg/L	04-Aug-22	TEL035
Lead	0.4	0.1	µg/L	04-Aug-22	TEL035
Manganese	1100	0.1	µg/L	04-Aug-22	TEL035
Mercury	0.01	0.01	µg/L	04-Aug-22	TEL035
Nickel	4.2	0.1	µg/L	04-Aug-22	TEL035
Zinc	9.2	0.4	µg/L	04-Aug-22	TEL035

Report Date: August-11-22
Print Date: August-11-22

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TAIGA LABS YK

13:10:27

08-10-2022

17/17



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

Taiga Batch No:
221480

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 207 Detection Limit adjusted due to sample matrix effects
- 208 Unreliable Matrix interference

* 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: August-11-22
Print Date: August-11-22

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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.:

221667

- 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 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: August-26-22

Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Client Project:

Sample Type: SWF Discharge

Received Date: 16-Aug-22

Sampling Date: 15-Aug-22

Sampling Time: 9:47

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	57.9	0.1	mg/L	18-Aug-22	TEL035	
Hardness	252	0.7	mg/L	18-Aug-22	TEL035	
Magnesium	27.1	0.1	mg/L	18-Aug-22	TEL035	
Potassium	4.1	0.1	mg/L	18-Aug-22	TEL035	
Sodium	46.6	0.1	mg/L	18-Aug-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.010	0.005	mg/L	17-Aug-22	TEL068	
Biochemical Oxygen Demand	21	2	mg/L	16-Aug-22	TEL019	55
CBOD	21	2	mg/L	16-Aug-22	TEL019	55
Organic Carbon, Total	23.8	0.5	mg/L	23-Aug-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	136	0.4	mg/L	16-Aug-22	TEL060	
Conductivity, Specific (@25C)	681	0.4	µS/cm	16-Aug-22	TEL059	
pH	7.96		pH units	16-Aug-22	TEL058	

ReportDate: August-26-22

Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Solids, Total Dissolved	396	10	mg/L	19-Aug-22	TEL009
Solids, Total Suspended	174	3	mg/L	19-Aug-22	TEL008

Major Ions

Chloride	102	0.7	mg/L	18-Aug-22	TEL055
Nitrate as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Sulphate	50	1	mg/L	18-Aug-22	TEL055

Microbiology

Coliforms, Fecal	3	1	CFU/100mL	16-Aug-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Aug-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	23-Aug-22	AB ENV.06537
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Trace Metals, Total

Aluminum	21400	0.6	µg/L	23-Aug-22	TEL035
Arsenic	6.9	0.2	µg/L	23-Aug-22	TEL035
Barium	313	0.1	µg/L	23-Aug-22	TEL035
Cadmium	0.9	0.04	µg/L	23-Aug-22	TEL035
Chromium	27.3	0.1	µg/L	23-Aug-22	TEL035
Cobalt	18.7	0.1	µg/L	23-Aug-22	TEL035
Copper	97.2	0.2	µg/L	23-Aug-22	TEL035
Iron	29500	5	µg/L	23-Aug-22	TEL035
Lead	29.1	0.1	µg/L	23-Aug-22	TEL035
Manganese	3450	0.1	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Mercury	0.18	0.01	µg/L	23-Aug-22	TEL035
Nickel	34.3	0.1	µg/L	23-Aug-22	TEL035
Zinc	3160	0.4	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

Client Project:

Sample Type: Truck to Lagoon

Received Date: 16-Aug-22

Sampling Date: 15-Aug-22

Sampling Time: 9:27

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	39.7	0.1	mg/L	18-Aug-22	TEL035	
Hardness	233	0.7	mg/L	18-Aug-22	TEL035	
Magnesium	33.5	0.1	mg/L	18-Aug-22	TEL035	
Potassium	23.9	0.1	mg/L	18-Aug-22	TEL035	
Sodium	149	0.1	mg/L	18-Aug-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	65.8	0.005	mg/L	17-Aug-22	TEL068	
Biochemical Oxygen Demand	56	2	mg/L	16-Aug-22	TEL019	
CBOD	49	2	mg/L	16-Aug-22	TEL019	
Organic Carbon, Total	51.0	0.5	mg/L	23-Aug-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	428	0.4	mg/L	16-Aug-22	TEL060	
Conductivity, Specific (@25C)	1600	0.4	µS/cm	16-Aug-22	TEL059	
pH	7.25		pH units	16-Aug-22	TEL058	
Solids, Total Dissolved	646	10	mg/L	19-Aug-22	TEL009	
Solids, Total Suspended	38	3	mg/L	19-Aug-22	TEL008	

ReportDate: August-26-22

Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **002**

Major Ions

Chloride	234	0.7	mg/L	18-Aug-22	TEL055
Nitrate as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Sulphate	12	1	mg/L	18-Aug-22	TEL055

Microbiology

Coliforms, Fecal	< 1,000	1000	CFU/100mL	16-Aug-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Aug-22	Visual Exam
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Subcontracted Organics

Phenols, Total	0.2000	0.005	mg/L	23-Aug-22	AB ENV.06537
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Trace Metals, Total

Aluminum	157	0.6	µg/L	23-Aug-22	TEL035
Arsenic	9.4	0.2	µg/L	23-Aug-22	TEL035
Barium	86.6	0.1	µg/L	23-Aug-22	TEL035
Cadmium	0.0	0.04	µg/L	23-Aug-22	TEL035
Chromium	2.4	0.1	µg/L	23-Aug-22	TEL035
Cobalt	3.2	0.1	µg/L	23-Aug-22	TEL035
Copper	12.7	0.2	µg/L	23-Aug-22	TEL035
Iron	8800	5	µg/L	23-Aug-22	TEL035
Lead	1.7	0.1	µg/L	23-Aug-22	TEL035
Manganese	1900	0.1	µg/L	23-Aug-22	TEL035
Mercury	0.02	0.01	µg/L	23-Aug-22	TEL035
Nickel	17.7	0.1	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **002**

Zinc	4.3	0.4	µg/L	23-Aug-22	TEL035
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ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Client Project:

Sample Type: Final Discharge

Received Date: 16-Aug-22

Sampling Date: 15-Aug-22

Sampling Time: 9:19

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	11.4	0.1	mg/L	18-Aug-22	TEL035	
Hardness	48.9	0.7	mg/L	18-Aug-22	TEL035	
Magnesium	5.2	0.1	mg/L	18-Aug-22	TEL035	
Potassium	18.0	0.1	mg/L	18-Aug-22	TEL035	
Sodium	39.5	0.1	mg/L	18-Aug-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	24.6	0.005	mg/L	17-Aug-22	TEL068	
Biochemical Oxygen Demand	17	2	mg/L	16-Aug-22	TEL019	61
CBOD	27	2	mg/L	16-Aug-22	TEL019	61
Organic Carbon, Total	49.2	0.5	mg/L	23-Aug-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	155	0.4	mg/L	16-Aug-22	TEL060	
Conductivity, Specific (@25C)	500	0.4	µS/cm	16-Aug-22	TEL059	
pH	8.20		pH units	16-Aug-22	TEL058	
Solids, Total Dissolved	198	10	mg/L	19-Aug-22	TEL009	
Solids, Total Suspended	82	3	mg/L	19-Aug-22	TEL008	

ReportDate: August-26-22

Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

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

Taiga Sample ID: **003**

Major Ions

Chloride	40.5	0.7	mg/L	18-Aug-22	TEL055
Nitrate as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Sulphate	14	1	mg/L	18-Aug-22	TEL055

Microbiology

Coliforms, Fecal	16000	1000	CFU/100mL	16-Aug-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Aug-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	23-Aug-22	AB ENV.06537
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Trace Metals, Total

Aluminum	35.9	0.6	µg/L	23-Aug-22	TEL035
Arsenic	0.5	0.2	µg/L	23-Aug-22	TEL035
Barium	3.8	0.1	µg/L	23-Aug-22	TEL035
Cadmium	< 0.0	0.04	µg/L	23-Aug-22	TEL035
Chromium	0.3	0.1	µg/L	23-Aug-22	TEL035
Cobalt	0.4	0.1	µg/L	23-Aug-22	TEL035
Copper	19.5	0.2	µg/L	23-Aug-22	TEL035
Iron	200	5	µg/L	23-Aug-22	TEL035
Lead	0.1	0.1	µg/L	23-Aug-22	TEL035
Manganese	32.7	0.1	µg/L	23-Aug-22	TEL035
Mercury	0.05	0.01	µg/L	23-Aug-22	TEL035
Nickel	1.6	0.1	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Zinc	15.7	0.4	µg/L	23-Aug-22	TEL035
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ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Client Project:

Sample Type: Wetland outfall

Received Date: 16-Aug-22

Sampling Date: 15-Aug-22

Sampling Time: 9:54

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	34.8	0.1	mg/L	18-Aug-22	TEL035	
Hardness	222	0.7	mg/L	18-Aug-22	TEL035	
Magnesium	33.4	0.1	mg/L	18-Aug-22	TEL035	
Potassium	9.1	0.1	mg/L	18-Aug-22	TEL035	
Sodium	162	0.1	mg/L	18-Aug-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	4.83	0.005	mg/L	17-Aug-22	TEL068	
Biochemical Oxygen Demand	9	2	mg/L	16-Aug-22	TEL019	
CBOD	4	2	mg/L	16-Aug-22	TEL019	
Organic Carbon, Total	14.3	0.5	mg/L	23-Aug-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	132	0.4	mg/L	16-Aug-22	TEL060	
Conductivity, Specific (@25C)	1260	0.4	µS/cm	16-Aug-22	TEL059	
pH	7.55		pH units	16-Aug-22	TEL058	
Solids, Total Dissolved	658	10	mg/L	19-Aug-22	TEL009	
Solids, Total Suspended	6	3	mg/L	19-Aug-22	TEL008	

ReportDate: August-26-22

Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **004**

Major Ions

Chloride	281	0.7	mg/L	18-Aug-22	TEL055
Nitrate as Nitrogen	1.63	0.01	mg/L	18-Aug-22	TEL055
Nitrate+Nitrite as Nitrogen	1.63	0.01	mg/L	18-Aug-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Sulphate	40	1	mg/L	18-Aug-22	TEL055

Microbiology

Coliforms, Fecal	< 10	10	CFU/100mL	16-Aug-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Aug-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	23-Aug-22	AB ENV.06537
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Trace Metals, Total

Aluminum	39.6	0.6	µg/L	23-Aug-22	TEL035
Arsenic	0.8	0.2	µg/L	23-Aug-22	TEL035
Barium	33.3	0.1	µg/L	23-Aug-22	TEL035
Cadmium	< 0.0	0.04	µg/L	23-Aug-22	TEL035
Chromium	0.5	0.1	µg/L	23-Aug-22	TEL035
Cobalt	0.8	0.1	µg/L	23-Aug-22	TEL035
Copper	2.5	0.2	µg/L	23-Aug-22	TEL035
Iron	883	5	µg/L	23-Aug-22	TEL035
Lead	< 0.1	0.1	µg/L	23-Aug-22	TEL035
Manganese	505	0.1	µg/L	23-Aug-22	TEL035
Mercury	< 0.01	0.01	µg/L	23-Aug-22	TEL035
Nickel	5.3	0.1	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Zinc	0.8	0.4	µg/L	23-Aug-22	TEL035
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ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

Client Project:

Sample Type: Landfarm Runoff

Received Date: 16-Aug-22

Sampling Date: 15-Aug-22

Sampling Time: 9:33

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	241	1.1	mg/L	18-Aug-22	TEL035	
Hardness	1020	7.7	mg/L	18-Aug-22	TEL035	
Magnesium	105	1.1	mg/L	18-Aug-22	TEL035	
Potassium	43.8	1.1	mg/L	18-Aug-22	TEL035	
Sodium	397	1.1	mg/L	18-Aug-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.334	0.005	mg/L	17-Aug-22	TEL068	
Biochemical Oxygen Demand	< 2	2	mg/L	16-Aug-22	TEL019	
CBOD	< 2	2	mg/L	16-Aug-22	TEL019	
Organic Carbon, Total	25.7	0.5	mg/L	23-Aug-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	342	0.4	mg/L	16-Aug-22	TEL060	
Conductivity, Specific (@25C)	3410	0.4	µS/cm	16-Aug-22	TEL059	
pH	7.33		pH units	16-Aug-22	TEL058	
Solids, Total Dissolved	2220	10	mg/L	19-Aug-22	TEL009	
Solids, Total Suspended	10	3	mg/L	19-Aug-22	TEL008	

ReportDate: August-26-22

Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **005**

Major Ions

Chloride	575	0.7	mg/L	18-Aug-22	TEL055
Nitrate as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	18-Aug-22	TEL055
Sulphate	697	1	mg/L	18-Aug-22	TEL055

Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	16-Aug-22	TEL017
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Organics

Benzene	< 2.0	2	ug/L	16-Aug-22	TEL075
Ethylbenzene	< 2.0	2	ug/L	16-Aug-22	TEL075
F2: C10-C16	< 0.2	0.2	mg/L	22-Aug-22	TEL067
F3: C16-C34	< 0.2	0.2	mg/L	22-Aug-22	TEL067
F4: C34-C50	< 0.2	0.2	mg/L	22-Aug-22	TEL067
Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	22-Aug-22	TEL067
Hydrocarbons, Volatile	< 0.3	0.3	mg/L	16-Aug-22	TEL076
Oil and Grease, visible	Non-visible			16-Aug-22	Visual Exam
Toluene	< 2.0	2	ug/L	16-Aug-22	TEL075
Xylenes	< 2.0	2	ug/L	16-Aug-22	TEL075

Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	23-Aug-22	AB ENV.06537
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Trace Metals, Total

Aluminum	60.7	0.6	ug/L	23-Aug-22	TEL035
Arsenic	1.9	0.2	ug/L	23-Aug-22	TEL035
Barium	66.2	0.1	ug/L	23-Aug-22	TEL035

ReportDate: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

Cadmium	< 0.0	0.04	µg/L	23-Aug-22	TEL035
Chromium	0.8	0.1	µg/L	23-Aug-22	TEL035
Cobalt	1.5	0.1	µg/L	23-Aug-22	TEL035
Copper	2.1	0.2	µg/L	23-Aug-22	TEL035
Iron	908	5	µg/L	23-Aug-22	TEL035
Lead	< 0.1	0.1	µg/L	23-Aug-22	TEL035
Manganese	655	0.1	µg/L	23-Aug-22	TEL035
Mercury	0.01	0.01	µg/L	23-Aug-22	TEL035
Nickel	6.3	0.1	µg/L	23-Aug-22	TEL035
Zinc	1.2	0.4	µg/L	23-Aug-22	TEL035

ReportDate: August-26-22
Print Date: August-26-22

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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.:
221667

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 55 *BOD result is inconclusive; residual DO was less than 1 mg/L. For evaluation purposes only.*
- 81 *Results are inconclusive due to insufficient depletion of sample, minimum 2 mg/L required over 5 days.*

*** 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: August-26-22

Print Date: August-26-22

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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.:

221943

- 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 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: September-29-22

Print Date: October-03-22

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Client Project:
Sample Type: SWF Discharge
Received Date: 16-Sep-22
Sampling Date: 15-Sep-22
Sampling Time: 9:30
Location: Kugluktuk Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	92.2	0.1	mg/L	22-Sep-22	TEL035	
Hardness	436	0.7	mg/L	22-Sep-22	TEL035	
Magnesium	50.1	0.1	mg/L	22-Sep-22	TEL035	
Potassium	5.0	0.1	mg/L	22-Sep-22	TEL035	
Sodium	62.0	0.1	mg/L	22-Sep-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.054	0.005	mg/L	20-Sep-22	TEL068	
Biochemical Oxygen Demand	2	2	mg/L	16-Sep-22	TEL019	81
CBOD	2	2	mg/L	16-Sep-22	TEL019	81
Organic Carbon, Total	18.1	0.5	mg/L	21-Sep-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO3)	294	0.4	mg/L	16-Sep-22	TEL060	
Conductivity, Specific (@25C)	1070	0.4	µS/cm	16-Sep-22	TEL059	
pH	8.08		pH units	16-Sep-22	TEL058	

Report Date: September-29-22
Print Date: October-03-22

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Solids, Total Dissolved	636	10	mg/L	26-Sep-22	TEL009
Solids, Total Suspended	6	3	mg/L	26-Sep-22	TEL008

Major Ions

Chloride	140	0.7	mg/L	17-Sep-22	TEL055
Nitrate as Nitrogen	0.64	0.01	mg/L	17-Sep-22	TEL055
Nitrate+Nitrite as Nitrogen	0.64	0.01	mg/L	17-Sep-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	17-Sep-22	TEL055
Sulphate	68	1	mg/L	17-Sep-22	TEL055

Microbiology

Coliforms, Fecal	1	1	CFU/100mL	16-Sep-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Sep-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	27-Sep-22	AB ENV.06537
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Trace Metals, Total

Aluminum	71.4	0.6	µg/L	27-Sep-22	TEL035
Arsenic	0.7	0.2	µg/L	27-Sep-22	TEL035
Barium	99.5	0.1	µg/L	27-Sep-22	TEL035
Cadmium	< 0.04	0.04	µg/L	27-Sep-22	TEL035
Chromium	0.4	0.1	µg/L	27-Sep-22	TEL035
Cobalt	0.3	0.1	µg/L	27-Sep-22	TEL035
Copper	4.9	0.2	µg/L	27-Sep-22	TEL035
Iron	229	5	µg/L	27-Sep-22	TEL035
Lead	0.3	0.1	µg/L	27-Sep-22	TEL035
Manganese	60.1	0.1	µg/L	27-Sep-22	TEL035

ReportDate: September-29-22
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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-2

Taiga Sample ID: 001

Mercury	0.01	0.01	µg/L	27-Sep-22	TEL035
Nickel	2.3	0.1	µg/L	27-Sep-22	TEL035
Zinc	146	0.4	µg/L	27-Sep-22	TEL035

ReportDate: September-29-22
Print Date: October-03-22

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

Client Project:

Sample Type: Truck to Lagoon

Received Date: 16-Sep-22

Sampling Date: 15-Sep-22

Sampling Time: 9:15

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	12.1	0.1	mg/L	22-Sep-22	TEL035	
Hardness	53.6	0.7	mg/L	22-Sep-22	TEL035	
Magnesium	5.7	0.1	mg/L	22-Sep-22	TEL035	
Potassium	17.9	0.1	mg/L	22-Sep-22	TEL035	
Sodium	43.7	0.1	mg/L	22-Sep-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	25.3	0.005	mg/L	20-Sep-22	TEL068	
Biochemical Oxygen Demand	65	2	mg/L	16-Sep-22	TEL019	
CBOD	74	2	mg/L	16-Sep-22	TEL019	
Organic Carbon, Total	116	0.5	mg/L	21-Sep-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	149	0.4	mg/L	16-Sep-22	TEL060	
Conductivity, Specific (@25C)	522	0.4	µS/cm	16-Sep-22	TEL059	
pH	8.20		pH units	16-Sep-22	TEL058	
Solids, Total Dissolved	268	10	mg/L	26-Sep-22	TEL009	
Solids, Total Suspended	144	3	mg/L	26-Sep-22	TEL008	

ReportDate: September-29-22

Print Date: October-03-22

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-3**

Taiga Sample ID: **002**

Major Ions

Chloride	46.4	0.7	mg/L	17-Sep-22	TEL055
Nitrate as Nitrogen	0.04	0.01	mg/L	17-Sep-22	TEL055
Nitrate+Nitrite as Nitrogen	0.22	0.01	mg/L	17-Sep-22	TEL055
Nitrite as Nitrogen	0.18	0.01	mg/L	17-Sep-22	TEL055
Sulphate	12	1	mg/L	17-Sep-22	TEL055

Microbiology

Coliforms, Fecal	7000	1000	CFU/100mL	16-Sep-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Sep-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	27-Sep-22	AB ENV.06537
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Trace Metals, Total

Aluminum	47.2	0.6	µg/L	27-Sep-22	TEL035
Arsenic	0.5	0.2	µg/L	27-Sep-22	TEL035
Barium	5.1	0.1	µg/L	27-Sep-22	TEL035
Cadmium	< 0.04	0.04	µg/L	27-Sep-22	TEL035
Chromium	0.5	0.1	µg/L	27-Sep-22	TEL035
Cobalt	0.5	0.1	µg/L	27-Sep-22	TEL035
Copper	18.0	0.2	µg/L	27-Sep-22	TEL035
Iron	257	5	µg/L	27-Sep-22	TEL035
Lead	0.2	0.1	µg/L	27-Sep-22	TEL035
Manganese	40.1	0.1	µg/L	27-Sep-22	TEL035
Mercury	0.07	0.01	µg/L	27-Sep-22	TEL035
Nickel	1.5	0.1	µg/L	27-Sep-22	TEL035

ReportDate: September-29-22

Print Date: *October-03-22*

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3

Taiga Sample ID: 002

Zinc	17.2	0.4	µg/L	27-Sep-22	TEL035
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ReportDate: September-29-22
Print Date: October-03-22

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Client Project:

Sample Type: Final Discharge

Received Date: 16-Sep-22

Sampling Date: 15-Sep-22

Sampling Time: 9:20

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	12.0	0.1	mg/L	22-Sep-22	TEL035	
Hardness	52.7	0.7	mg/L	22-Sep-22	TEL035	
Magnesium	5.6	0.1	mg/L	22-Sep-22	TEL035	
Potassium	17.8	0.1	mg/L	22-Sep-22	TEL035	
Sodium	43.4	0.1	mg/L	22-Sep-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	25.7	0.005	mg/L	20-Sep-22	TEL068	
Biochemical Oxygen Demand	92	2	mg/L	16-Sep-22	TEL019	55
CBOD	78	2	mg/L	16-Sep-22	TEL019	
Organic Carbon, Total	104	0.5	mg/L	21-Sep-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	148	0.4	mg/L	16-Sep-22	TEL060	
Conductivity, Specific (@25C)	518	0.4	µS/cm	16-Sep-22	TEL059	
pH	8.21		pH units	16-Sep-22	TEL058	
Solids, Total Dissolved	246	10	mg/L	26-Sep-22	TEL009	
Solids, Total Suspended	135	3	mg/L	26-Sep-22	TEL008	

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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.:
221943

- CERTIFICATE OF ANALYSIS -

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

Taiga Sample ID: **003**

Major Ions

Chloride	47.8	0.7	mg/L	17-Sep-22	TEL055
Nitrate as Nitrogen	0.04	0.01	mg/L	17-Sep-22	TEL055
Nitrate+Nitrite as Nitrogen	0.23	0.01	mg/L	17-Sep-22	TEL055
Nitrite as Nitrogen	0.19	0.01	mg/L	17-Sep-22	TEL055
Sulphate	13	1	mg/L	17-Sep-22	TEL055

Microbiology

Coliforms, Fecal	41000	1000	CFU/100mL	16-Sep-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Sep-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	27-Sep-22	AB ENV.06537
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Trace Metals, Total

Aluminum	99.2	0.6	µg/L	27-Sep-22	TEL035
Arsenic	0.5	0.2	µg/L	27-Sep-22	TEL035
Barium	5.3	0.1	µg/L	27-Sep-22	TEL035
Cadmium	< 0.04	0.04	µg/L	27-Sep-22	TEL035
Chromium	0.6	0.1	µg/L	27-Sep-22	TEL035
Cobalt	0.4	0.1	µg/L	27-Sep-22	TEL035
Copper	19.7	0.2	µg/L	27-Sep-22	TEL035
Iron	295	5	µg/L	27-Sep-22	TEL035
Lead	0.2	0.1	µg/L	27-Sep-22	TEL035
Manganese	41.0	0.1	µg/L	27-Sep-22	TEL035
Mercury	0.08	0.01	µg/L	27-Sep-22	TEL035
Nickel	1.6	0.1	µg/L	27-Sep-22	TEL035

ReportDate: September-29-22
Print Date: *October-03-22*

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-3A

Taiga Sample ID: 003

Zinc	21.4	0.4	µg/L	27-Sep-22	TEL035
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ReportDate: September-29-22
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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-4

Taiga Sample ID: 004

Client Project:

Sample Type: Wetland Outfall

Received Date: 16-Sep-22

Sampling Date: 15-Sep-22

Sampling Time: 9:40

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	29.3	0.1	mg/L	22-Sep-22	TEL035	
Hardness	163	0.7	mg/L	22-Sep-22	TEL035	
Magnesium	22.0	0.1	mg/L	22-Sep-22	TEL035	
Potassium	7.6	0.1	mg/L	22-Sep-22	TEL035	
Sodium	78.0	0.1	mg/L	22-Sep-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	4.43	0.005	mg/L	20-Sep-22	TEL068	
Biochemical Oxygen Demand	12	2	mg/L	16-Sep-22	TEL019	
CBOD	11	2	mg/L	16-Sep-22	TEL019	
Organic Carbon, Total	22.7	0.5	mg/L	21-Sep-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	116	0.4	mg/L	16-Sep-22	TEL060	
Conductivity, Specific (@25C)	754	0.4	µS/cm	16-Sep-22	TEL059	
pH	7.62		pH units	16-Sep-22	TEL058	
Solids, Total Dissolved	390	10	mg/L	26-Sep-22	TEL009	
Solids, Total Suspended	27	3	mg/L	26-Sep-22	TEL008	

ReportDate: September-29-22

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **004**

Major Ions

Chloride	132	0.7	mg/L	17-Sep-22	TEL055
Nitrate as Nitrogen	2.06	0.01	mg/L	17-Sep-22	TEL055
Nitrate+Nitrite as Nitrogen	2.37	0.01	mg/L	17-Sep-22	TEL055
Nitrite as Nitrogen	0.31	0.01	mg/L	17-Sep-22	TEL055
Sulphate	36	1	mg/L	17-Sep-22	TEL055

Microbiology

Coliforms, Fecal	1130	10	CFU/100mL	16-Sep-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Sep-22	Visual Exam
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	27-Sep-22	AB ENV.06537
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Trace Metals, Total

Aluminum	74.1	0.6	µg/L	27-Sep-22	TEL035
Arsenic	0.7	0.2	µg/L	27-Sep-22	TEL035
Barium	21.8	0.1	µg/L	27-Sep-22	TEL035
Cadmium	< 0.04	0.04	µg/L	27-Sep-22	TEL035
Chromium	0.6	0.1	µg/L	27-Sep-22	TEL035
Cobalt	0.6	0.1	µg/L	27-Sep-22	TEL035
Copper	5.6	0.2	µg/L	27-Sep-22	TEL035
Iron	1110	5	µg/L	27-Sep-22	TEL035
Lead	0.1	0.1	µg/L	27-Sep-22	TEL035
Manganese	133	0.1	µg/L	27-Sep-22	TEL035
Mercury	0.02	0.01	µg/L	27-Sep-22	TEL035
Nickel	4.0	0.1	µg/L	27-Sep-22	TEL035

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-4**

Taiga Sample ID: **004**

Zinc	2.6	0.4	µg/L	27-Sep-22	TEL035
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ReportDate: September-29-22
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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

Client Project:

Sample Type: Landfarm Runoff

Received Date: 16-Sep-22

Sampling Date: 15-Sep-22

Sampling Time: 9:25

Location: Kugluktuk Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	504	2.6	mg/L	22-Sep-22	TEL035	
Hardness	1650	18.2	mg/L	22-Sep-22	TEL035	
Magnesium	94.6	2.6	mg/L	22-Sep-22	TEL035	
Potassium	89.6	2.6	mg/L	22-Sep-22	TEL035	
Sodium	204	2.6	mg/L	22-Sep-22	TEL035	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.331	0.005	mg/L	20-Sep-22	TEL068	
Biochemical Oxygen Demand	< 2	2	mg/L	16-Sep-22	TEL019	
CBOD	< 2	2	mg/L	16-Sep-22	TEL019	
Organic Carbon, Total	22.4	0.5	mg/L	21-Sep-22	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	340	0.4	mg/L	16-Sep-22	TEL060	
Conductivity, Specific (@25C)	3280	0.4	µS/cm	16-Sep-22	TEL059	
pH	7.77		pH units	16-Sep-22	TEL058	
Solids, Total Dissolved	2730	10	mg/L	26-Sep-22	TEL009	
Solids, Total Suspended	26	3	mg/L	26-Sep-22	TEL008	

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **KUG-5**

Taiga Sample ID: **005**

Major Ions

Chloride	174	0.7	mg/L	17-Sep-22	TEL055
Nitrate as Nitrogen	5.14	0.01	mg/L	17-Sep-22	TEL055
Nitrate+Nitrite as Nitrogen	5.14	0.01	mg/L	17-Sep-22	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	17-Sep-22	TEL055
Sulphate	1570	1	mg/L	17-Sep-22	TEL055

Microbiology

Coliforms, Fecal	1	1	CFU/100mL	16-Sep-22	TEL017
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Organics

Oil and Grease, visible	Non-visible			16-Sep-22	Visual Exam
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Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	25-Sep-22	EPA 5021
Bromodichloromethane	< 0.0010	0.001	mg/L	25-Sep-22	SW-846
Bromoform	< 0.0010	0.001	mg/L	25-Sep-22	SW-846
Chloroform	< 0.0010	0.001	mg/L	25-Sep-22	SW-846
Dibromochloromethane	< 0.0010	0.001	mg/L	25-Sep-22	SW-846
Ethylbenzene	< 0.00050	0.0005	mg/L	25-Sep-22	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	27-Sep-22	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	27-Sep-22	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	27-Sep-22	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	27-Sep-22	EPA3510
Phenols, Total	< 0.0010	0.001	mg/L	27-Sep-22	AB ENV.06537
Toluene	< 0.00050	0.0005	mg/L	25-Sep-22	EPA 5021
Trihalomethanes, Total	< 0.0020	0.002	mg/L	25-Sep-22	SW-846
Xylenes	< 0.00050	0.0005	mg/L	25-Sep-22	EPA 5021

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

Trace Metals, Total

Aluminum	81.3	0.6	µg/L	27-Sep-22	TEL035
Arsenic	1.0	0.2	µg/L	27-Sep-22	TEL035
Barium	30.4	0.1	µg/L	27-Sep-22	TEL035
Cadmium	0.04	0.04	µg/L	27-Sep-22	TEL035
Chromium	0.5	0.1	µg/L	27-Sep-22	TEL035
Cobalt	1.1	0.1	µg/L	27-Sep-22	TEL035
Copper	12.1	0.2	µg/L	27-Sep-22	TEL035
Iron	219	5	µg/L	27-Sep-22	TEL035
Lead	0.3	0.1	µg/L	27-Sep-22	TEL035
Manganese	76.0	0.1	µg/L	27-Sep-22	TEL035
Mercury	0.01	0.01	µg/L	27-Sep-22	TEL035
Nickel	12.5	0.1	µg/L	27-Sep-22	TEL035
Zinc	17.1	0.4	µg/L	27-Sep-22	TEL035

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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.:
221943

- CERTIFICATE OF ANALYSIS -

Client Sample ID: KUG-5

Taiga Sample ID: 005

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 55 *BOD result is inconclusive; residual DO was less than 1 mg/L. For evaluation purposes only.*
- 81 *Results are inconclusive due to insufficient depletion of sample, minimum 2 mg/L required over 5 days.*

*** 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

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Appendix C: Hazardous Materials Spill Database, Kugluktuk 2022

There were no spills with the infrastructure under the KUG2030 license.

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Appendix D: Kugluktuk 2022 Sampling Summary

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Parameter	Unit	KUG-2				KUG-3			
		June 20	July 25	Aug 15	Sept 15	June 20	July 25	Aug 15	Sept 15
CBOD	mg/L	7	5	21	2	138	37	49	74
TSS	mg/L	14	20	174	6	18	96	38	144
Fecal Coliforms	CFU/100ml	-	240	3	1	-	-	<1,000	7000
pH	pH	8.58	7.85	7.96	8.08	7.20	7.75	7.25	8.20
Conductivity	µS/cm	783	1010	681	1070	562	538	1600	522
Nitrate-Nitrite	mg/L	<0.01	<0.01			<0.01	<0.01	<0.01	
Oil and Grease	Visibility	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible	Non-Visible
Magnesium	mg/L	28.0	39.5	27.1	50.1	4.6	5.1	33.5	5.7
Calcium	mg/L	78.0	85.7	57.9	92.2	7.6	10.1	39.7	12.1
Sodium	mg/L	31.3	47.7	46.6	62.0	25.3	38.0	149	43.7
Potassium	mg/L	6.3	6.4	4.1	5.0	19.4	20.3	23.9	17.9
Chloride	mg/L	135	183	102	140	31.9	38.7	234	46.4
Sulphate	mg/L	117	113	50	68	9	13	12	12
Total Hardness	mg/L	310	377	252	436	38.2	46.1	428	53.6
Total Alkalinity	mg/L	77.4	108	136	294	179	165	428	149
Ammonia Nitrogen	mg/L	0.005	<0.005	0.0010	0.054	52.4	31.8	65.8	25.3
Total Cadmium	µg/L	0.3	0.2	0.9	<0.04	<0.1	<0.0	0.0	<0.04
Total Cobalt	µg/L	1.3	1.1	18.7	0.3	0.4	0.4	3.2	0.5
Total Chromium	µg/L	1.3	1.4	27.3	0.4	0.5	0.3	2.4	0.5
Total Copper	µg/L	10.8	9.8	97.2	4.9	29.9	24.9	12.7	18.0
Total Aluminum	µg/L	381	745	21400	71.4	91.6	77.6	157	47.2
Total Mercury	µg/L	0.05	0.03	0.18	0.01	0.02	0.05	0.02	0.07
Total Zinc	µg/L	230	381	3160	146	29.3	17.0	4.3	17.2
Total Iron	µg/L	607	1080	29500	229	308	253	8800	257
Total Manganese	µg/L	152	353	3450	60.1	32.2	32.6	1900	40.1
Total Nickel	µg/L	3.6	4.2	34.3	2.3	1.0	1.7	17.7	1.5
Total Lead	µg/L	2.5	2.1	29.1	0.3	0.4	0.3	1.7	0.2
Total Arsenic	µg/L	1.1	1.4	6.9	0.7	0.4	0.6	9.4	0.5
Total Organic Carbon	mg/L	28.8	23.5	23.8	18.1	115	64.7	51.0	116

Parameter	Unit	KUG-4			
		June 20	July 25	Aug 15	Sept 15

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BOD ₅	mg/L	-	-	-	-
CBOD	mg/L	2	<2	4	11
TSS	mg/L	<3	<3	6	27
Fecal Coliforms	CFU/100ml	-	10	<10	1130
pH	pH	7.67	7.50	7.55	7.62
Conductivity	µS/cm	436	631	1260	754
Nitrate-Nitrite	mg/L	1.05			
Oil and Grease	Visibility	Non-Visible	Non-Visible	Non-Visible	Non-Visible
Magnesium	mg/L	13.9	19.6	33.4	22.0
Calcium	mg/L	13.6	23.8	34.8	29.3
Sodium	mg/L	51.6	66.9	162	78.0
Potassium	mg/L	3.4	4.0	9.1	7.6
Chloride	mg/L	91.6	124	281	132
Sulphate	mg/L	14	14	40	36
Total Hardness	mg/L	91.1	140	222	163
Total Alkalinity	mg/L	58.0	90.1	132	116
Ammonia Nitrogen	mg/L	0.744	0.893	4.83	4.43
Total Cadmium	µg/L	<0.1	<0.0	<0.0	<0.04
Total Cobalt	µg/L	0.4	0.5	0.8	0.6
Total Chromium	µg/L	0.4	2.1	0.5	0.6
Total Copper	µg/L	2.5	2.1	2.5	5.6
Total Aluminum	µg/L	54.4	72.8	39.6	74.1
Total Mercury	µg/L	0.01	<0.01	<0.01	0.02
Total Zinc	µg/L	<5.0	0.7	0.8	2.6
Total Iron	µg/L	853	813	883	1110
Total Manganese	µg/L	98.1	291	505	133
Total Nickel	µg/L	2.3	3.2	5.3	4.0
Total Lead	µg/L	<0.1	<0.1	<0.1	0.1
Total Arsenic	µg/L	0.7	0.7	0.8	0.7
Total Organic Carbon	mg/L	11.2	10.7	14.3	22.7

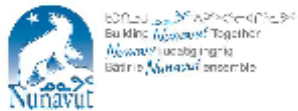
		KUG-5			
Parameter	Unit	June 20	July 25	Aug 15	Sept 15
pH	pH	7.22	6.87	7.33	7.77
TSS	mg/L	1200	184	10	26

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Conductivity	mg/L	1990	1830	3410	3280
Total Hardness	mg/L	832	523	1020	1650
Oil and Grease	mg/L	Non-Visible	Non-Visible	Non-Visible	Non-Visible
Nitrate-Nitrite	mg/L	<0.01	<0.01	<0.01	
Total Copper	µg/L	4.8	2.7	2.1	12.1
Total Mercury	µg/L	0.03	0.01	0.01	0.01
Total Zinc	µg/L	13.3	9.7	1.2	17.1
Total Chromium	µg/L	3.5	1.5	0.8	0.5
Total Nickel	µg/L	6.6	4.2	6.3	12.5
Total Lead	µg/L	0.8	0.4	<0.1	0.3
Total Arsenic	µg/L	15.1	2.7	1.9	1.0
Total Cadmium	µg/L	<0.1	<0.0	<0.0	0.04
Benzene	mg/L	<0.002	<0.002	<0.002	<0.00050
Toluene	mg/L	<0.002	<0.002	<0.002	<0.00050
Ethylbenzene	mg/L	<0.002	<0.002	<0.002	<0.00050
Xylene	mg/L	<0.002	<0.002	<0.002	<0.00050
Polychlorinated biphenyls		-	-	-	-

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

Appendix E: Notification of Maintenance



June 10, 2022
Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119 Gjoa Haven, X0B1J0

Re: Notification of Construction within 3BM-KUG2030

Dear Mr. Dwyer,

Maintenance work is to be completed on the Kugluktuk Sewage Lagoon with completion estimated as end of Summer 2022, licensed under 3BM-KUG2030. As this modification is consistent with the terms of the licence, please take this letter as notification, under part E, section 2 of the licence. The following items are to be upgraded:

1. The repair of an existing entrance road to the sewage lagoon. Gravel will be added and the road re-graded
2. The addition of an additional dumping site providing a reprieve from prevailing winds
3. The addition of balusters to increase safety

The maintenance will not impact the lagoon, the lagoon capacity, or wetland. Photos of the work will be submitted once completed.

Please feel free to contact me with any questions.

Regards,

A handwritten signature in black ink, appearing to read "Madeline Cole".

Madeline Cole
Municipal Technical Officer
Community and Government Services
Government of Nunavut

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Appendix F: Photos of Maintenance

- 1) Gravel added to road



ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK



ANNUAL REPORT FOR THE MUNICIPALITY OF KUGLUKTUK

2) Culvert added for drainage



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FOR THE MUNICIPALITY OF KUGLUKTUK**



**ANNUAL REPORT
FOR THE MUNICIPALITY OF KUGLUKTUK**

Appendix F: CIRNAC Inspection Report

The CIRNAC inspection did not take place in 2022.