Cambridge Bay Soil & Water Treatment Facility

2022 Annual Report

Nunavut Water Board Licence 1BR-CST1723

2022 Annual Report

Cambridge Bay SWTF 2022 Annual Report
Version Number: V.1.0

March 2023

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EXECUTIVE SUMMARY

The Kitikmeot Environmental Ltd. (KEL) soil and water treatment facility was licensed in 2017 by the Nunavut Water Board under water licence number 1BR-CST1723, and construction of the Facility was completed in October 2017.

The Facility consists of one soil treatment cell for the receipt of soil contaminated with petroleum hydrocarbons, one cell for the receipt of contaminated snow and water along with one cell for the storage of containerized hazardous waste material. The soil treatment cell dimensions are approximately 35 meters by 49 meters. The water cell and hazardous water storage cell dimensions are approximately 14 meters by 16 meters. The water cell is designed with a capacity of 170 cubic meters. In 2022 no soil or water was deposited at the Facility.

1.0 INTRODUCTION

Licensee:

Kitikmeot Environmental Ltd. (KEL)
PO Box 92, 10 Omilik Road
Cambridge Bay, Nunavut
X0B 0C0

The Cambridge Bay Soil and Water Treatment Facility (the Facility) is operated under the Nunavut Water Board (NWB) water licence 1BR-CST1723.

This 2022 Annual Report satisfies the requirements outlined in Part B, Item 1 of the water licence. A copy of the completed NWB Annual Reporting Form for 2022 can be found in Appendix C.

2.0 PART B, ITEM 1 – ANNUAL REPORT

a. The monthly and annual quantities of material deposited in the on-site Waste Management Facility:

No material was deposited in the on-site Waste Management Facility in 2022.

b. Characterization of soils treated at the Facility

Due to contractor availability, a soil treatment event did not occur at the facility in 2022. T

On September 9, 2022, samples were collected for piles P1, P2, P3, P4, P5, P6, P7, P8 and P9 to characterize the soil and determine compliance with reuse criteria. Due to a laboratory error, the analysis was incomplete and updated characterization was not available. The analytical results for this sampling event are included in Appendix B. Based on the 2021 analysis, the known characterization of the soil piles is below.

Soil Pile Number	Generator Name	Hydrocarbon Characterization	Metals Characterization
1	Government of Nunavut Community and Government Services	Above Reuse Criteria	Meets Reuse Criteria
2	NSSI Tank Farm	Meets Reuse Criteria	Meets Reuse Criteria
3	Qulliq Energy Corporation	Above Reuse Criteria	Meets Reuse Criteria
4	Raytheon	Meets Reuse Criteria	Meets Reuse Criteria
5	Inukshuk	Meets Reuse Criteria	Meets Reuse Criteria
6	Kitnuna Projects	Not Analyzed	Meets Reuse Criteria
7	Qulliaq Energy Corporation	Meets Reuse Criteria	Meets Reuse Criteria

8	Raytheon	Not Analyzed	Meets Reuse Criteria
9	CHARS	Not Analyzed	Not Analyzed

c. The monthly and annual quantities of any effluent discharge from the Facility

Approval to discharge effluent water from the Facility was granted by Mr. Jonathan Mesher on September 21, 2022. Due to contractor availability, a decant of water from the facility did not occur in 2022. Correspondence approving the discharge can be found in Appendix A. A copy of the analytical can be found in Appendix B.

d. Waste backhauled to any Nunavut Community in 2022

No waste was backhauled to any Nunavut community in 2022.

e. GPS coordinates of all waste associated with the Project

The coordinates of the Facility are 69°7.718' North and 105° 2.760 West.

f. Construction work, modification, and major maintenance work completed at the Facility

No construction work, modification, or major maintenance work was completed at the Facility in 2022

g. Tabular summaries for all data and information generated under the "Monitoring Program"

A monitoring event occurred on September 9th, 2022. All three monitoring wells had insufficient water levels for sampling. As a result, no groundwater samples were taken in 2022.

Surface water samples were collected from CST-1 W (pond 1), CST-1 E (pond 2), and CST-1 N (standing water on the soil pad). Tabulated results are included in Appendix D.

h. Monitoring Program Data Analysis

Groundwater monitoring wells were installed in 2018 at locations surrounding the Facility. The locations of these wells were established under Part K Item 1 of the water license. The requirements for the monitoring program were for one well to be installed upgradient of the Facility (CST-2) and two wells installed downgradient (CST-3, CST-4). The monitoring wells were installed by KEL on August 17-18, 2018. One of the groundwater monitoring wells, CST3, was damaged during the municipal construction of a road adjacent to the Facility. The well was decommissioned, and a new well designated CST3 was installed on August 5, 2020.

All monitoring wells were dry during the August sampling campaign. Due to all the monitoring wells being dry during the monitoring event that occurred, no groundwater samples were collected in 2022.

As per Part K Item 7 of the license, a Water Monitoring Plan (WMP) was created and submitted to the NWB on May 12, 2017. The WMP will be revised once the groundwater monitoring wells have been sampled for the first time in 2023.

i. Summary of Studies

No studies were requested by the Board in 2022.

j. Unauthorized Discharges

No unauthorized discharges occurred in 2022.

k. Description of trenches or sumps excavated

No trenches or sumps were excavated in 2022.

l. Public consultation/participation report

No public consultations occurred in 2022.

m. Summary of Inspection Reports and Corrective Actions

No inspections or reports were prepared by an inspector in 2022.

n. Executive summary in English and in Inuktitut of all plans, reports, or studies conducted under this Licence

No reports or studies were conducted in 2022.

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o. Additional details as requested by the Board

No additional details were requested by the Board in 2022.

APPENDIX A

Appendix A Inspector Approval to Discharge

From: Mesher, Jonathan
To: Katie Oliver; Pedersen, Baba; Pedersen, Baba (AADNC/AANDC)
Cc: Murilo Marques
Subject: RE: Cambridge Bay STF - Discharge Approval Request
Date: September 21, 2022 2:17:30 PM

Hello,
Thank you for the notification to decant. Will there be someone available this week to accompany me on an inspection of this facility?

Regards,

Jonathan Mesher

Resource Managment Officer, Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada – CIRNAC
Jonathan.mesher@canada.ca
Fax: 867 979-6445
Cell #: 867-222-0118

From: Katie Oliver <koliver@kblenv.com>
Sent: Wednesday, September 21, 2022 3:50 PM
To: Pedersen, Baba <baba.pedersen@rcaanc-cirnac.gc.ca>; Pedersen, Baba (AADNC/AANDC) <baba.pedersen@canada.ca>; Mesher, Jonathan <jonathan.mesher@rcaanc-cirnac.gc.ca>
Cc: Murilo Marques <mmarques@kblenv.com>
Subject: RE: Cambridge Bay STF - Discharge Approval Request

Thanks Baba!

Jon – We are seeking approval to discharge water from the Cambridge Bay STF under NWB Water Licence No. 1BR-CST1723.

The table below summarizes recent samples from standing water results from snow melt in the soil treatment area, the facility drum storage area and the retention pond. Supporting certificate of analysis from the laboratory is attached for reference.

Parameter	Guideline mg/L	Facility drum storage area (**4300CBSTF-220909-CST1W**)	Retention Pond (**4300CBSTF-220909-CST1E**)	Soil Treatment Area (**4300CBSTF-220909-CSTN**)	Duplicate Sample (**4300CBSTF-220909-CST1W-DUPP)**
pH	6.0-9.0	7.93	8.00	8.16	7.96
TSS	50	3.5	8.5	4.1	10.3

Oil and Grease	15	<5.0	<5.0	<5.0	<5.0
Total Lead	0.001	0.000140	0.000230	0.000233	0.000159
Benzene	0.37	<0.50	<0.50	<0.50	<0.50
Toluene	0.002	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	0.09	<0.50	<0.50	<0.50	<0.50
Xylenes	0.18	<0.50	<0.50	<0.50	<0.50

Let me know if you have any questions,

Thank you | Merci | Mársı | Kinanāskomitin | Hąį' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsì

Katie Oliver
General Manager, Environmental Consulting

P 780.452.7779
C 780.893.3305

Box 1895, 17 Cameron Road
Yellowknife, NT X1A 2P4

From: Pedersen, Baba <baba.pedersen@rcaanc-cirnac.gc.ca>
Sent: September 21, 2022 1:39 PM
To: Katie Oliver <koliver@kblenv.com>; Pedersen, Baba (AADNC/AANDC) <baba.pedersen@canada.ca>; Mesher, Jonathan <jonathan.mesher@rcaanc-cirnac.gc.ca>
Cc: Murilo Marques <mmarques@kblenv.com>
Subject: Re: Cambridge Bay STF - Discharge Approval Request

Hello Katie,

CIRNAC now has an Inspector based in Cambridge Bay, his name is Jon Mesher, I have cc'd him above
Please correspond with Jon on this file moving forward

Koana,

Baba

From: Katie Oliver <koliver@kblenv.com>
Sent: Wednesday, September 21, 2022 7:21 PM
To: Pedersen, Baba (AADNC/AANDC) <baba.pedersen@canada.ca>
Cc: Murilo Marques <mmarques@kblenv.com>
Subject: Cambridge Bay STF - Discharge Approval Request

Hi Baba,

This email is seeking approval to discharge water from the facility under NWB Water Licence No. 1BR-CST1723.

The table below summarizes recent samples from standing water results from snow melt in the soil treatment area, the facility drum storage area and the retention pond. Supporting certificate of analysis from the laboratory is attached for reference.

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Let me know if you have any questions,

Thank you | Merci | Márs ı | Kinanāskomitin | Hąį' | Quana | Qujannamiik | Quyanainni | Máhs ı | Máhs ı | Mahsì

Katie Oliver, MBA, CET, PMP

General Manager, Environmental Consulting

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d: 587.601.5736

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3909, 68 Avenue
Leduc, AB T9E 0Z4

kblenv.com

APPENDIX B

Appendix B Laboratory Certificates of Analysis (COA)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **YL2201514**	Page	: 1 of 4
Client	: **KBL Environmental Ltd.**	Laboratory	: Yellowknife - Environmental
Contact	: Jeff Bembridge	Account Manager	: Oliver Gregg
Address	: 17 Cameron Road PO Box 1895 Yellowknife NT Canada X1A 2P4	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: 604 996 1110	Telephone	: 1 867 446 5593
Project	: 4300-CBSTF	Date Samples Received	: 12-Sep-2022 14:20
PO	: ----	Date Analysis Commenced	: 16-Sep-2022
C-O-C number	: ----	Issue Date	: 23-Sep-2022 13:25
Sampler	: Preni Jani		
Site	: ----		
Quote number	: KBLE YL		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Geoff Berg	Lab Analyst	Organics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Sample(s) XXX: Non-ALS methanol preservative vial submitted with VOC soil sample. Purity and volume of methanol cannot be verified by ALS. Reported test results assume a 10.0 mL volume of methanol.

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	4300CBSTF-220 909-SS1	4300CBSTF-220 909-SS2	4300CBSTF-220 909-SS3	4300CBSTF-220 909-SS4	4300CBSTF-220 909-SS5
					Client sampling date / time	09-Sep-2022	09-Sep-2022	09-Sep-2022	09-Sep-2022	09-Sep-2022
						YL2201514-001	YL2201514-002	YL2201514-003	YL2201514-004	YL2201514-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		8.55	7.76	5.98	7.02	7.23
Leachable Metals										
lead, leachable	7439-92-1	E441	0.010	mg/kg		<0.010	----	<0.010	<0.010	----
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		<0.200	<0.200	<0.200	<0.200	<0.200
styrene	100-42-5	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, m+p-	179601-23-1	E611A	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
xylene, o-	95-47-6	E611A	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
xylenes, total	1330-20-7	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	0.10	%		75.0	76.4	114	109	84.8
difluorobenzene, 1,4-	540-36-3	E611A	0.10	%		82.5	79.6	118	107	89.1
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	----	EC580	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	<10	<10	<10
VPHs	----	EC580A	10	mg/kg		<10	<10	<10	<10	<10
Hydrocarbons Surrogates										
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		73.8	73.2	97.0	87.4	72.8

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	4300CBSTF-220909-SS6	4300CBSTF-220909-SS7	4300CBSTF-220909-SS8	----	----
					Client sampling date / time	09-Sep-2022	09-Sep-2022	09-Sep-2022	----	----
						YL2201514-006	YL2201514-007	YL2201514-008	--------	--------
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.25	%		26.5	9.52	8.47	----	----
Leachable Metals										
lead, leachable	7439-92-1	E441	0.010	mg/kg		----	<0.010	----	----	----
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	----	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	<0.015	<0.015	----	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		<0.200	<0.200	<0.200	----	----
styrene	100-42-5	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
toluene	108-88-3	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
xylene, m+p-	179601-23-1	E611A	0.030	mg/kg		<0.030	<0.030	<0.030	----	----
xylene, o-	95-47-6	E611A	0.030	mg/kg		<0.030	<0.030	<0.030	----	----
xylenes, total	1330-20-7	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	0.10	%		82.8	89.4	114	----	----
difluorobenzene, 1,4-	540-36-3	E611A	0.10	%		85.0	92.5	122	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1	5.0	mg/kg		<5.0	<5.0	<5.0	----	----
F1-BTEX	----	EC580	5.0	mg/kg		<5.0	<5.0	<5.0	----	----
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	<10	----	----
VPHs	----	EC580A	10	mg/kg		<10	<10	<10	----	----
Hydrocarbons Surrogates										
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		76.4	78.4	97.1	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2201514**	Page	: 1 of 8
Client	: **KBL Environmental Ltd.**	Laboratory	: Yellowknife - Environmental
Contact	: Jeff Bembridge	Account Manager	: Oliver Gregg
Address	: 17 Cameron Road PO Box 1895 Yellowknife NT Canada X1A 2P4	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 604 996 1110	Telephone	: 1 867 446 5593
Project	: 4300-CBSTF	Date Samples Received	: 12-Sep-2022 14:20
PO	: ----	Issue Date	: 23-Sep-2022 13:28
C-O-C number	: ----		
Sampler	: Preni Jani		
Site	: ----		
Quote number	: KBLE YL		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS1	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS2	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS3	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS4	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS5	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS6	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 4300CBSTF-220909-SS7	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
4300CBSTF-220909-SS8	E581.VH+F1	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Leachable Metals : Leachable Metals in Soil/Solid by ICPMS										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS1	E441	09-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	180 days	13 days	✓
Leachable Metals : Leachable Metals in Soil/Solid by ICPMS										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS3	E441	09-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	180 days	13 days	✓
Leachable Metals : Leachable Metals in Soil/Solid by ICPMS										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS4	E441	09-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	180 days	13 days	✓
Leachable Metals : Leachable Metals in Soil/Solid by ICPMS										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS7	E441	09-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	180 days	13 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag										
4300CBSTF-220909-SS1	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS2	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag										
4300CBSTF-220909-SS3	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag										
4300CBSTF-220909-SS4	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS5	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS6	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag										
4300CBSTF-220909-SS7	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
4300CBSTF-220909-SS8	E144	09-Sep-2022	----	----	----		16-Sep-2022	----	----	
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS1	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS2	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS3	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS4	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS5	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS6	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS7	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
4300CBSTF-220909-SS8	E611A	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	40 days	7 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	650102	1	8	12.5	5.0	✓
Leachable Metals in Soil/Solid by ICPMS	E441	657720	1	4	25.0	5.0	✓
Moisture Content by Gravimetry	E144	650277	3	38	7.8	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	650101	1	8	12.5	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	650102	1	8	12.5	5.0	✓
Moisture Content by Gravimetry	E144	650277	3	38	7.8	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	650101	1	8	12.5	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	650102	1	8	12.5	5.0	✓
Leachable Metals in Soil/Solid by ICPMS	E441	657720	1	4	25.0	5.0	✓
Moisture Content by Gravimetry	E144	650277	3	38	7.8	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	650101	1	8	12.5	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	650102	1	8	12.5	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Edmonton - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Leachable Metals in Soil/Solid by ICPMS	E441 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	This analysis is carried out using a leaching procedure which involves the gentle tumbling of the sample in a specified leaching solution (typically deionized water) for a specific length of time. The resulting extract is then analysed by ICPMS.
VH and F1 by Headspace GC-FID	E581.VH+F1 Edmonton - Environmental	Soil/Solid	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BTEX by Headspace GC-MS	E611A Edmonton - Environmental	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Edmonton - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
VPH: VH-BTEX-Styrene	EC580A Edmonton - Environmental	Soil/Solid	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VH-BTEX = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach for Metals and Anions	EP441 Vancouver - Environmental	Soil/Solid	In-House	This analysis is carried out using a leaching procedure which involves the gentle tumbling of the sample in a specified leaching solution (typically deionized water) for a specific length of time.
VOCs Methanol Extraction for Headspace Analysis	EP581 Edmonton - Environmental	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **YL2201514**	Page	: 1 of 6
Client	: KBL Environmental Ltd.	Laboratory	: Yellowknife - Environmental
Contact	: Jeff Bembridge	Account Manager	: Oliver Gregg
Address	: 17 Cameron Road PO Box 1895 Yellowknife NT Canada X1A 2P4	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 604 996 1110	Telephone	: 1 867 446 5593
Project	: 4300-CBSTF	Date Samples Received	: 12-Sep-2022 14:20
PO	: ----	Date Analysis Commenced	: 16-Sep-2022
C-O-C number	: ----	Issue Date	: 23-Sep-2022 13:25
Sampler	: Preni Jani		
Site	: ----		
Quote number	: KBLE YL		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Geoff Berg	Lab Analyst	Edmonton Organics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Edmonton Organics, Edmonton, Alberta
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 650277)											
EO2207643-007	Anonymous	moisture	----	E144	0.25	%	27.4	26.8	2.28%	20%	----
Physical Tests (QC Lot: 650641)											
EO2207644-002	Anonymous	moisture	----	E144	0.25	%	17.2	17.8	3.62%	20%	----
Physical Tests (QC Lot: 650997)											
YL2201514-001	4300CBSTF-220909-SS1	moisture	----	E144	0.25	%	8.55	7.72	10.2%	20%	----
Leachable Metals (QC Lot: 657720)											
YL2201514-001	4300CBSTF-220909-SS1	lead, leachable	7439-92-1	E441	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 650102)											
YL2201514-001	4300CBSTF-220909-SS1	benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg	<0.200	<0.200	0	Diff <2x LOR	----
		styrene	100-42-5	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 650101)											
YL2201514-001	4300CBSTF-220909-SS1	F1 (C6-C10)	----	E581.VH+F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	<10	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 650277)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 650641)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 650997)						
moisture	----	E144	0.25	%	<0.25	----
Leachable Metals (QCLot: 657720)						
lead, leachable	7439-92-1	E441	0.01	mg/kg	<0.010	----
Volatile Organic Compounds (QCLot: 650102)						
benzene	71-43-2	E611A	0.005	mg/kg	<0.0050	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.04	mg/kg	<0.040	----
styrene	100-42-5	E611A	0.05	mg/kg	<0.050	----
toluene	108-88-3	E611A	0.05	mg/kg	<0.050	----
xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	<0.030	----
xylene, o-	95-47-6	E611A	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 650101)						
F1 (C6-C10)	----	E581.VH+F1	5	mg/kg	<5.0	----
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 650277)									
moisture	----	E144	0.25	%	50 %	99.4	90.0	110	----
Physical Tests (QCLot: 650641)									
moisture	----	E144	0.25	%	50 %	99.6	90.0	110	----
Physical Tests (QCLot: 650997)									
moisture	----	E144	0.25	%	50 %	98.2	90.0	110	----
Volatile Organic Compounds (QCLot: 650102)									
benzene	71-43-2	E611A	0.005	mg/kg	2.5 mg/kg	85.6	70.0	130	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg	2.5 mg/kg	82.3	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.04	mg/kg	2.5 mg/kg	93.4	70.0	130	----
styrene	100-42-5	E611A	0.05	mg/kg	2.5 mg/kg	87.4	70.0	130	----
toluene	108-88-3	E611A	0.05	mg/kg	2.5 mg/kg	83.4	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	5 mg/kg	88.4	70.0	130	----
xylene, o-	95-47-6	E611A	0.03	mg/kg	2.5 mg/kg	90.4	70.0	130	----
Hydrocarbons (QCLot: 650101)									
F1 (C6-C10)	----	E581.VH+F1	5	mg/kg	86 mg/kg	111	70.0	130	----
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	86 mg/kg	111	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 650102)										
YL2201514-002	4300CBSTF-220909-SS2	benzene	71-43-2	E611A	1.79 mg/kg	2.5 mg/kg	117	60.0	140	----
		ethylbenzene	100-41-4	E611A	1.64 mg/kg	2.5 mg/kg	107	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	1.92 mg/kg	2.5 mg/kg	125	60.0	140	----
		styrene	100-42-5	E611A	1.73 mg/kg	2.5 mg/kg	113	60.0	140	----
		toluene	108-88-3	E611A	1.66 mg/kg	2.5 mg/kg	108	60.0	140	----
		xylene, m+p-	179601-23-1	E611A	3.27 mg/kg	5 mg/kg	106	60.0	140	----
		xylene, o-	95-47-6	E611A	1.77 mg/kg	2.5 mg/kg	115	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	KBL Environment
Contact:	Katie Oliver
Phone:	780-893-3305
	Company address below will appear on the final report
Street:	3909, 68 Avenu
City/Province:	Leduc, AB
Postal Code:	T9E 0Z4
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: koliver@kblenv.com
Email 2: nprince@kblenv.com
Email 3: Kble esdat.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accounting@kblenv.com
Email 2:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:
Job #: 4300-CBSTF
PO / AFE: [redacted]
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#:
Major/Minor Code: | Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): YL2201514

ALS Contact: Oliver Gregg | Sampler: Preni Jani

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	CCME Metals (Plus Cr and Hg)	BTEX, F1-F4	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	4300CBSTF-220909-SS1	2022/09/09	[redacted]	Soil	4	X	X		
	4300CBSTF-220909-SS2	2022/09/09	[redacted]	Soil	3		X		
	4300CBSTF-220909-SS3	2022/09/09	[redacted]	Soil	4	X	X		
	4300CBSTF-220909-SS4	2022/09/09	[redacted]	Soil	4	X	X		
	4300CBSTF-220909-SS5	2022/09/09	[redacted]	Soil	3		X		
	4300CBSTF-220909-SS6	2022/09/09	[redacted]	Soil	3		X		
	4300CBSTF-220909-SS7	2022/09/09	[redacted]	Soil	4	X	X		
	4300CBSTF-220909-SS8	2022/09/09	[redacted]	Soil	3		X		

Environmental Division
Yellowknife
Work Order Reference
YL2201514

Telephone : +1 867 873 5593

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
6.3	

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
[signature]	Sept 12/22	14:23

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
[signature]	SEPT 12/22	14:20

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NOV 2018 FRONT

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

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **YL2201517**	Page	: 1 of 4
Client	: **KBL Environmental Ltd.**	Laboratory	: Yellowknife - Environmental
Contact	: Katie Oliver	Account Manager	: Oliver Gregg
Address	: 17 Cameron Road PO Box 1895 Yellowknife NT Canada X1A 2P4	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: 780 893 3305	Telephone	: 1 867 446 5593
Project	: ----	Date Samples Received	: 12-Sep-2022 14:20
PO	: ----	Date Analysis Commenced	: 16-Sep-2022
C-O-C number	: ----	Issue Date	: 20-Sep-2022 16:48
Sampler	: Preni Jani		
Site	: ----		
Quote number	: YL22-KBLE100-001		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	4300CBSTF-220909-CST1W	4300CBSTF-220909-CST1E	4300CBSTF-220909-CST1N	4300CBSTF-220909-CST1W-DUPP	----
					Client sampling date / time	09-Sep-2022	09-Sep-2022	09-Sep-2022	09-Sep-2022	----
						YL2201517-001	YL2201517-002	YL2201517-003	YL2201517-004	--------
						Result	Result	Result	Result	----
Physical Tests										
pH	----	E108	0.10	pH units		7.93	8.00	8.16	7.96	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		3.5	8.5	4.1	10.3	----
Total Metals										
lead, total	7439-92-1	E420	0.000050	mg/L		0.000140	0.000230	0.000233	0.000159	----
Aggregate Organics										
oil & grease (gravimetric)	----	E567	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	----
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	----
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	----
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		94.8	94.9	95.6	93.0	----
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		100	100	100	100	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1	100	µg/L		<100	<100	<100	<100	----
F2 (C10-C16)	----	E601	300	µg/L		<300	<300	<300	<300	----
F3 (C16-C34)	----	E601	300	µg/L		<300	<300	<300	<300	----
F4 (C34-C50)	----	E601	300	µg/L		<300	<300	<300	<300	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L		<100	<100	<100	<100	----
F1-BTEX	----	EC580	100	µg/L		<100	<100	<100	<100	----
VPHw	----	EC580A	100	µg/L		<100	<100	<100	<100	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		83.3	85.2	86.4	85.7	----
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		102	121	107	98.1	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2201517**	Page	: 1 of 9
Client	: **KBL Environmental Ltd.**	Laboratory	: Yellowknife - Environmental
Contact	: Katie Oliver	Account Manager	: Oliver Gregg
Address	: 17 Cameron Road PO Box 1895 Yellowknife NT Canada X1A 2P4	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 780 893 3305	Telephone	: 1 867 446 5593
Project	: ----	Date Samples Received	: 12-Sep-2022 14:20
PO	: ----	Issue Date	: 20-Sep-2022 16:48
C-O-C number	: ----		
Sampler	: Preni Jani		
Site	: ----		
Quote number	: YL22-KBLE100-001		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
4300CBSTF-220909-CST1E	E567	09-Sep-2022	18-Sep-2022	28 days	9 days	✓	18-Sep-2022	40 days	0 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
4300CBSTF-220909-CST1N	E567	09-Sep-2022	18-Sep-2022	28 days	9 days	✓	18-Sep-2022	40 days	0 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
4300CBSTF-220909-CST1W	E567	09-Sep-2022	18-Sep-2022	28 days	9 days	✓	18-Sep-2022	40 days	0 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
4300CBSTF-220909-CST1W-DUPP	E567	09-Sep-2022	18-Sep-2022	28 days	9 days	✓	18-Sep-2022	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
4300CBSTF-220909-CST1E	E601	09-Sep-2022	19-Sep-2022	14 days	11 days	✓	20-Sep-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
4300CBSTF-220909-CST1N	E601	09-Sep-2022	19-Sep-2022	14 days	11 days	✓	20-Sep-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
4300CBSTF-220909-CST1W	E601	09-Sep-2022	19-Sep-2022	14 days	11 days	✓	20-Sep-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
4300CBSTF-220909-CST1W-DUPP	E601	09-Sep-2022	19-Sep-2022	14 days	11 days	✓	20-Sep-2022	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
4300CBSTF-220909-CST1E	E581.VH+F1	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
4300CBSTF-220909-CST1N	E581.VH+F1	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
4300CBSTF-220909-CST1W	E581.VH+F1	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
4300CBSTF-220909-CST1W-DUPP	E581.VH+F1	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓
Physical Tests : pH by Meter										
HDPE										
4300CBSTF-220909-CST1E	E108	09-Sep-2022	16-Sep-2022	----	----		18-Sep-2022	0.25 hrs	39.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
4300CBSTF-220909-CST1N	E108	09-Sep-2022	16-Sep-2022	----	----		18-Sep-2022	0.25 hrs	39.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
4300CBSTF-220909-CST1W	E108	09-Sep-2022	16-Sep-2022	----	----		18-Sep-2022	0.25 hrs	39.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
4300CBSTF-220909-CST1W-DUPP	E108	09-Sep-2022	16-Sep-2022	----	----		18-Sep-2022	0.25 hrs	39.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE 4300CBSTF-220909-CST1E	E160	09-Sep-2022	----	----	----		16-Sep-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 4300CBSTF-220909-CST1N	E160	09-Sep-2022	----	----	----		16-Sep-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 4300CBSTF-220909-CST1W	E160	09-Sep-2022	----	----	----		16-Sep-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 4300CBSTF-220909-CST1W-DUPP	E160	09-Sep-2022	----	----	----		16-Sep-2022	7 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4300CBSTF-220909-CST1E	E420	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4300CBSTF-220909-CST1N	E420	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4300CBSTF-220909-CST1W	E420	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4300CBSTF-220909-CST1W-DUPP	E420	09-Sep-2022	16-Sep-2022	----	----		16-Sep-2022	180 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 4300CBSTF-220909-CST1E	E611A	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 4300CBSTF-220909-CST1N	E611A	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 4300CBSTF-220909-CST1W	E611A	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 4300CBSTF-220909-CST1W-DUPP	E611A	09-Sep-2022	17-Sep-2022	----	----		17-Sep-2022	14 days	8 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	651815	1	20	5.0	5.0	✓
pH by Meter	E108	651160	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	651075	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	650749	1	11	9.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	651814	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	651815	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	654308	1	6	16.6	5.0	✓
Oil & Grease by Gravimetry	E567	652801	1	9	11.1	5.0	✓
pH by Meter	E108	651160	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	651075	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	650749	1	11	9.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	651814	1	20	5.0	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	651815	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	654308	1	6	16.6	5.0	✓
Oil & Grease by Gravimetry	E567	652801	1	9	11.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	651075	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	650749	1	11	9.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	651814	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	651815	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	651075	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	651814	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Oil & Grease by Gravimetry	E567 Vancouver - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
VH and F1 by Headspace GC-FID	E581.VH+F1 Vancouver - Environmental	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
CCME PHCs - F2-F4 by GC-FID	E601 Vancouver - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4).
BTEX by Headspace GC-MS	E611A Vancouver - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Vancouver - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
VPH: VH-BTEX-Styrene	EC580A Vancouver - Environmental	Water	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Oil & Grease Extraction for Gravimetry	EP567 Vancouver - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 Vancouver - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **YL2201517**	Page	: 1 of 6
Client	: KBL Environmental Ltd.	Laboratory	: Yellowknife - Environmental
Contact	: Katie Oliver	Account Manager	: Oliver Gregg
Address	: 17 Cameron Road PO Box 1895 Yellowknife NT Canada X1A 2P4	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 780 893 3305	Telephone	: 1 867 446 5593
Project	: ----	Date Samples Received	: 12-Sep-2022 14:20
PO	: ----	Date Analysis Commenced	: 16-Sep-2022
C-O-C number	: ----	Issue Date	: 20-Sep-2022 16:48
Sampler	: Preni Jani		
Site	: ----		
Quote number	: YL22-KBLE100-001		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 650749)											
VA22C1919-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 651160)											
FJ2202583-003	Anonymous	pH	----	E108	0.10	pH units	5.28	5.30	0.284%	4%	----
Total Metals (QC Lot: 651075)											
YL2201517-001	4300CBSTF-220909-CST1 W	lead, total	7439-92-1	E420	0.000050	mg/L	0.000140	0.000146	0.000006	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 651815)											
FJ2202546-001	Anonymous	benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 651814)											
FJ2202546-001	Anonymous	F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----
		VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 650749)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Total Metals (QCLot: 651075)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Aggregate Organics (QCLot: 652801)						
oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Volatile Organic Compounds (QCLot: 651815)						
benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 651814)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 654308)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 650749)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	102	85.0	115	----
Physical Tests (QCLot: 651160)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Total Metals (QCLot: 651075)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
Aggregate Organics (QCLot: 652801)									
oil & grease (gravimetric)	----	E567	5	mg/L	100 mg/L	94.4	70.0	130	----
Volatile Organic Compounds (QCLot: 651815)									
benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	96.6	70.0	130	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	101	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	98.0	70.0	130	----
styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	101	70.0	130	----
toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	98.3	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	102	70.0	130	----
xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	99.3	70.0	130	----
Hydrocarbons (QCLot: 651814)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	83.4	70.0	130	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	86.2	70.0	130	----
Hydrocarbons (QCLot: 654308)									
F2 (C10-C16)	----	E601	100	µg/L	3538 µg/L	109	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7053 µg/L	106	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5051 µg/L	97.2	70.0	130	----

Matrix Spike (MS) Report

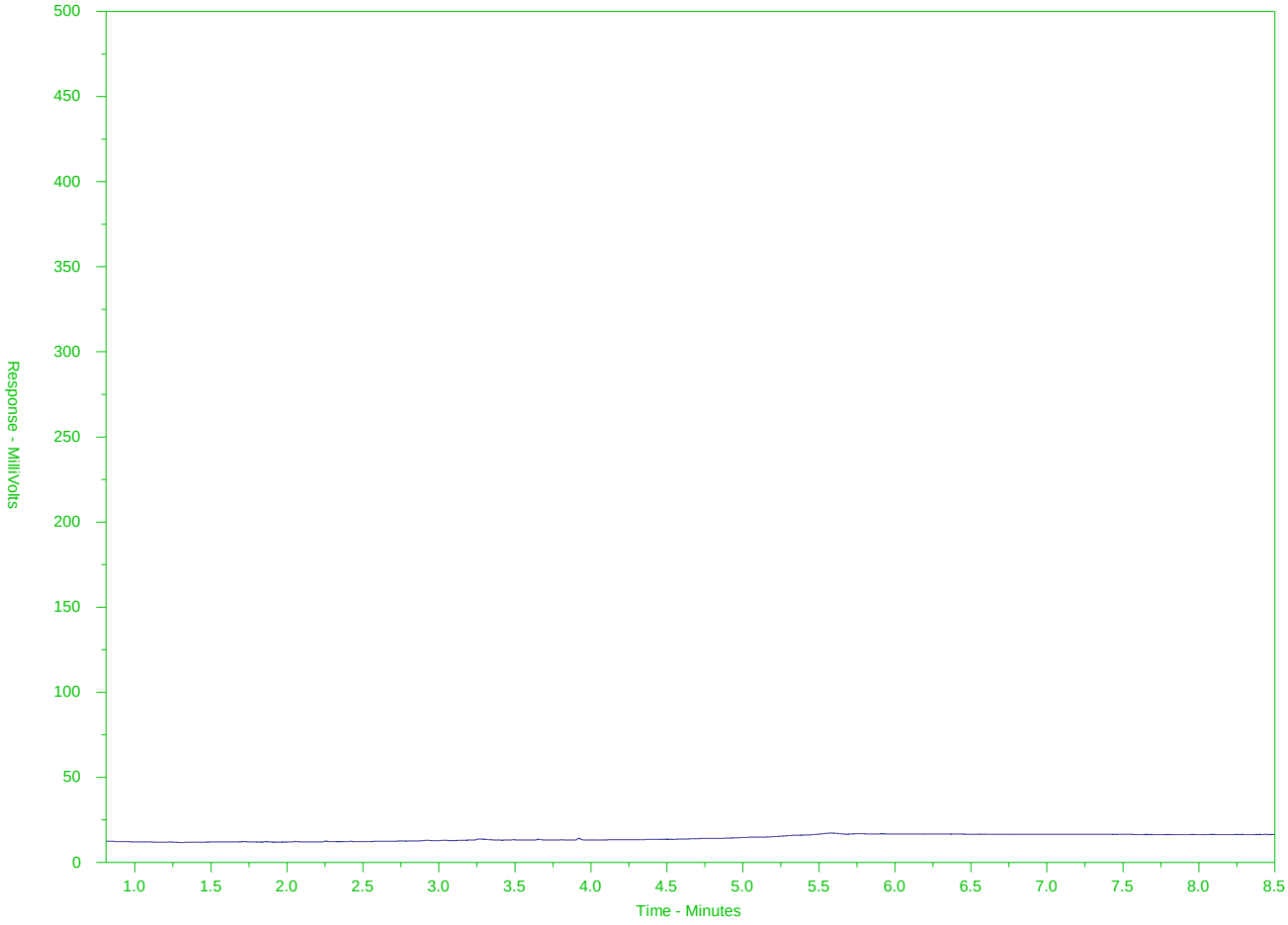
A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 651075)										
YL2201517-002	4300CBSTF-220909-CST1E	lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
Volatile Organic Compounds (QCLot: 651815)										
FJ2202546-001	Anonymous	benzene	71-43-2	E611A	93.7 µg/L	100 µg/L	93.7	60.0	140	----
		ethylbenzene	100-41-4	E611A	97.5 µg/L	100 µg/L	97.5	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		styrene	100-42-5	E611A	99.6 µg/L	100 µg/L	99.6	60.0	140	----
		toluene	108-88-3	E611A	94.2 µg/L	100 µg/L	94.2	60.0	140	----
		xylene, m+p-	179601-23-1	E611A	198 µg/L	200 µg/L	98.8	60.0	140	----
		xylene, o-	95-47-6	E611A	97.2 µg/L	100 µg/L	97.2	60.0	140	----
Hydrocarbons (QCLot: 651814)										
FJ2202546-002	Anonymous	F1 (C6-C10)	----	E581.VH+F1	4360 µg/L	6310 µg/L	69.2	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	4530 µg/L	6310 µg/L	71.8	60.0	140	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: YL2201517-001-E601
Client Sample ID: 4300CBSTF-220909-CST1W



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
←Gasoline→	← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

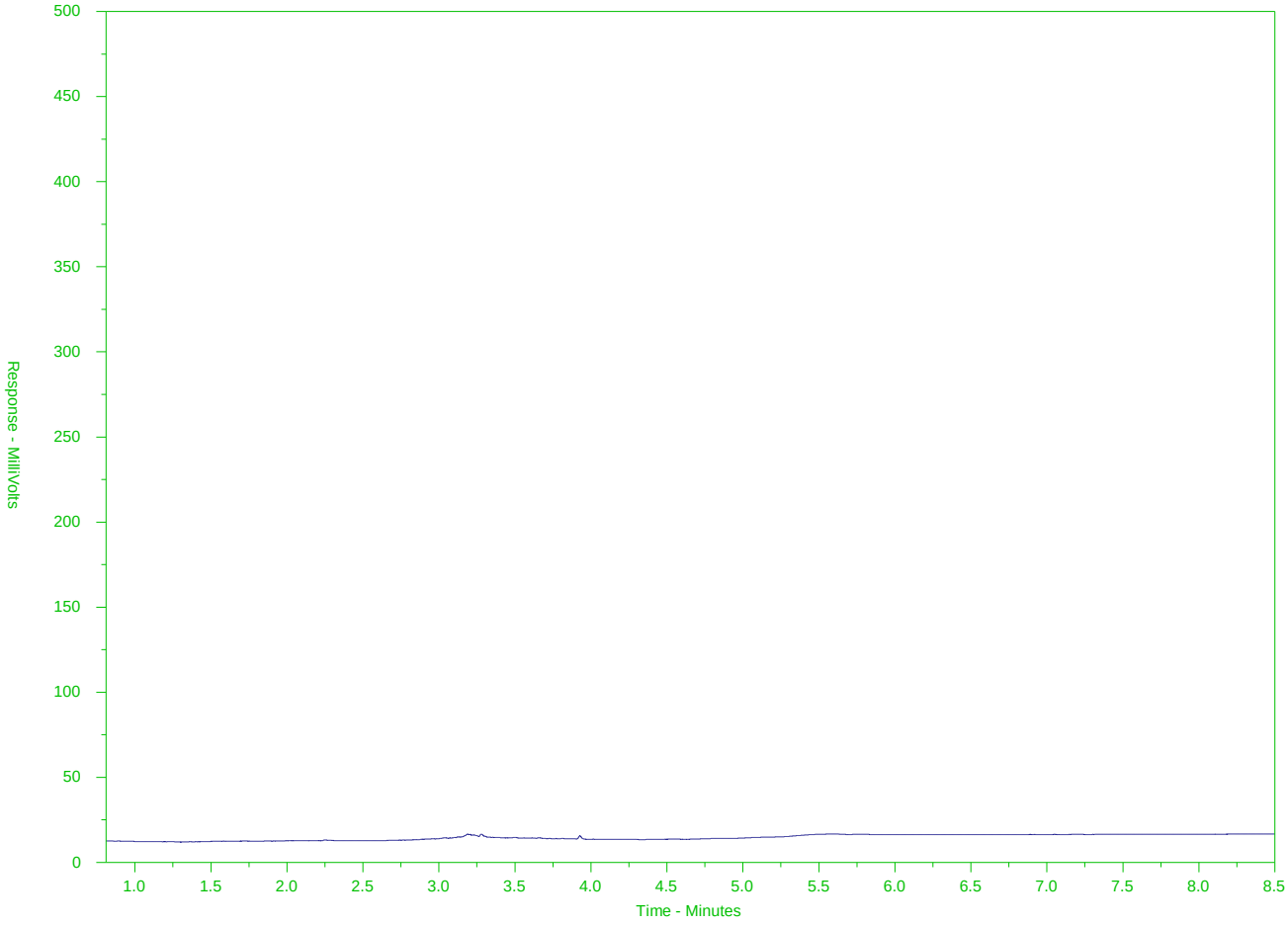
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: YL2201517-002-E601
Client Sample ID: 4300CBSTF-220909-CST1E



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
←Gasoline→	← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

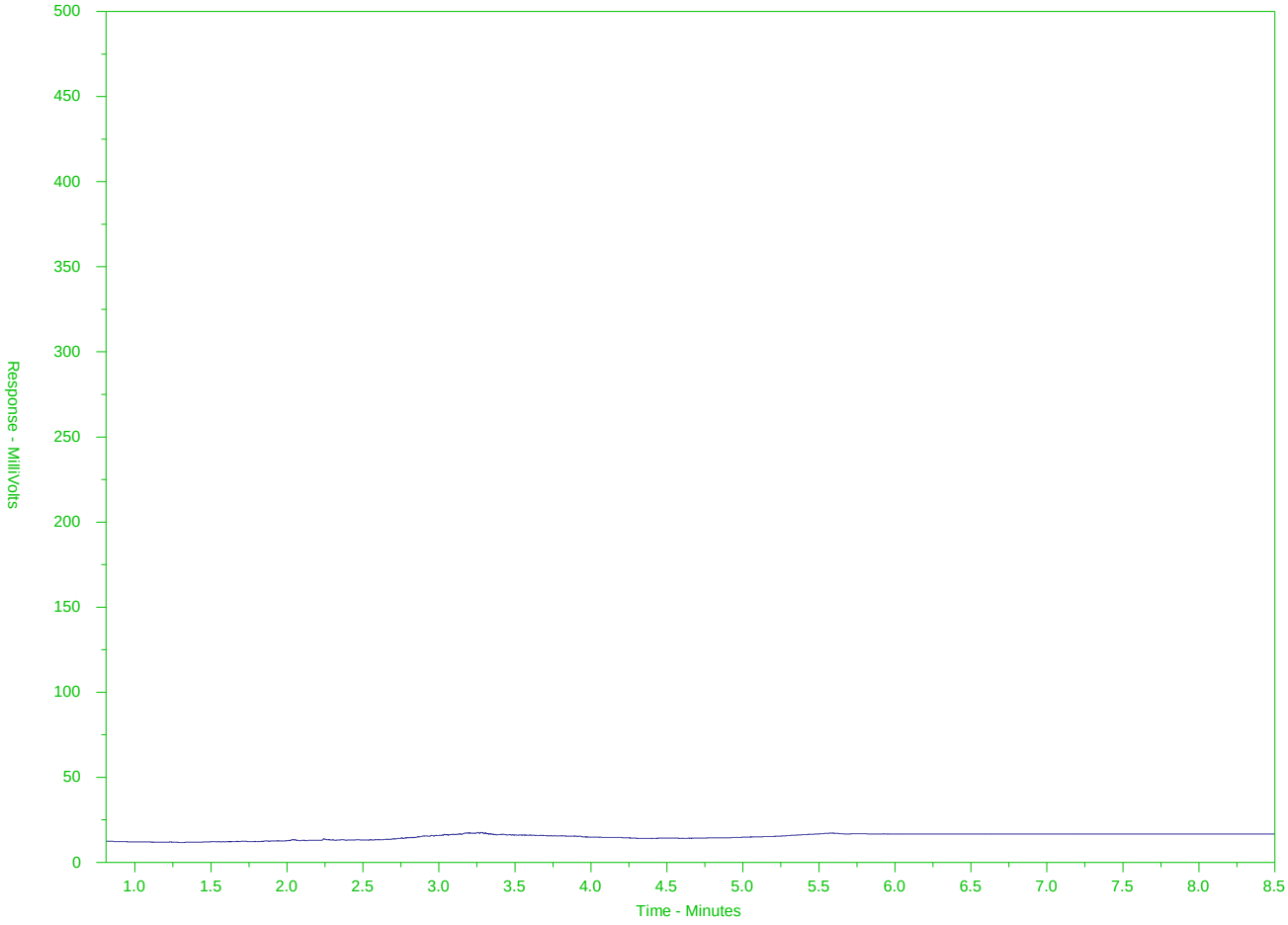
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: YL2201517-003-E601
Client Sample ID: 4300CBSTF-220909-CST1N



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
←Gasoline→	← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

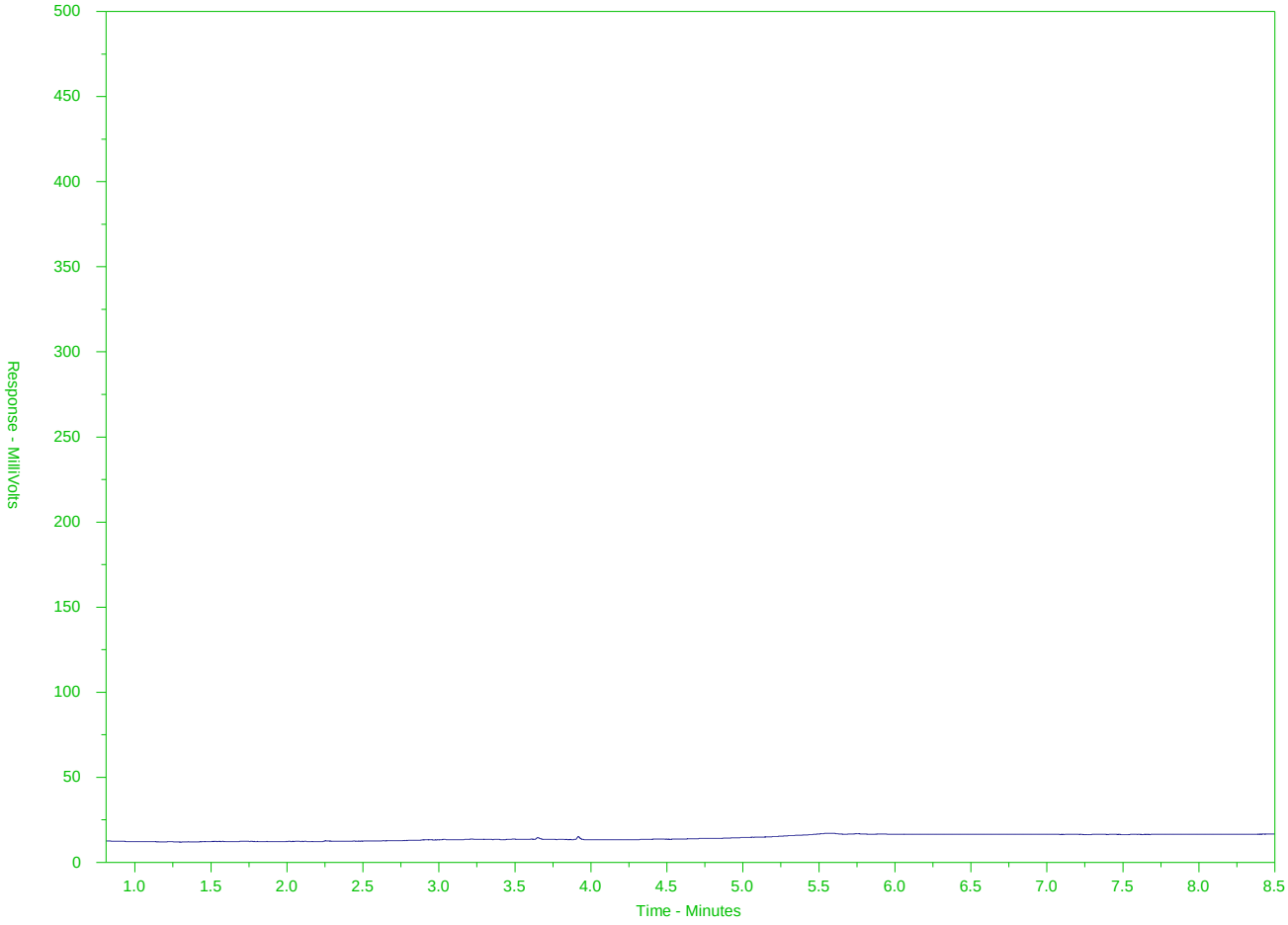
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: YL2201517-004-E601
Client Sample ID: 4300CBSTF-220909-CST1W-DUPP



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
←Gasoline→	← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	KBL Environment
Contact:	Katie Oliver
Phone:	780-893-3305
	Company address below will appear on the final report
Street:	3909, 68 Avenu
City/Province:	Leduc, AB
Postal Code:	T9E 0Z4
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: koliver@kblenv.com

Email 2: nprince@kblenv.com

Email 3: Kblesdat.net

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accounting@kblenv.com

Email 2:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:

Job #: 4300-CBSTF

PO / AFE: [redacted]

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only):

ALS Contact: Oliver Gregg Sampler: Preni Jani

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	pH	TSS	Oil and Grease	Total Lead	BTEX, F1-F4	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	4300CBSTF-220909-CST1W	2022/09/09	[redacted]	Water	1	X	X	X	X	X		
	4300CBSTF-220909-CST1E	2022/09/09	[redacted]	Water	1	X	X	X	X	X		
	4300CBSTF-220909-CST1N	2022/09/09	[redacted]	Water	1	X	X	X	X	X		
	4300CBSTF-220909-CST1W-DUPP	2022/09/09	[redacted]	Water	1	X	X	X	X	X		

Environmental Division
Yellowknife
Work Order Reference
YL2201517

Telephone : +1 867 873 5593

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7.7							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Preni Jani	Sept 12/22	14:23

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
BA	SEPT 17/22	14:20

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

APPENDIX C

Appendix C Nunavut Water Board Annual Reporting Form

NWB Annual Report **Year being reported:** Select 2021

License No: 1BR-CST1723 **Issued Date:** March 23, 2017
Expiry Date: March 22, 2023

Project Name: Cambridge Bay Soil and Water Treatment Facility Project

Licensee: Kitikmeot Environmental Ltd.

Mailing Address: P.O. Box 92, OMILIK Cambridge Bay, NU, X0B 0C0

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

Kitikmeot Environmental Ltd.

General Background Information on the Project (*optional):

Licence Requirements: the licensee must provide the following information in accodance with

Part B Item 1

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s):

Water Quantity:

	Quantity Allowable Domestic (cu.m)
	Actual Quantity Used Domestic (cu.m)
	Quantity Allowable Drilling (cu.m)
	Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

- ☐ Solid Waste Disposal
- ☐ Sewage
- ☐ Drill Waste
- ☐ Greywater
- ☐ Hazardous
- ☑ Other: Soil and water treatment facility

Additional Details:

Please refer to 2022 Annual Report

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: NA (as reported to the Spill Hot-line)
Date of Spill:
Date of Notification to an Inspector:
Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Revisions to the Spill Contingency Plan

SCP submitted and approved - no revision required or proposed

Additional Details:

Revisions to the Abandonment and Restoration Plan

AR plan submitted and approved - no revision required or proposed

Additional Details:

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

Results of the Monitoring Program including:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;

Details attached

Additional Details:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Details attached

Additional Details:

Results of any additional sampling and/or analysis that was requested by an Inspector

No additional sampling requested by an Inspector or the Board

Additional Details: (date of request, analysis of results, data attached, etc)

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

No additional sampling requested by an Inspector or the Board

Additional Details: (Attached or provided below)

Any responses or follow-up actions on inspection/compliance reports

No inspection and/or compliance report issued by INAC

Additional Details: (Dates of Report, Follow-up by the Licensee)

Any additional comments or information for the Board to consider

Date Submitted:	March 31, 2023	
Submitted/Prepared by:	Katie Oliver	
Contact Information:	**Tel:**	780.452.7779
	Fax:	866.316.7991
	email:	koliver@kblenv.com

APPENDIX D

Appendix D Tabulated Results of Monitoring Program

Table 1: Surface Water Sampling
Date: September 9, 2022
Cambridge Bay Soil Treatment Facility

Sample Location	Date	Parameter	pH	TSS	Oil and Grease	Total Lead	Benzene	Toluene	Ethylbenzene	Xylenes
Nunavut Water Board Licence 1BR-CST1723 Discharge Limit			6.0-9.0	50	15	0.001	0.37	0.002	0.09	0.18
CST-1 E (pond 2)	09-09-2022	(4300CBSTF-220909-CST1W)	7.93	3.5	<5.0	0.00014	<0.50	<0.50	<0.50	<0.50
CST-1 E (pond 2)	09-09-2022	(4300CBSTF-220909-CST1W-DUPP)	7.96	10.3	<5.0	0.000159	<0.50	<0.50	<0.50	<0.50
CST-1 W (pond 1)	09-09-2022	(4300CBSTF-220909-CST1E)	8	8.5	<5.0	0.00023	<0.50	<0.50	<0.50	<0.50
CST-1 N (standing water on the soil pad)	09-09-2022	(4300CBSTF-220909-CSTN)	8.16	4.1	<5.0	0.000233	<0.50	<0.50	<0.50	<0.50