

ANNUAL REPORT FOR THE KUGAARUK LANDFARM

YEAR BEING REPORTED: 2022

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 1BR-KRK1929 issued to the Government of Nunavut Department of Community and Government Services.

a) A summary report of Waste disposal activities including:

i. quantity and quality of effluent discharged from Landfarm; and

600 m³

ii. quantity and characterization of soils placed within the Landfarm for treatment.

No new soil was placed into the landfarm in 2022.

b) Quantity of Waste backhauled to an approved facility for disposal;

There was no Waste backhauled to an approved facility for disposal in 2022.

c) A list of unauthorized discharges and a summary of follow-up actions taken;

There were no unauthorized discharges in 2022.

d) Any revisions to the management plans, as required by Part B, Item 6, submitted in the form of an Addendum;

There were no revisions to the management plans submitted in the form of an Addendum in 2022.

e) A description of all progressive and/or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;

There was no progressive and/or final reclamation work undertaken in 2022.

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- f) A summary of all information requested and results of the Monitoring Program, an analysis and interpretation of the results, and any follow-up measures that may be required;

Table 1. Monitoring Program Station SW2 Effluent Results

Parameter	Maximum Concentration (mg/L)	SW2 July 05 2022 (mg/L)
pH	6.5-9	8.47
TSS	50	<3
Oil and Grease	15 and no visible sheen	Non-visible
Total Lead	0.001	0.0002
Benzene	0.37	<0.002
Toluene	0.002	<0.002
Ethylbenzene	0.09	<0.002

Table 2. Monitoring Program Station SW1 Effluent Results

Parameters	Unit	SW1 July 05 2022
pH		8.46
TSS	mg/L	4
Chloride	mg/L	6.54
Nitrate+Nitrite as Nitrogen	mg/L	0.0100
Sulphate	mg/L	1.80
HC Extractable	mg/L	<0.2
Calcium	mg/L	19.0
Magnesium	mg/L	5.1
Potassium	mg/L	2.7
Sodium	mg/L	5.5
Benzene	mg/L	<0.002
Ethylbenzene	mg/L	<0.002
Toluene	mg/L	<0.002
Xylenes	mg/L	<0.002
Aluminium	µg/L	120
Arsenic	µg/L	0.6
Cadmium	µg/L	<0.1
Chromium	µg/L	0.3
Cobalt	µg/L	0.1

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Copper	µg/L	1.9
Iron	µg/L	148
Lead	µg/L	0.2
Manganese	µg/L	16.4
Mercury	µg/L	0.03
Nickel	µg/L	0.5
Zinc	µg/L	<5.0
Total Phenol	mg/L	<0.0010
Hardness	mg/L	68.2
PAH	mg/L	-
Conductivity	mg/L	159
Ammonia Nitrogen	mg/L	0.0249
Oil and grease (visual)	mg/L	Non-visible
Alkalinity	mg/L	71.5
Phosphorous	mg/L	0.0225

Table 3. Petroleum Hydrocarbon Contaminant Levels at Soil Locations LF1-LF4

	CCME Guideline for Industrial Land Use	July 05 2022 (ppm)			
Parameter	Coarse (ppm)	LF-1	LF-2	LF-3	LF-4
Benzene	0.03	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	0.37	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	0.082	<0.015	<0.15	<0.15	<0.15
Xylenes	11	<0.050	<0.050	<0.050	<0.050
F1	320	<5	<5	<5	<5
F2	260				
F3	1700				
F4	3300				
Lead	600	4.20	4.05	4.04	9.08

- Groundwater is not observed within the monitoring wells M1-M6.

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- g) A summary, including photographic records before, during and after any relevant construction activities or Modifications and/or major maintenance work carried out on facilities under this Licence and an outline of any work anticipated for the next year;**
- There was no relevant construction activities or Modifications and/or major maintenance work carried out on facilities under this licence in 2022 and there is no work anticipated for 2023.
- h) A summary of public consultation/participation, describing consultation with local organizations and residents of the nearby communities, if any were conducted;**
- There was no public consultation/participation conducted in 2022.
- i) Any other details on Waste disposal requested by the Board by the 1st November of the year being reported.**
- There were no other details on Waste disposal requested by the Board by the 1st of November of 2022.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- Sampling training with CGS Staff took place Summer 2022 sampling.
- No soil was removed from the landfarm.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- A CIRNAC inspection did not take place in 2022

List of Appendices

Appendix A: Laboratory Certificate of Analysis – July 05 2022 – 8 pages

Appendix A: Laboratory Certificate of Analysis – July 05 2022 – 10 pages

Appendix B: CIRNAC Inspection Report - 1 page

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Appendix A: 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.:
221330

- FINAL REPORT -

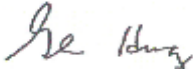
Prepared For: Government of Nunavut

Address: Community and Government Services
P.O. Box 200
Cambridge Bay, NU
X0B 0C0

Attn: Madeline Cole

Facsimile:

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-22-22
Print Date: July-22-22

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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.:
221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Retention Cell SW1

Taiga Sample ID: 001

Client Project:

Sample Type: Water

Received Date: 07-Jul-22

Sampling Date: 05-Jul-22

Sampling Time: 9:00

Location: Landfarm at Kugaaruk

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	19.0	0.1	mg/L	12-Jul-22	TEL035	
Hardness	68.2	0.7	mg/L	12-Jul-22	TEL035	
Magnesium	5.1	0.1	mg/L	12-Jul-22	TEL035	
Potassium	2.7	0.1	mg/L	12-Jul-22	TEL035	
Sodium	5.5	0.1	mg/L	12-Jul-22	TEL035	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	71.5	0.4	mg/L	07-Jul-22	TEL060	
Conductivity, Specific (@25C)	159	0.4	µS/cm	07-Jul-22	TEL059	
pH	8.46		pH units	07-Jul-22	TEL058	
Solids, Total Dissolved	100	10	mg/L	12-Jul-22	TEL009	
Solids, Total Suspended	4	3	mg/L	12-Jul-22	TEL008	
<u>Organics</u>						
Benzene	< 2.0	2	ug/L	08-Jul-22	TEL075	
Ethylbenzene	< 2.0	2	ug/L	08-Jul-22	TEL075	
F2: C10-C16	< 0.2	0.2	mg/L	14-Jul-22	TEL067	

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

Taiga Batch No.:
221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Retention Cell SW1			Taiga Sample ID: 001		
F3: C16-C34	< 0.2	0.2	mg/L	14-Jul-22	TEL067
F4: C34-C50	< 0.2	0.2	mg/L	14-Jul-22	TEL067
Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	14-Jul-22	TEL067
Hydrocarbons, Volatile	< 0.3	0.3	mg/L	08-Jul-22	TEL076
Oil and Grease, visible	Non-visible			07-Jul-22	Visual Exam
Toluene	< 2.0	2	ug/L	08-Jul-22	TEL075
Xylenes	< 2.0	2	ug/L	08-Jul-22	TEL075
<u>Subcontracted Inorganics</u>					
Chloride	6.54	0.1	mg/L	13-Jul-22	EPA300.1
Nitrate as Nitrogen	0.0086	0.005	mg/L	13-Jul-22	EPA300.1
Nitrite as N	0.0014	0.001	mg/L	13-Jul-22	EPA300.1
NO2+NO3 - N	0.0100	0.0051	mg/L	13-Jul-22	EPA300.1
Phosphorous, Total	0.0225	0.002	mg/L	14-Jul-22	APHA4500:P
Sulphate	1.80	0.05	mg/L	13-Jul-22	EPA300.1
<u>Subcontracted Nutrients</u>					
Ammonia as Nitrogen	0.0249	0.005	mg/L	15-Jul-22	SM4500 NH3
<u>Subcontracted Organics</u>					
Phenols, Total	< 0.0010	0.001	mg/L	19-Jul-22	AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	120	5	ug/L	13-Jul-22	TEL035
Antimony	0.2	0.1	ug/L	13-Jul-22	TEL035
Arsenic	0.6	0.2	ug/L	13-Jul-22	TEL035
Barium	4.4	0.1	ug/L	13-Jul-22	TEL035
Beryllium	< 0.1	0.1	ug/L	13-Jul-22	TEL035
Bismuth	< 0.2	0.2	ug/L	13-Jul-22	TEL035

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Taiga Batch No.:

221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Retention Cell SW1**

Taiga Sample ID: **001**

Boron	34.0	0.9	µg/L	13-Jul-22	TEL035
Cadmium	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Cesium	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Chromium	0.3	0.1	µg/L	13-Jul-22	TEL035
Cobalt	0.1	0.1	µg/L	13-Jul-22	TEL035
Copper	1.9	0.2	µg/L	13-Jul-22	TEL035
Iron	148	5	µg/L	13-Jul-22	TEL035
Lead	0.2	0.1	µg/L	13-Jul-22	TEL035
Manganese	16.4	0.1	µg/L	13-Jul-22	TEL035
Mercury	0.03	0.01	µg/L	13-Jul-22	TEL035
Molybdenum	1.6	0.1	µg/L	13-Jul-22	TEL035
Nickel	0.5	0.1	µg/L	13-Jul-22	TEL035
Rubidium	1.1	0.1	µg/L	13-Jul-22	TEL035
Selenium	< 0.5	0.5	µg/L	13-Jul-22	TEL035
Silver	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Strontium	119	0.1	µg/L	13-Jul-22	TEL035
Thallium	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Titanium	5.8	0.1	µg/L	13-Jul-22	TEL035
Uranium	4.9	0.1	µg/L	13-Jul-22	TEL035
Vanadium	0.5	0.1	µg/L	13-Jul-22	TEL035
Zinc	< 5.0	5	µg/L	13-Jul-22	TEL035

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

Taiga Batch No.:
221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Discharge SW2

Taiga Sample ID: 002

Client Project:

Sample Type: Water

Received Date: 07-Jul-22

Sampling Date: 05-Jul-22

Sampling Time: 9:00

Location: Landfarm at Kugaaruk

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Cations by ICP-MS</u>						
Calcium	19.4	0.1	mg/L	12-Jul-22	TEL035	
Hardness	69.5	0.7	mg/L	12-Jul-22	TEL035	
Magnesium	5.1	0.1	mg/L	12-Jul-22	TEL035	
Potassium	2.8	0.1	mg/L	12-Jul-22	TEL035	
Sodium	5.5	0.1	mg/L	12-Jul-22	TEL035	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	71.9	0.4	mg/L	07-Jul-22	TEL060	
Conductivity, Specific (@25C)	161	0.4	µS/cm	07-Jul-22	TEL059	
pH	8.47		pH units	07-Jul-22	TEL058	
Solids, Total Dissolved	92	10	mg/L	12-Jul-22	TEL009	
Solids, Total Suspended	< 3	3	mg/L	12-Jul-22	TEL008	
<u>Organics</u>						
Benzene	< 2.0	2	ug/L	08-Jul-22	TEL075	
Ethylbenzene	< 2.0	2	ug/L	08-Jul-22	TEL075	
F2: C10-C16	< 0.2	0.2	mg/L	14-Jul-22	TEL067	
F3: C16-C34	< 0.2	0.2	mg/L	14-Jul-22	TEL067	

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

Taiga Batch No.:
221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Discharge SW2**

Taiga Sample ID: **002**

F4: C34-C50	< 0.2	0.2	mg/L	14-Jul-22	TEL067
Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	14-Jul-22	TEL067
Hydrocarbons, Volatile	< 0.3	0.3	mg/L	08-Jul-22	TEL076
Oil and Grease, visible	Non-visible			07-Jul-22	Visual Exam
Toluene	< 2.0	2	ug/L	08-Jul-22	TEL075
Xylenes	< 2.0	2	ug/L	08-Jul-22	TEL075
<u>Subcontracted Inorganics</u>					
Chloride	6.22	0.1	mg/L	13-Jul-22	EPA300.1
Nitrate as Nitrogen	< 0.0050	0.005	mg/L	13-Jul-22	EPA300.1
Nitrite as N	< 0.0010	0.001	mg/L	13-Jul-22	EPA300.1
NO2+NO3 - N	< 0.0051	0.0051	mg/L	13-Jul-22	EPA300.1
Phosphorous, Total	0.0202	0.002	mg/L	14-Jul-22	APHA4500:P
Sulphate	1.13	0.05	mg/L	13-Jul-22	EPA300.1
<u>Subcontracted Nutrients</u>					
Ammonia as Nitrogen	0.0262	0.005	mg/L	15-Jul-22	SM4500 NH3
<u>Subcontracted Organics</u>					
Phenols, Total	< 0.0010	0.001	mg/L	19-Jul-22	AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	118	5	ug/L	13-Jul-22	TEL035
Antimony	0.2	0.1	ug/L	13-Jul-22	TEL035
Arsenic	0.6	0.2	ug/L	13-Jul-22	TEL035
Barium	4.3	0.1	ug/L	13-Jul-22	TEL035
Beryllium	< 0.1	0.1	ug/L	13-Jul-22	TEL035
Bismuth	< 0.2	0.2	ug/L	13-Jul-22	TEL035
Boron	34.2	0.9	ug/L	13-Jul-22	TEL035

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

Taiga Batch No.:
221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Discharge SW2

Taiga Sample ID: 002

Cadmium	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Cesium	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Chromium	0.2	0.1	µg/L	13-Jul-22	TEL035
Cobalt	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Copper	1.8	0.2	µg/L	13-Jul-22	TEL035
Iron	142	5	µg/L	13-Jul-22	TEL035
Lead	0.2	0.1	µg/L	13-Jul-22	TEL035
Manganese	15.8	0.1	µg/L	13-Jul-22	TEL035
Mercury	0.01	0.01	µg/L	13-Jul-22	TEL035
Molybdenum	1.6	0.1	µg/L	13-Jul-22	TEL035
Nickel	0.5	0.1	µg/L	13-Jul-22	TEL035
Rubidium	1.1	0.1	µg/L	13-Jul-22	TEL035
Selenium	< 0.5	0.5	µg/L	13-Jul-22	TEL035
Silver	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Strontium	116	0.1	µg/L	13-Jul-22	TEL035
Thallium	< 0.1	0.1	µg/L	13-Jul-22	TEL035
Titanium	6.1	0.1	µg/L	13-Jul-22	TEL035
Uranium	4.8	0.1	µg/L	13-Jul-22	TEL035
Vanadium	0.5	0.1	µg/L	13-Jul-22	TEL035
Zinc	< 5.0	5	µg/L	13-Jul-22	TEL035

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

Taiga Batch No.:
221330

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Discharge SW2**

Taiga Sample ID: **002**

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

Taiga Batch No.:
221331

- FINAL REPORT -

Prepared For: Government of Nunavut

Address: Community and Government Services
P.O. Box 200
Cambridge Bay, NU
X0B 0C0

Attn: Madeline Cole

Facsimile:

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.

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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **LF-1**

Taiga Sample ID: **001**

Client Project:
Sample Type: Soil
Received Date: 07-Jul-22
Sampling Date: 05-Jul-22
Sampling Time: 9:00
Location: Landfarm
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
Subcontracted Metals						
Aluminum	4270	50	mg/kg	14-Jul-22	EPA200.2	
Antimony	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2	
Arsenic	1.54	0.1	mg/kg	14-Jul-22	EPA200.2	
Barium	15.8	0.5	mg/kg	14-Jul-22	EPA200.2	
Beryllium	0.31	0.1	mg/kg	14-Jul-22	EPA200.2	
Bismuth	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2	
Boron	< 5.0	5	mg/kg	14-Jul-22	EPA200.2	
Cadmium	0.040	0.02	mg/kg	14-Jul-22	EPA200.2	
Calcium	2210	50	mg/kg	14-Jul-22	EPA200.2	
Chromium	9.25	0.5	mg/kg	14-Jul-22	EPA200.2	
Cobalt	2.77	0.1	mg/kg	14-Jul-22	EPA200.2	
Copper	3.98	0.5	mg/kg	14-Jul-22	EPA200.2	
Iron	8740	50	mg/kg	14-Jul-22	EPA200.2	
Lead	4.20	0.5	mg/kg	14-Jul-22	EPA200.2	
Lithium	10.4	2	mg/kg	14-Jul-22	EPA200.2	

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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: LF-1

Taiga Sample ID: 001

Magnesium	2950	20	mg/kg	14-Jul-22	EPA200.2
Manganese	112	1	mg/kg	14-Jul-22	EPA200.2
Molybdenum	0.28	0.1	mg/kg	14-Jul-22	EPA200.2
Nickel	4.73	0.5	mg/kg	14-Jul-22	EPA200.2
Phosphorus	346	50	mg/kg	14-Jul-22	EPA200.2
Potassium	1130	100	mg/kg	14-Jul-22	EPA200.2
Selenium	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2
Silver	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2
Sodium	112	50	mg/kg	14-Jul-22	EPA200.2
Strontium	5.10	0.5	mg/kg	14-Jul-22	EPA200.2
Thallium	0.077	0.05	mg/kg	14-Jul-22	EPA200.2
Tin	< 2.0	2	mg/kg	14-Jul-22	EPA200.2
Titanium	344	1	mg/kg	14-Jul-22	EPA200.2
Uranium	1.68	0.05	mg/kg	14-Jul-22	EPA200.2
Vanadium	17.4	0.2	mg/kg	14-Jul-22	EPA200.2
Zinc	18.2	2	mg/kg	14-Jul-22	EPA200.2

Subcontracted Organics

Benzene	< 0.0050	0.005	mg/kg	19-Jul-22	CCME CWS PHC
Ethylbenzene	< 0.015	0.015	mg/kg	19-Jul-22	CCME CWS PHC
Fl: C6-C10	< 5	5	mg/kg	19-Jul-22	CCME CWS PHC
Toluene	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC
Xylenes	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC

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ANNUAL REPORT FOR THE KUGAARUK LANDFARM



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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: LF-2

Taiga Sample ID: 002

Client Project:

Sample Type: Soil

Received Date: 07-Jul-22

Sampling Date: 05-Jul-22

Sampling Time: 9:00

Location: Landfarm

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Subcontracted Metals</u>						
Aluminum	5430	50	mg/kg	14-Jul-22	EPA200.2	
Antimony	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2	
Arsenic	1.32	0.1	mg/kg	14-Jul-22	EPA200.2	
Barium	15.6	0.5	mg/kg	14-Jul-22	EPA200.2	
Beryllium	0.30	0.1	mg/kg	14-Jul-22	EPA200.2	
Bismuth	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2	
Boron	< 5.0	5	mg/kg	14-Jul-22	EPA200.2	
Cadmium	0.031	0.02	mg/kg	14-Jul-22	EPA200.2	
Calcium	3700	50	mg/kg	14-Jul-22	EPA200.2	
Chromium	9.23	0.5	mg/kg	14-Jul-22	EPA200.2	
Cobalt	3.48	0.1	mg/kg	14-Jul-22	EPA200.2	
Copper	3.43	0.5	mg/kg	14-Jul-22	EPA200.2	
Iron	10900	50	mg/kg	14-Jul-22	EPA200.2	
Lead	4.05	0.5	mg/kg	14-Jul-22	EPA200.2	
Lithium	13.4	2	mg/kg	14-Jul-22	EPA200.2	
Magnesium	3930	20	mg/kg	14-Jul-22	EPA200.2	

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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **LF-2**

Taiga Sample ID: **002**

Manganese	155	1	mg/kg	14-Jul-22	EPA200.2
Molybdenum	0.33	0.1	mg/kg	14-Jul-22	EPA200.2
Nickel	5.11	0.5	mg/kg	14-Jul-22	EPA200.2
Phosphorus	384	50	mg/kg	14-Jul-22	EPA200.2
Potassium	1180	100	mg/kg	14-Jul-22	EPA200.2
Selenium	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2
Silver	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2
Sodium	86	50	mg/kg	14-Jul-22	EPA200.2
Strontium	7.36	0.5	mg/kg	14-Jul-22	EPA200.2
Thallium	0.066	0.05	mg/kg	14-Jul-22	EPA200.2
Tin	< 2.0	2	mg/kg	14-Jul-22	EPA200.2
Titanium	305	1	mg/kg	14-Jul-22	EPA200.2
Uranium	2.21	0.05	mg/kg	14-Jul-22	EPA200.2
Vanadium	16.2	0.2	mg/kg	14-Jul-22	EPA200.2
Zinc	26.7	2	mg/kg	14-Jul-22	EPA200.2

Subcontracted Organics

Benzene	< 0.0050	0.005	mg/kg	19-Jul-22	CCME CWS PHC
Ethylbenzene	< 0.015	0.015	mg/kg	19-Jul-22	CCME CWS PHC
Fl: C6-C10	< 5	5	mg/kg	19-Jul-22	CCME CWS PHC
Toluene	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC
Xylenes	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC

ReportDate: July-22-22
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ANNUAL REPORT FOR THE KUGAARUK LANDFARM



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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: LF-3

Taiga Sample ID: 003

Client Project:
Sample Type: Soil
Received Date: 07-Jul-22
Sampling Date: 05-Jul-22
Sampling Time: 9:00
Location: Landfarm
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Subcontracted Metals</u>						
Aluminum	4690	50	mg/kg	14-Jul-22	EPA200.2	
Antimony	0.17	0.1	mg/kg	14-Jul-22	EPA200.2	
Arsenic	1.26	0.1	mg/kg	14-Jul-22	EPA200.2	
Barium	14.3	0.5	mg/kg	14-Jul-22	EPA200.2	
Beryllium	0.27	0.1	mg/kg	14-Jul-22	EPA200.2	
Bismuth	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2	
Boron	< 5.0	5	mg/kg	14-Jul-22	EPA200.2	
Cadmium	0.055	0.02	mg/kg	14-Jul-22	EPA200.2	
Calcium	2330	50	mg/kg	14-Jul-22	EPA200.2	
Chromium	9.42	0.5	mg/kg	14-Jul-22	EPA200.2	
Cobalt	2.88	0.1	mg/kg	14-Jul-22	EPA200.2	
Copper	3.39	0.5	mg/kg	14-Jul-22	EPA200.2	
Iron	8980	50	mg/kg	14-Jul-22	EPA200.2	
Lead	4.04	0.5	mg/kg	14-Jul-22	EPA200.2	
Lithium	11.0	2	mg/kg	14-Jul-22	EPA200.2	
Magnesium	3200	20	mg/kg	14-Jul-22	EPA200.2	

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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: LF-3

Taiga Sample ID: 003

Manganese	121	1	mg/kg	14-Jul-22	EPA200.2
Molybdenum	0.20	0.1	mg/kg	14-Jul-22	EPA200.2
Nickel	4.95	0.5	mg/kg	14-Jul-22	EPA200.2
Phosphorus	308	50	mg/kg	14-Jul-22	EPA200.2
Potassium	970	100	mg/kg	14-Jul-22	EPA200.2
Selenium	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2
Silver	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2
Sodium	97	50	mg/kg	14-Jul-22	EPA200.2
Strontium	4.51	0.5	mg/kg	14-Jul-22	EPA200.2
Thallium	0.058	0.05	mg/kg	14-Jul-22	EPA200.2
Tin	< 2.0	2	mg/kg	14-Jul-22	EPA200.2
Titanium	292	1	mg/kg	14-Jul-22	EPA200.2
Uranium	2.58	0.05	mg/kg	14-Jul-22	EPA200.2
Vanadium	13.6	0.2	mg/kg	14-Jul-22	EPA200.2
Zinc	22.2	2	mg/kg	14-Jul-22	EPA200.2

Subcontracted Organics

Benzene	< 0.0050	0.005	mg/kg	19-Jul-22	CCME CWS PHC
Ethylbenzene	< 0.015	0.015	mg/kg	19-Jul-22	CCME CWS PHC
F1: C6-C10	< 5	5	mg/kg	19-Jul-22	CCME CWS PHC
Toluene	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC
Xylenes	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC

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ANNUAL REPORT FOR THE KUGAARUK LANDFARM



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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: LF-4

Taiga Sample ID: 004

Client Project:

Sample Type: Soil

Received Date: 07-Jul-22

Sampling Date: 05-Jul-22

Sampling Time: 9:00

Location: Landfarm

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Subcontracted Metals</u>						
Aluminum	6140	50	mg/kg	14-Jul-22	EPA200.2	
Antimony	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2	
Arsenic	1.93	0.1	mg/kg	14-Jul-22	EPA200.2	
Barium	20.7	0.5	mg/kg	14-Jul-22	EPA200.2	
Beryllium	0.38	0.1	mg/kg	14-Jul-22	EPA200.2	
Bismuth	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2	
Boron	< 5.0	5	mg/kg	14-Jul-22	EPA200.2	
Cadmium	0.029	0.02	mg/kg	14-Jul-22	EPA200.2	
Calcium	3650	50	mg/kg	14-Jul-22	EPA200.2	
Chromium	13.3	0.5	mg/kg	14-Jul-22	EPA200.2	
Cobalt	3.78	0.1	mg/kg	14-Jul-22	EPA200.2	
Copper	5.63	0.5	mg/kg	14-Jul-22	EPA200.2	
Iron	11500	50	mg/kg	14-Jul-22	EPA200.2	
Lead	9.08	0.5	mg/kg	14-Jul-22	EPA200.2	
Lithium	14.1	2	mg/kg	14-Jul-22	EPA200.2	
Magnesium	3980	20	mg/kg	14-Jul-22	EPA200.2	

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ANNUAL REPORT FOR THE KUGAARUK LANDFARM



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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **LF-4**

Taiga Sample ID: **004**

Manganese	158	1	mg/kg	14-Jul-22	EPA200.2
Molybdenum	0.35	0.1	mg/kg	14-Jul-22	EPA200.2
Nickel	6.70	0.5	mg/kg	14-Jul-22	EPA200.2
Phosphorus	539	50	mg/kg	14-Jul-22	EPA200.2
Potassium	1510	100	mg/kg	14-Jul-22	EPA200.2
Selenium	< 0.20	0.2	mg/kg	14-Jul-22	EPA200.2
Silver	< 0.10	0.1	mg/kg	14-Jul-22	EPA200.2
Sodium	161	50	mg/kg	14-Jul-22	EPA200.2
Strontium	8.24	0.5	mg/kg	14-Jul-22	EPA200.2
Thallium	0.096	0.05	mg/kg	14-Jul-22	EPA200.2
Tin	< 2.0	2	mg/kg	14-Jul-22	EPA200.2
Titanium	458	1	mg/kg	14-Jul-22	EPA200.2
Uranium	2.59	0.05	mg/kg	14-Jul-22	EPA200.2
Vanadium	20.5	0.2	mg/kg	14-Jul-22	EPA200.2
Zinc	24.8	2	mg/kg	14-Jul-22	EPA200.2

Subcontracted Organics

Benzene	< 0.0050	0.005	mg/kg	19-Jul-22	CCME CWS PHC
Ethylbenzene	< 0.015	0.015	mg/kg	19-Jul-22	CCME CWS PHC
Fl: C6-C10	< 5	5	mg/kg	19-Jul-22	CCME CWS PHC
Toluene	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC
Xylenes	< 0.050	0.05	mg/kg	19-Jul-22	CCME CWS PHC

ReportDate: July-22-22
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ANNUAL REPORT FOR THE KUGAARUK LANDFARM



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

Taiga Batch No.:
221331

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **LF-4**

Taiga Sample ID: **004**

* 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

**ANNUAL REPORT
FOR THE KUGAARUK LANDFARM**

Appendix B: CIRNAC Inspection Report

The CIRNAC inspection did not take place in 2022.