Clean Harbors Canada, Ltd.

Annual Runoff and Industrial Wastewater Report

February 8, 2024

ANNUAL RUNOFF and INDUSTRIAL WASTEWATER REPORT – 2023

1. Introduction

Approval 10348-03-01 Section 4.3: Runoff and Industrial Wastewater requires Clean Harbors to monitor the runoff control system, as required in TABLE 4.3-D and TABLE 4.3-E. Section 4.3.19 requires Clean Harbors to submit the Annual Runoff and Industrial Wastewater Report in TABLE 4.3-D to the Director. The minimum contents of the Annual Runoff and Industrial Wastewater Report are described in Section 4.3.20 with an additional requirement outlined in Section 4.3.22. These monitoring and reporting requirements are summarized in Table A.

Table A Concordance with the *Environmental Protection and Enhancement Act* Approval No 10348-03-01, Section 4.3: Runoff and Industrial Wastewater

Approval Section Number	Requirement	Location
4.3.19	The Annual Runoff and Industrial Wastewater Report shall include, at a minimum, all the following information:	
4.3.19(a)	An annual summary assessment of the monitoring results relative to the limits in TABLE 4.3-B;	Section 2, Appendices A, B & C
4.3.19(b)	An annual summary assessment of the monitoring results relative to the limits in TABLE 4.3-C;	Section 3
4.3.19(c)(i)	An annual summary assessment of the performance of the: runoff control system,	Section 4
4.3.19(c)(ii)	An annual summary assessment of the performance of the: pollution abatement equipment, and	Section 5
4.3.19(c)(iii)	An annual summary assessment of the performance of the: monitoring equipment;	Section 6
4.3.19(d)(i)	An annual summary of management and disposal of the: industrial wastewaters as per 4.3.7, and	Section 7
4.3.19(d)(ii)	An annual summary of management and disposal of the: specified runoff as per 4.3.7;	Section 8
4.3.19(e)	An annual summary and evaluation of management and disposal of runoff in general;	Section 9
4.3.19(f)	An annual summary of the results pursuant to 4.3.22;	Section 10, Tables 1 & 2, Appendix D
4.3.19(g)	An annual summary of runoff contraventions reported pursuant to 2.1.1; and	Section 11
4.3.19(h)	Any other information as required in writing by the Director.	Section 12

2. Assessment of Surface Water Detention Pond Monitoring Results

Pond B received surface water from the landfill facility in 2023. Pond C collects water from the non-regulated maintenance and parking area adjacent to the landfill. A new pond was constructed as part of the landfill expansion undertaken in 2023. Pond D is designed to collect water from the newly constructed "tipping pad" for the landfill. No water was discharged from Pond D in 2023 so no discharge criteria analyses were performed. The pond was sampled as per TABLE 4.3-E and these results are reported in Section 10 and Appendix C.

Ponds B and C were sampled on July 10, 2023. The results were received from ALS Labs on July 13th. The results from Pond B did not meet the discharge criteria for sodium. Pond B was resampled on July 12th and 13th after precipitation events. The July 12th sample did not meet the criteria for sodium, but the July 13th sample did meet the criteria. Discharge began July 20th and continued to July 31st. A total of 25, 248 m^3 were discharged during the pumping event.

Pond B was sampled on October 5th. The results for Pond B were received from ALS Labs on October 6th. All parameters met the discharge criteria except the COD concentration. Pond B was resampled on October 10th for COD analysis, bioassay, and for oil & other substances. The COD result was received on October 13th and the bioassay and oil & other substances results were received on October 18th. All results met the discharge criteria. Discharge commenced on October 19th and ended on October 22nd. A total of 10,099 m^3 was discharged during the pumping event. No water was discharged from Pond C in October.

A comparison of the Pond B monitoring results for each sampling/discharge event and the discharge criteria is shown in the Table below. The analytical reports can be found in Appendices A and B.

Parameter	**Limit**	July 10 Not discharged	July 12 Not discharged	July 13	Oct 5 Not discharged	Oct 10
pH	6.0 – 9.5	8.46			8.1	
COD, mg/L	50	45			54	47
Total Dissolved Solids, mg/L	2500	850			630	
Total Suspended Solids, mg/L	25	10.6			22	
Ammonia, Total Dissolved (as N) mg/L	5	0.168			2.62	
Chloride, mg/L	250	41.3			13.3	
Sodium, mg/L	200	225	227	196	148	
Sulphate, mg/L	500	442			231	
Oil or other substances	No visible sheen	No visible sheen			Not tested	No visible sheen
Rainbow Trout	50% or greater survival	Pass			Not tested	Pass
Daphnia Magna		Pass			Not tested	Pass

A comparison of the Pond C monitoring results for the discharge event and the discharge criteria is shown in the Table below. The analytical report can be found in Appendices A.

Parameter	**Limit**	July 10
pH	6.0 – 9.5	8.53
COD, mg/L	50	39
Total Dissolved Solids, mg/L	2500	778
Total Suspended Solids, mg/L	25	7
Ammonia, Total Dissolved (as N) mg/L	5	0.0597
Chloride, mg/L	250	61.9
Sodium, mg/L	200	187
Sulphate, mg/L	500	384
Oil or other substances	No visible sheen	No visible sheen
Rainbow Trout	50% or greater survival	Pass
Daphnia Magna		Pass

3. Assessment of Tank Farm Bermed Area Monitoring Results

No liquid from the tank farm bermed area was discharged to surface in 2023.

4. Assessment of the performance of the run-off control system.

The run-off control system functioned as designed in 2023. There were no issues with the performance and operation of the run-off control system.

5. Assessment of the performance of the pollution abatement equipment

The pollution abatement equipment functioned as designed in 2023. There were no issues with the performance and operation of the pollution abatement systems.

6. Assessment of the performance of the monitoring equipment

The monitoring equipment functioned as designed in 2023. There were no issues with the performance and operation of the monitoring equipment.

7. Summary of the management and disposal of industrial wastewaters

Industrial wastewater from the operation of the Hazardous Waste/Recyclable Storage and Processing Facility (HWRSP) was solidified and landfilled.

8. Summary of the management and disposal of specified runoff

In 2023 no runoff exceeded the limits for the parameters listed in TABLE 4.3-B or required disposal before the results of the parameters in TABLE 4.3-B were available. Water from the tank farm bermed area was solidified and landfilled.

9. Summary and evaluation of the management and disposal of runoff

Pond B and Pond C water that met the criteria of TABLE 4.3-B was discharged to surface as required by Sections 4.3.5 and 4.3.6.
The monthly discharge volumes are provided in the Table below.

	July 20 - 31	May 20 - 26
Pond B	22,587 m^3	10,099 m^3
Pond C	2561 m^3	0

10. Summary of the results pursuant to 4.3.22

In 2023 Clean Harbors sampled Ponds B, C, and D as per TABLE 4.3-E. The September analytical results are summarized in Tables 1, 2, and 3 on the following pages. Copies of the complete analytical reports are included in Appendix C.

11. Summary of runoff contraventions reported pursuant to 2.1.1

No runoff contraventions pursuant to 2.1.1 occurred in 2023.

12. Any other information required by the Director.

The Director has not required any additional information.

Table 1: Pond B – Annual Monitoring Summary

Parameter	Result	Parameter	Result
pH	8.73	Electrical conductivity	874 uS/cm
COD	37 mg/L	DOC	12.0 mg/L
Total Dissolved Solids	572 mg/L	Total Suspended Solids	23.6 mg/L
Fluoride, dissolved	1.53 mg/L	Cyanide, (weak acid dissociable)	<0.005 mg/L
Phenols	0.0019 mg/L	Total chlorinated phenols	All analyzed chlorophenols were less than detection limit
Polychlorinated biphenyls, total	<0.06 ug/L	Total organic halogens	<0.020 mg/L
Petroleum Hydrocarbons Fraction F1 (C6-C10)	<100 ug/L	Petroleum Hydrocarbons Fraction F2 (C10-C16)	<100 ug/L
Benzene	<0.50 ug/L	Toluene	<0.50 ug/L
Ethylbenzene	<0.50 ug/L	Xylenes (total)	<0.50 ug/L
Ammonia nitrogen	0.401 mg/L	Total Kjeldahl nitrogen	1.24 mg/L
Nitrate nitrogen	0.145 mg/L	Nitrite nitrogen	<0.010 mg/L
Total phosphorous	0.392 mg/L	Dissolved phosphorous	0.321 mg/L
Calcium	35.7 mg/L	Magnesium	11.3 mg/L
Sodium	139 mg/L	Potassium	5.39 mg/L
Carbonate	12.7 mg/L	Bicarbonate	173 mg/L
Chloride	26.1 mg/L	Sulfate	241 mg/L
Aluminum, dissolved	0.0346 mg/L	Antimony, dissolved	0.00083 mg/L
Arsenic, dissolved	0.00461 mg/L	Barium, dissolved	0.0487 mg/l
Boron, dissolved	0.174 mg/L	Cadmium, dissolved	0.000219 mg/L
Chromium, total	0.00160 mg/L	Chromium, dissolved (+6)	<0.00050 mg/L
Cobalt, dissolved	0.00083 mg/L	Copper, dissolved	0.00551 mg/L
Lead, dissolved	0.000085 mg/L	Manganese, dissolved	0.00804 mg/L
Mercury, total	<0.0000050 mg/L	Molybdenum, dissolved	0.722 mg/L
Nickel, dissolved	0.0174 mg/L	Selenium, dissolved	0.00186 mg/L
Silver, dissolved	<0.000010 mg/L	Thallium, dissolved	<0.00001 mg/L
Tin, dissolved	<0.00010 mg/L	Uranium, dissolved	0.00333 mg/L
Zinc, dissolved	0.0034 mg/L		

Table 2: Pond C – Annual Monitoring Summary

Parameter	Result	Parameter	Result
pH	8.94	Electrical conductivity	914 uS/cm
COD	58 mg/L	DOC	9.95 mg/L
Total Dissolved Solids	603 mg/L	Total Suspended Solids	14.6 mg/L
Fluoride, dissolved	0.700 mg/L	Cyanide, (weak acid dissociable)	<0.005 mg/L
Phenols	0.0012 mg/L	Total chlorinated phenols	All analyzed chlorophenols were less than detection limit
Polychlorinated biphenyls, total	<0.060 ug/L	Total organic halogens	0.020 mg/L
Petroleum Hydrocarbons Fraction F1 (C6-c10)	<100 ug/L	Petroleum Hydrocarbons Fraction F2 (C10-C16)	<100 ug/L
Benzene	<0.50 ug/L	Toluene	<0.50 ug/L
Ethylbenzene	<0.50 ug/L	Xylenes (total)	<0.50 ug/L
Ammonia nitrogen	0.0218 mg/L	Total Kjeldahl nitrogen	1.12 mg/L
Nitrate nitrogen	<0.020 mg/L	Nitrite nitrogen	<0.010 mg/L
Total phosphorous	0.040 mg/L	Dissolved phosphorous	<0.020 mg/L
Calcium	35.9 mg/L	Magnesium	12.2 mg/L
Sodium	145 mg/L	Potassium	4.58 mg/L
Carbonate	13.8 mg/L	Bicarbonate	141 mg/L
Chloride	49.9 mg/L	Sulfate	258 mg/L
Aluminum, dissolved	0.0134 mg/L	Antimony, dissolved	0.00055 mg/L
Arsenic, dissolved	0.00348 mg/L	Barium, dissolved	0.0147 mg/l
Boron, dissolved	0.057 mg/L	Cadmium, dissolved	0.0000238 mg/L
Chromium, total	<0.0050 mg/L	Chromium, dissolved (+6)	<0.0005 mg/L
Cobalt, dissolved	0.00018 mg/L	Copper, dissolved	0.00275 mg/L
Lead, dissolved	<0.000050 mg/L	Manganese, dissolved	0.00953 mg/L
Mercury, total	<0.0000050 mg/L	Molybdenum, dissolved	0.0835 mg/L
Nickel, dissolved	0.00705 mg/L	Selenium, dissolved	0.000536 mg/L
Silver, dissolved	<0.000010 mg/L	Thallium, dissolved	<0.000010 mg/L
Tin, dissolved	<0.00010 mg/L	Uranium, dissolved	0.00163 mg/L
Zinc, dissolved	0.0016 mg/L		

Table 3: Pond D – Annual Monitoring Summary

Parameter	Result	Parameter	Result
pH	9.85	Electrical conductivity	1280 uS/cm
COD	55 mg/L	DOC	8.24 mg/L
Total Dissolved Solids	873 mg/L	Total Suspended Solids	39.2 mg/L
Fluoride, dissolved	1.25 mg/L	Cyanide, (weak acid dissociable)	<0.005 mg/L
Phenols	<0.0010 mg/L	Total chlorinated phenols	All analyzed chlorophenols were less than detection limit
Polychlorinated biphenyls, total	<0.060 ug/L	Total organic halogens	0.020 mg/L
Petroleum Hydrocarbons Fraction F1 (C6-c10)	<100 ug/L	Petroleum Hydrocarbons Fraction F2 (C10-C16)	<100 ug/L
Benzene	<0.50 ug/L	Toluene	<0.50 ug/L
Ethylbenzene	<0.50 ug/L	Xylenes (total)	<0.50 ug/L
Ammonia nitrogen	0.0217 mg/L	Total Kjeldahl nitrogen	1.06 mg/L
Nitrate nitrogen	<0.020 mg/L	Nitrite nitrogen	<0.010 mg/L
Total phosphorous	0.306 mg/L	Dissolved phosphorous	0.090 mg/L
Calcium	21.2 mg/L	Magnesium	5.98 mg/L
Sodium	252 mg/L	Potassium	4.26 mg/L
Carbonate	36.7 mg/L	Bicarbonate	64.3 mg/L
Chloride	6.02 mg/L	Sulfate	504 mg/L
Aluminum, dissolved	0.0701 mg/L	Antimony, dissolved	0.00100 mg/L
Arsenic, dissolved	0.00376 mg/L	Barium, dissolved	0.0210 mg/l
Boron, dissolved	0.063 mg/L	Cadmium, dissolved	0.0000399mg/L
Chromium, total	0.00388 mg/L	Chromium, dissolved (+6)	<0.0005 mg/L
Cobalt, dissolved	0.00034 mg/L	Copper, dissolved	0.00259 mg/L
Lead, dissolved	0.000105 mg/L	Manganese, dissolved	0.00090 mg/L
Mercury, total	<0.0000050 mg/L	Molybdenum, dissolved	0.104 mg/L
Nickel, dissolved	0.00539 mg/L	Selenium, dissolved	0.00986 mg/L
Silver, dissolved	0.000012 mg/L	Thallium, dissolved	<0.000010 mg/L
Tin, dissolved	<0.00010 mg/L	Uranium, dissolved	0.00391 mg/L
Zinc, dissolved	0.0016 mg/L		

Appendix A

Pond B and Pond C

Analytical Report

July 2023

CERTIFICATE OF ANALYSIS

Work Order	: **EO2305939**	Page	: 1 of 4
Amendment	: **1**		
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B and C July 10	Date Samples Received	: 10-Jul-2023 15:25
PO	: 0000234905	Date Analysis Commenced	: 11-Jul-2023
C-O-C number	: ----	Issue Date	: 19-Jul-2023 10:41
Sampler	: TW		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Amanda Powell	Account Manager	External Subcontracting, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta
Geoff Berg	Lab Analyst	Organics, Edmonton, Alberta
Leah Yee	Lab Assistant	Inorganics, Edmonton, Alberta
Michelle Schroder	Laboratory Analyst	Inorganics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Saron Gebremariam	Lab Assistant	Inorganics, Edmonton, Alberta

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.

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

EO2305939-001

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

Client sample ID: Pond B
Client sampling date / time: 10-Jul-2023 09:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
pH	----	8.46	0.10	pH units	E108/EO	12-Jul-2023	12-Jul-2023	1032412
Solids, total dissolved [TDS]	----	850	20	mg/L	E162/EO	-	12-Jul-2023	1032312
Solids, total suspended [TSS]	----	10.6	3.0	mg/L	E160/EO	-	12-Jul-2023	1032808
Anions and Nutrients								
Ammonia, total (as N)	7664-41-7	0.168	0.0050	mg/L	E298/EO	11-Jul-2023	11-Jul-2023	1033385
Chloride	16887-00-6	41.3	0.50	mg/L	E235.Cl/EO	11-Jul-2023	12-Jul-2023	1032488
Sulfate (as SO4)	14808-79-8	442	0.30	mg/L	E235.SO4/EO	11-Jul-2023	12-Jul-2023	1032489
Bioassays								
Daphnia magna LC50	----	See attached	-	-	DAP-LC50-48/3D	-	13-Jul-2023	-
Trout bioassay LC50	----	See attached	-	-	TRT-LC50-96/3D	-	13-Jul-2023	-
Total Metals								
Sodium, total	7440-23-5	225	0.050	mg/L	E420/EO	11-Jul-2023	11-Jul-2023	1032626
Aggregate Organics								
Chemical oxygen demand [COD]	----	45	10	mg/L	E559-L/EO	-	11-Jul-2023	1032504
Oil & grease (visible sheen)	----	Absent	-	-	E566/EO	-	12-Jul-2023	-

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

EO2305939-002

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

Client sample ID: Pond C
Client sampling date / time: 10-Jul-2023 09:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
pH	----	8.53	0.10	pH units	E108/EO	12-Jul-2023	12-Jul-2023	1032412
Solids, total dissolved [TDS]	----	778	20	mg/L	E162/EO	-	12-Jul-2023	1032312
Solids, total suspended [TSS]	----	7.0	3.0	mg/L	E160/EO	-	12-Jul-2023	1032808
Anions and Nutrients								
Ammonia, total (as N)	7664-41-7	0.0597	0.0050	mg/L	E298/EO	11-Jul-2023	11-Jul-2023	1033385
Chloride	16887-00-6	61.9	0.50	mg/L	E235.Cl/EO	11-Jul-2023	12-Jul-2023	1032488
Sulfate (as SO4)	14808-79-8	384	0.30	mg/L	E235.SO4/EO	11-Jul-2023	12-Jul-2023	1032489
Bioassays								
Daphnia magna LC50	----	See attached	-	-	DAP-LC50-48/3D	-	13-Jul-2023	-
Trout bioassay LC50	----	See attached	-	-	TRT-LC50-96/3D	-	13-Jul-2023	-
Total Metals								
Sodium, total	7440-23-5	187	0.050	mg/L	E420/EO	11-Jul-2023	11-Jul-2023	1032626
Aggregate Organics								
Chemical oxygen demand [COD]	----	39	10	mg/L	E559-L/EO	-	11-Jul-2023	1032504
Oil & grease (visible sheen)	----	Absent	-	-	E566/EO	-	12-Jul-2023	-

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2305939**	Page	: 1 of 8
Amendment	: **1**		
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B and C July 10	Date Samples Received	: 10-Jul-2023 15:25
PO	: 0000234905	Issue Date	: 19-Jul-2023 10:41
C-O-C number	: ----		
Sampler	: TW		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 2		
No. of samples analysed	: 2		

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 : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) Pond B	E559-L	10-Jul-2023	----	----	----		11-Jul-2023	28 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) Pond C	E559-L	10-Jul-2023	----	----	----		11-Jul-2023	28 days	1 days	✓
Aggregate Organics : Oil & Grease by Visible Sheen										
Amber glass (hydrochloric acid) Pond B	E566	10-Jul-2023	----	----	----		12-Jul-2023	28 days	2 days	✓
Aggregate Organics : Oil & Grease by Visible Sheen										
Amber glass (hydrochloric acid) Pond C	E566	10-Jul-2023	----	----	----		12-Jul-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Pond B	E298	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Pond C	E298	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Pond B	E235.Cl	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 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
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Pond C	E235.Cl	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Pond B	E235.SO4	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Pond C	E235.SO4	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Bioassays : Survival/LC50 Daphnia Magna 48 hours										
HDPE										
Pond B	DAP-LC50-48	10-Jul-2023	----	----	----		13-Jul-2023	5 days	3 days	✓
Bioassays : Survival/LC50 Daphnia Magna 48 hours										
HDPE										
Pond C	DAP-LC50-48	10-Jul-2023	----	----	----		13-Jul-2023	5 days	3 days	✓
Bioassays : Survival/LC50 Rainbow Trout (96 hours)										
LDPE carboy										
Pond B	TRT-LC50-96	10-Jul-2023	----	----	----		13-Jul-2023	5 days	3 days	✓
Bioassays : Survival/LC50 Rainbow Trout (96 hours)										
LDPE carboy										
Pond C	TRT-LC50-96	10-Jul-2023	----	----	----		13-Jul-2023	5 days	3 days	✓
Physical Tests : pH by Meter										
HDPE										
Pond B	E108	10-Jul-2023	12-Jul-2023	0.07 hrs	0.25 hrs	× EHTR-FM	12-Jul-2023	-51.45 hrs	0.07 hrs	× UCP
Physical Tests : pH by Meter										
HDPE										
Pond C	E108	10-Jul-2023	12-Jul-2023	0.07 hrs	0.25 hrs	× EHTR-FM	12-Jul-2023	-51.45 hrs	0.07 hrs	× UCP

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 : TDS by Gravimetry										
HDPE Pond B	E162	10-Jul-2023	----	----	----		12-Jul-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Pond C	E162	10-Jul-2023	----	----	----		12-Jul-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Pond B	E160	10-Jul-2023	----	----	----		12-Jul-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Pond C	E160	10-Jul-2023	----	----	----		12-Jul-2023	7 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Pond B	E420	10-Jul-2023	11-Jul-2023	180 days	1 days	✓	11-Jul-2023	179 days	0 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Pond C	E420	10-Jul-2023	11-Jul-2023	180 days	1 days	✓	11-Jul-2023	179 days	0 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).

UCP: Unsuitable Container and/or Preservative used (invalidates standard hold time). Maximum hold time of zero applied. Test results may be biased low / unreliable, and may not meet regulatory requirements.

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)							
Ammonia by Fluorescence	E298	1033385	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032504	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1032488	1	11	9.0	5.0	✓
pH by Meter	E108	1032412	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032489	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	1032312	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	1032626	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1032808	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	1033385	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032504	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1032488	1	11	9.0	5.0	✓
pH by Meter	E108	1032412	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032489	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	1032312	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	1032626	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1032808	1	20	5.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	1033385	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032504	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1032488	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032489	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	1032312	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	1032626	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1032808	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1033385	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032504	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1032488	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032489	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	1032626	1	15	6.6	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
Survival/LC50 Daphnia Magna 48 hours	DAP-LC50-48 Bureau Veritas (Edmonton) - 9331 - 48th Street Edmonton Alberta Canada T6B 2R4	Water	EPS1/RM/14	See attached report.
pH by Meter	E108 ALS Environmental - Edmonton	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 ALS Environmental - Edmonton	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.
TDS by Gravimetry	E162 ALS Environmental - Edmonton	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Edmonton	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total metals in Water by CRC ICPMS	E420 ALS Environmental - Edmonton	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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Edmonton	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Oil & Grease by Visible Sheen	E566 ALS Environmental - Edmonton	Water	Alberta Energy Regulator, Drilling waste Management, Directive 050, July 2016	Use a qualitivative visual observation of rainbow sheen to determine the presence or absence of oil and grease on water.
Survival/LC50 Rainbow Trout (96 hours)	TRT-LC50-96 Bureau Veritas (Edmonton) - 9331 - 48th Street Edmonton Alberta Canada T6B 2R4	Water	EPS1/RM/13	See attached report.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Edmonton	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.

QUALITY CONTROL REPORT

Work Order	: **EO2305939**	Page	: 1 of 6
Amendment	: **1**		
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: Pond B and C July 10	Date Samples Received	: 10-Jul-2023 15:25
PO	: 0000234905	Date Analysis Commenced	: 11-Jul-2023
C-O-C number	: ----	Issue Date	: 19-Jul-2023 10:41
Sampler	: TW 780 663 2513		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 2		
No. of samples analysed	: 2		

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*
Alex Drake	Lab Analyst	Edmonton Inorganics, Edmonton, Alberta
Amanda Powell	Account Manager	Bureau Veritas (Edmonton) External Subcontracting, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Edmonton Metals, Edmonton, Alberta
Geoff Berg	Lab Analyst	Edmonton Organics, Edmonton, Alberta
Leah Yee	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Michelle Schroder	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Edmonton Inorganics, Edmonton, Alberta
Saron Gebremariam	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta

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: 1032312)											
EO2305844-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	674	694	3.00%	20%	----
Physical Tests (QC Lot: 1032412)											
EO2305844-001	Anonymous	pH	----	E108	0.10	pH units	8.74	8.71	0.344%	3%	----
Physical Tests (QC Lot: 1032808)											
EO2305737-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	3.6	<3.0	0.6	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1032488)											
EO2305930-006	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	5.12	5.13	0.117%	20%	----
Anions and Nutrients (QC Lot: 1032489)											
EO2305930-006	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	70.5	70.3	0.254%	20%	----
Anions and Nutrients (QC Lot: 1033385)											
FC2301815-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0125	0.0116	0.0009	Diff <2x LOR	----
Total Metals (QC Lot: 1032626)											
EO2305887-001	Anonymous	Sodium, total	7440-23-5	E420	0.050	mg/L	133	132	0.961%	20%	----
Aggregate Organics (QC Lot: 1032504)											
EO2305823-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	50	47	2	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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1032312)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1032808)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1032488)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1032489)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1033385)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 1032626)						
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 1032504)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<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: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1032312)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.6	85.0	115	----
Physical Tests (QCLot: 1032412)									
pH	----	E108	----	pH units	6 pH units	100	97.0	103	----
Physical Tests (QCLot: 1032808)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	107	85.0	115	----
Anions and Nutrients (QCLot: 1032488)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 1032489)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1033385)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
Total Metals (QCLot: 1032626)									
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	91.6	80.0	120	----
Aggregate Organics (QCLot: 1032504)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	106	85.0	115	----

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
Anions and Nutrients (QCLot: 1032488)										
EO2305930-006	Anonymous	Chloride	16887-00-6	E235.Cl	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 1032489)										
EO2305930-006	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1033385)										
FC2301815-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
Total Metals (QCLot: 1032626)										
EO2305887-001	Anonymous	Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
Aggregate Organics (QCLot: 1032504)										
EO2305838-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	ND mg/L	100 mg/L	ND	75.0	125	----

Your P.O. #: EO2305939
Your Project #: EO2305939
Your C.O.C. #: 126969

Attention: ALS Reporting Edmonton

ALS ENVIRONMENTAL
Bay 7, 1313 44th ave NE
CALGARY, AB
CANADA T2E 6L5

Report Date: 2023/07/19
Report #: R3366935
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C351740
Received: 2023/07/11, 10:11

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Daphnia magna LC50 Multi-Concentration	2	N/A	2023/07/13	EENVSOP-00154	EPS 1 RM14 2nd ed m
Rainbow Trout LC50 Multi-concentration (1)	2	N/A	2023/07/13	BBY2SOP-00004	EPS 1/RM/13

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Your P.O. #: EO2305939
Your Project #: EO2305939
Your C.O.C. #: 126969

Attention: ALS Reporting Edmonton

ALS ENVIRONMENTAL
Bay 7, 1313 44th ave NE
CALGARY, AB
CANADA T2E 6L5

Report Date: 2023/07/19
Report #: R3366935
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C351740
Received: 2023/07/11, 10:11

Encryption Key

Alejandro Escobar-Lopez
Customer Solutions Representative
19 Jul 2023 10:03:32

Please direct all questions regarding this Certificate of Analysis to:
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (780) 577-7100

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C351740
Report Date: 2023/07/19

ALS ENVIRONMENTAL
Client Project #: EO2305939
Your P.O. #: EO2305939

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BUG940	BUG941	
Sampling Date		2023/07/11	2023/07/11	
COC Number		126969	126969	
	UNITS	**POND B**	**POND C**	**QC Batch**
Daphnia Magna Bioassay				
LC50	% vol/vol	ATTACHED	ATTACHED	B032627
Rainbow Trout Bioassay				
LC50	% vol/vol	ATTACHED	ATTACHED	B033606

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	10.0°C
Package 2	11.0°C
Package 3	11.0°C
Package 4	11.0°C
Package 5	11.7°C
Package 6	11.0°C
Package 7	11.0°C
Package 8	11.7°C
Package 9	12.0°C

Results relate only to the items tested.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C351740
Report Date: 2023/07/19

ALS ENVIRONMENTAL
Client Project #: EO2305939
Your P.O. #: EO2305939

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Natasha Lloyd, Team Lead

Navpreet Shergill, Scientist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Chain of Custody
ALS Environmental - Edmonton
9450 - 17 Avenue NW
Edmonton AB Canada T6N 1M9

C351740

126969

Destination Lab:	**Bureau Veritas (Edmonton)**
Address:	9331 - 48th Street Edmonton AB Canada T6B 2R4
Work Order Number:	**EO2305939**
Original Receipt Date/Time	Instructions Received
10/07/2023 15:25	

Relinquished By

Date/Time

Received By AMYNAT AZEEZ

Date/Time 2023/07/11 10:11

Receipt Temp See ACTR

Return as Indicated: Results: ALSEDClientServices@alsglobal.com Invoice: ALSEDClientServices@alsglobal.com Electronic Data: ALSEDClientServices@alsglobal.com

Attention: Megha Walia

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
EO2305939-001	Pond B	Water	LDPE carboy	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	17-07-2023	11/07/2023 00:00	
EO2305939-001	Pond B	Water	LDPE carboy			17-07-2023	11/07/2023 00:00	
EO2305939-001	Pond B	Water	LDPE carboy			17-07-2023	11/07/2023 00:00	
EO2305939-001	Pond B	Water	LDPE carboy			17-07-2023	11/07/2023 00:00	
EO2305939-001	Pond B	Water	HDPE	DAP-LC50-48	Survival/LC50 Daphnia Magna 48 hours	17-07-2023	11/07/2023 00:00	
EO2305939-001	Pond B	Water	HDPE			17-07-2023	11/07/2023 00:00	
EO2305939-002	Pond C	Water	LDPE carboy	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	17-07-2023	11/07/2023 00:00	
EO2305939-002	Pond C	Water	LDPE carboy			17-07-2023	11/07/2023 00:00	
EO2305939-002	Pond C	Water	LDPE carboy			17-07-2023	11/07/2023 00:00	
EO2305939-002	Pond C	Water	LDPE carboy			17-07-2023	11/07/2023 00:00	
EO2305939-002	Pond C	Water	HDPE	DAP-LC50-48	Survival/LC50 Daphnia Magna 48 hours	17-07-2023	11/07/2023 00:00	
EO2305939-002	Pond C	Water	HDPE			17-07-2023	11/07/2023 00:00	

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY Job Number: C351740

Client Project Name & Number: EO2305939 Sample Number: BUG940-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : POND B Sample Matrix : Water

Description: Pale yellow, clear Sample Prior to Analysis:

Sample Collected: Jul 11, 2023 Sampling Method : N/A pH: 7.9

Sample Collected By: N/A Site Collection: N/A Temperature : 20 °C

Sample Received: Jul 11, 2023 10:11 AM Volume Received: 1L Dissolved Oxygen: 8.5 mg/L

Analysis Start : Jul 13, 2023 11:28 AM Avg Temp Arrival: 11 °C Sample Conductance: 1248 µS/cm

End : Jul 15, 2023 11:06 AM Storage: 2-6°C Hardness: 180 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	7.7	341	8.2	0	0	0	0	21	7.9	351	7.7
6.25	20	8.0	396	8.3	0	0	0	0	21	8.0	402	8.0
12.5	20	8.0	452	8.2	0	0	0	0	21	8.0	458	7.9
25	20	7.9	569	8.1	0	0	0	0	21	8.0	571	7.9
50	20	8.0	807	8.3	0	0	0	0	21	8.0	801	7.9
100	20	8.0	1264	8.5	0	0	0	0	21	8.1	1264	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	24.3
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.3
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY

Job Number: C351740

Client Project Name & Number: EO2305939

Sample Number: BUG940-02

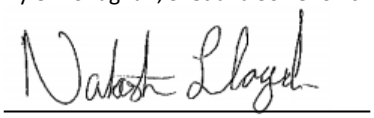
Reference chemical:	Sodium Chloride	Test Date:	Jun 29, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.75 (4.20, 7.86) g/L	Concentration :	0,1.71,2.56,3.82,5.7,8.5 g/L

Test Method EPS 1/RM/14

Method Deviations: None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kyle Monaghan, Svetlana Sofrenovic



Verified By : Natasha Lloyd, Team Lead

Date: Jul 18, 2023 03:30 PM

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY Job Number: C351740

Client Project Name & Number: EO2305939 Sample Number: BUG941-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : POND C Sample Matrix : Water

Description: Clear, colorless Sample Prior to Analysis:

Sample Collected: Jul 11, 2023 Sampling Method : N/A pH: 8.0

Sample Collected By: N/A Site Collection: N/A Temperature : 20 °C

Sample Received: Jul 11, 2023 10:11 AM Volume Received: 1L Dissolved Oxygen: 8.3 mg/L

Analysis Start : Jul 13, 2023 10:44 AM Avg Temp Arrival: 11 °C Sample Conductance: 1111 µS/cm

End : Jul 15, 2023 11:07 AM Storage: 2-6°C Hardness: 220 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	21	7.8	343	8.0	0	0	0	0	21	7.9	352	7.9
6.25	21	7.8	388	8.0	0	0	0	0	21	8.0	395	7.9
12.5	21	7.9	434	8.0	0	0	0	0	21	8.0	439	8.0
25	21	7.9	550	8.1	0	0	0	0	21	8.0	553	7.9
50	21	7.9	750	8.0	0	0	0	0	21	8.0	749	8.0
100	21	8.0	1188	8.0	0	0	0	0	21	8.1	1179	7.6

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 160 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	0 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	24.3
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	3.3
Culture Temperature :	20 ± 2 °C	Time To First Brood :	8 Days

Culture Diet Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY

Job Number: C351740

Client Project Name & Number: EO2305939

Sample Number: BUG941-02

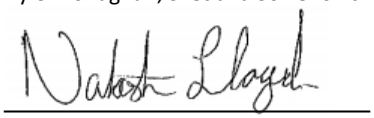
Reference chemical:	Sodium Chloride	Test Date:	Jun 29, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.17 (5.50, 6.93)g/L	Statistical Method :	Untrimmed Spearman-Kärber
Historical Mean LC50 (warning limits) :	5.75 (4.20, 7.86) g/L	Concentration :	0,1.71,2.56,3.82,5.7,8.5 g/L

Test Method EPS 1/RM/14

Method Deviations: None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Kyle Monaghan, Svetlana Sofrenovic



Verified By : Natasha Lloyd, Team Lead

Date: Jul 18, 2023 03:32 PM

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY Job Number: C351740

Client Project Name & Number: EO2305939

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : POND B

Description:	Clear,and light yellow.			Sample Number:	BUG940-01
Sample Collected:	Jul 11, 2023	Sampling Method :	N/A	Site Collection:	N/A
Sample Collected By:	N/A	Volume Received:	4 x 11PAL	Avg Temp Arrival:	11 °C Storage: 2-6°C
Sample Received:	Jul 11, 2023 10:11 AM	pH:	8.4	Dissolved Oxygen:	9.0 mg/L
Analysis Start :	Jul 13, 2023 11:35 AM	Temperature :	15 °C	Sample Conductance:	1395 µS/cm

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity (uS/cm)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)
% vol/vol	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	96 hrs	96 hrs
0	14	14	10.0	10.1	8.0	7.7	54	0	0	0
6.25	14	14	10.2	10.1	8.1	7.8	180	0	0	0
12.5	14	14	10.2	10.1	8.0	7.9	256	0	0	0
25	14	14	10.1	10.0	8.2	8.0	446	0	0	0
50	15	14	9.6	10.1	8.4	8.2	871	0	0	0
100	15	14	9.5	10.0	8.4	8.4	1395	0	0	0

Comments : All fish appeared and behaved normally during the test.

Culture/Control/Dilution Water Burnaby Municipal Dechlorinated Water

Hardness: 32 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	35 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	15 L	Vessel Volume :	20L	Test pH Adjusted:	No
Loading Density :	0.4 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Aqua Farm

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.5 ± 0.2 g	Length (Mean) +- SD :	4.49 ± 0.76 cm
Culture Water Renewal :	≥ 1L/min/kg fish	Weight (Range) :	0.2 – 0.8 g	Length (Range) :	3.10 – 5.10 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Zinc Test Date: Jul 04, 2023

Test Endpoint 96 hrs LC50 (95% confidence interval) : 0.15 (0.11, 0.20)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 0.19 (0.10, 0.36) mg/L Concentration : 0,0.04,0.08,0.16,0.32,0.64 mg/L

Test Method BV Lab's BBY2SOP-00004 is based on the latest version of EPS 1/RM9 and EPS 1 /RM13.

Method Deviations : None.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Guilherme De Faria Silva Naves, Melanie Mazziotti, Yihui (Phyllis) Fang

Verified By : Navpreet Shergill, Scientist Date: Jul 18, 2023 06:08 PM

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY Job Number: C351740

Client Project Name & Number: EO2305939

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : POND C

Description:	Clear, and light yellow.			Sample Number:	BUG941-01
Sample Collected:	Jul 11, 2023	Sampling Method :	N/A	Site Collection:	N/A
Sample Collected By:	N/A	Volume Received:	4 x 11PAL	Avg Temp Arrival:	11 °C Storage: 2-6°C
Sample Received:	Jul 11, 2023 10:11 AM	pH:	8.5	Dissolved Oxygen:	9.2 mg/L
Analysis Start :	Jul 13, 2023 03:55 PM	Temperature :	15 °C	Sample Conductance:	1295 µS/cm

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity (uS/cm)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)
% vol/vol	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	96 hrs	96 hrs
0	14	14	10.2	9.9	7.8	7.7	56	0	0	0
6.25	14	14	10.2	10.1	7.9	7.8	139	0	0	0
12.5	14	14	10.2	9.9	8.0	7.8	229	0	0	0
25	15	14	10.2	10.0	8.2	7.9	378	0	0	0
50	15	14	10.0	10.0	8.4	8.1	697	0	0	0
100	15	14	9.8	10.0	8.5	8.4	1295	0	0	0

Comments : All fish appeared and behaved normally during the test.

Culture/Control/Dilution Water Burnaby Municipal Dechlorinated Water

Hardness: 32 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	30 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	15 L	Vessel Volume :	20L	Test pH Adjusted:	No
Loading Density :	0.4 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Aqua Farm

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.6 ± 0.2 g	Length (Mean) +- SD :	4.13 ± 0.43 cm
Culture Water Renewal :	≥ 1L/min/kg fish	Weight (Range) :	0.3 – 1.0 g	Length (Range) :	3.40 – 4.90 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Zinc Test Date: Jul 04, 2023

Test Endpoint 96 hrs LC50 (95% confidence interval) : 0.15 (0.11, 0.20)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 0.19 (0.10, 0.36) mg/L Concentration : 0,0.04,0.08,0.16,0.32,0.64 mg/L

Test Method BV Lab's BBY2SOP-00004 is based on the latest version of EPS 1/RM9 and EPS 1 /RM13.

Method Deviations : None.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Donald Lai, Guilherme De Faria Silva Naves, Melanie Mazziotti, Yihui (Phyllis) Fang

Verified By : Navpreet Shergill, Scientist Date: Jul 18, 2023 06:12 PM

ALS ENVIRONMENTAL

Bureau Veritas Job Number: C351740
Client Project #: EO2305939

Report Date: 2023/07/19

Your P.O. #: EO2305939

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BUG940	BUG941	
Sampling Date		7/11/2023	7/11/2023	
COC Number		126969	126969	
	UNITS	**POND B**	**POND C**	**QC Batch**
Daphnia Magna Bioassay				
LC50	% vol/vol	ATTACHED	ATTACHED	B032627
Rainbow Trout Bioassay				
LC50	% vol/vol	ATTACHED	ATTACHED	B033606

RDL = Reportable Detection Limit
N/A = Not Applicable

Results relate only to the items tested.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	Clean Harbors Canada
Contact:	Todd Webb, Stan Yuha
Phone:	(780) 663-2513
	Company address below will appear on the final report
Street:	PO Box 390, 50114 Range Road 173
City/Province:	Ryley, AB
Postal Code:	T0B 4A0
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Clean Harbors Canada
Contact:	Stephanie Dennis

Project Information

ALS Account # / Quote #:	EO22-CHES100-008 (Table 4.3B)
Job #:	Pond B and C July 10
PO / AFE:	
LSD:	Table 4.3B

ALS Lab Work Order # (ALS use only): EO2305939

Reports / Recipients

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

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: webb.todd@cleanharbors.com

Email 2: yuha.stan@cleanharbors.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Dennis.Stephanie@cleanharbors.com

Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Contact: Megha Walia **Sampler:** Todd Webb

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☑ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☑ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

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

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Analysis Request

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

ALS Sample # (ALS 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	Table 4.3B	Trout 96 hr multi conc. Acute Lethalit	Daphnia 48 hr Static acute lethality te	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Pond B	10-Jul-23	9:30	Surface Water	12	P2	P4	P4			
	Pond C	10-Jul-23	9:30	Surface Water	12	P2	P4	P4			

Environmental Division
Edmonton
Work Order Reference
EO2305939

Telephone : +1 780 413 5227

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please rush. Analyze as per Table 4.3B (attached), including trout and Daphnia bioassays

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
8.4							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Todd Webb	10-Jul-23	10:00

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
Rifco	10/7/2023	1745

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 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.**

TABLE 4.3-B: RUNOFF LIMITS FOR SURFACE WATER DETENTION POND

PARAMETER	LIMITS Maximum unless otherwise indicated
pH	6.0 – 9.5 pH units
COD	50 mg/L
TDS	2500 mg/L
TSS	25 mg/L
Ammonia (expressed as Nitrogen)	5 mg/L
Chloride	250 mg/L
Sodium	200 mg/L
Sulphate	500 mg/L
Oil or other substances	Not present in amounts sufficient to create a visible film or sheen
96-Hour Multiple Concentration Acute Lethality Test Using Rainbow Trout (*Oncorhynchus mykiss*)	50% or greater survival

48 hr Static Acute Lethality test using Daphnia Magna

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **EO2306128**	Page	: 1 of 2
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B July 12 - Sodium	Date Samples Received	: 13-Jul-2023 14:00
PO	: 234905	Date Analysis Commenced	: 14-Jul-2023
C-O-C number	: ----	Issue Date	: 15-Jul-2023 14:57
Sampler	: TW		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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*
Daniel Nguyen	Lab Assistant	Metals, Edmonton, Alberta

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
mg/L	milligrams per litre

>: greater than.
<: less than.

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

EO2306128-001

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

Client sample ID: Pond B
Client sampling date / time: 12-Jul-2023 11:00

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method/Lab*	*Prep Date*	*Analysis Date*	*QCLot*
Dissolved Metals								
Sodium, dissolved	7440-23-5	227	0.050	mg/L	E421/EO	14-Jul-2023	14-Jul-2023	1039257
Dissolved metals filtration location	----	Laboratory	-	-	EP421/EO	-	14-Jul-2023	1039257

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2306128**	Page	: 1 of 5
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B July 12 - Sodium	Date Samples Received	: 13-Jul-2023 14:00
PO	: 234905	Issue Date	: 15-Jul-2023 14:57
C-O-C number	: ----		
Sampler	: TW		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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: **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
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Pond B	E421	12-Jul-2023	14-Jul-2023	180 days	2 days	✓	14-Jul-2023	178 days	0 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: **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)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	5.0	✓
Method Blanks (MB)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	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
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Edmonton	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Edmonton	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order	: **EO2306128**	Page	: 1 of 3
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: Pond B July 12 - Sodium	Date Samples Received	: 13-Jul-2023 14:00
PO	: 234905	Date Analysis Commenced	: 14-Jul-2023
C-O-C number	: ----	Issue Date	: 15-Jul-2023 14:57
Sampler	: TW 780 663 2513		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Daniel Nguyen	Lab Assistant	Edmonton Metals, Edmonton, Alberta

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
Dissolved Metals (QC Lot: 1039257)											
EO2306128-001	Pond B	Sodium, dissolved	7440-23-5	E421	0.050	mg/L	227	214	5.93%	20%	----

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
Dissolved Metals (QCLot: 1039257)						
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----

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
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----

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
Dissolved Metals (QCLot: 1039257)										
EO2306129-001	Anonymous	Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page of

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Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Clean Harbors Canada
Contact:	Todd Webb, Stan Yuha
Phone:	(780) 663-2513
	Company address below will appear on the final report
Street:	PO Box 390, 50114 Range Road 173
City/Province:	Ryley, AB
Postal Code:	T0B 4A0
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Clean Harbors Canada
Contact:	Stephanie Dennis

Reports / Recipients

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

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: webb.todd@cleanharbors.com

Email 2: yuha.stan@cleanharbors.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Dennis.Stephanie@cleanharbors.com

Email 2:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☑ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

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

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	EO22-CHES100-008 (Table 4.3B)
Job #:	Pond B July 12 - Sodium
PO / AFE:	234905
LSD:	Table 4.3B

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (ALS use only): EO2306128

ALS Contact: Megha Walia **Sampler:** Todd Webb

Analysis Request

ALS Sample # (ALS 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	Dissolved Sodium	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Pond B	12-Jul-23	11:00	Surface Water	1	P2			

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

Environmental Division
Edmonton
Work Order Reference
EO2306128

Telephone : +1 780 413 5227

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please rush. Sample not filtered, please run dissolved Sodium only, results required by Monday July 17.

SAMPLE

Cooling Method: ☐ NONE ☐ ICE ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.7							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Todd Webb	13-Jul-23	11:30

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	13-Jul-23	2:00

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 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**.

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CERTIFICATE OF ANALYSIS

Work Order	: **EO2306129**	Page	: 1 of 2
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
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Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B July 13 - Sodium	Date Samples Received	: 13-Jul-2023 14:00
PO	: 234905	Date Analysis Commenced	: 14-Jul-2023
C-O-C number	: ----	Issue Date	: 15-Jul-2023 14:57
Sampler	: TW		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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This Certificate of Analysis contains the following information:

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- Analytical Results

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).

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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*
Daniel Nguyen	Lab Assistant	Metals, Edmonton, Alberta

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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.

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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
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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.

Unit	*Description*
-	no units
mg/L	milligrams per litre

>: greater than.
<: less than.

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.

Accreditation

Accreditation	*Description*	*Laboratory*	*Address*
A	CALA ISO/IEC 17025:2017	EO ALS Environmental - Edmonton	9450 - 17 Avenue NW, Edmonton, AB

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Analytical Results

EO2306129-001

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

Client sample ID: Pond B
Client sampling date / time: 13-Jul-2023 11:15

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method/Lab*	*Prep Date*	*Analysis Date*	*QCLot*
Dissolved Metals								
Sodium, dissolved	7440-23-5	196	0.050	mg/L	E421/EO A	14-Jul-2023	14-Jul-2023	1039257
Dissolved metals filtration location	----	Laboratory	-	-	EP421/EO	-	14-Jul-2023	1039257

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2306129**	Page	: 1 of 5
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B July 13 - Sodium	Date Samples Received	: 13-Jul-2023 14:00
PO	: 234905	Issue Date	: 15-Jul-2023 14:58
C-O-C number	: ----		
Sampler	: TW		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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: **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
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Pond B	E421	13-Jul-2023	14-Jul-2023	180 days	1 days	✓	14-Jul-2023	179 days	0 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: **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)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	5.0	✓
Method Blanks (MB)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Metals in Water by CRC ICPMS	E421	1039257	1	2	50.0	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
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Edmonton	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Edmonton	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order	: **EO2306129**	Page	: 1 of 3
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: Pond B July 13 - Sodium	Date Samples Received	: 13-Jul-2023 14:00
PO	: 234905	Date Analysis Commenced	: 14-Jul-2023
C-O-C number	: ----	Issue Date	: 15-Jul-2023 14:57
Sampler	: TW 780 663 2513		
Site	: Table 4.3B		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Daniel Nguyen	Lab Assistant	Edmonton Metals, Edmonton, Alberta

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
Dissolved Metals (QC Lot: 1039257)											
EO2306128-001	Anonymous	Sodium, dissolved	7440-23-5	E421	0.050	mg/L	227	214	5.93%	20%	----

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
Dissolved Metals (QCLot: 1039257)						
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----

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
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----

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
Dissolved Metals (QCLot: 1039257)										
EO2306129-001	Pond B	Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page of

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Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Clean Harbors Canada
Contact:	Todd Webb, Stan Yuha
Phone:	(780) 663-2513
	Company address below will appear on the final report
Street:	PO Box 390, 50114 Range Road 173
City/Province:	Ryley, AB
Postal Code:	T0B 4A0
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Clean Harbors Canada
Contact:	Stephanie Dennis

Reports / Recipients

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

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: webb.todd@cleanharbors.com

Email 2: yuha.stan@cleanharbors.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Dennis.Stephanie@cleanharbors.com

Email 2:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☑ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

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

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	EO22-CHES100-008 (Table 4.3B)
Job #:	Pond B July 13 - Sodium
PO / AFE:	234905
LSD:	Table 4.3B

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (ALS use only): EO2306129

ALS Contact: Megha Walia **Sampler:** Todd Webb

Analysis Request

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

ALS Sample # (ALS 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	Dissolved Sodium	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Pond B	13-Jul-23	11:15	Surface Water	1	P2			

Environmental Division
Edmonton
Work Order Reference
EO2306129

Telephone : +1 780 413 5227

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please rush. Sample not filtered, please run dissolved Sodium only, results required by Monday July 17.

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.7							

SHIPMENT RELEASE (client use)

Released by:	Todd Webb	Date:	13-Jul-23	Time:	11:30

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:		Date:	13 JUL 23	Time:	9:00

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:		Date:		Time:	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 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**.

Appendix B

Pond B

Analytical Report

October 2023

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CERTIFICATE OF ANALYSIS

Work Order	: **EO2309082**	Page	: 1 of 2
Amendment	: **1**		
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B Oct 5,2023	Date Samples Received	: 05-Oct-2023 14:29
PO	: 0000236720	Date Analysis Commenced	: 05-Oct-2023
C-O-C number	: ----	Issue Date	: 12-Oct-2023 12:40
Sampler	: TW		
Site	: Table 4.3B Chemistry		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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*
Daniel Nguyen	Lab Assistant	Metals, Edmonton, Alberta
Leah Yee	Lab Assistant	Inorganics, Edmonton, Alberta
Michelle Schroder	Laboratory Analyst	Inorganics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Saron Gebremariam	Lab Assistant	Inorganics, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Inorganics, Edmonton, Alberta

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

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

>: greater than.
<: less than.

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

EO2309082-001

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

Client sample ID: Pond B
Client sampling date / time: 05-Oct-2023 10:00

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method/Lab*	*Prep Date*	*Analysis Date*	*QCLot*
Physical Tests								
pH	----	8.10	0.10	pH units	E108/EO	06-Oct-2023	06-Oct-2023	1173025
Solids, total dissolved [TDS]	----	630	20	mg/L	E162/EO	-	06-Oct-2023	1172279
Solids, total suspended [TSS]	----	22.0	3.0	mg/L	E160/EO	-	06-Oct-2023	1172267
Anions and Nutrients								
Ammonia, total (as N)	7664-41-7	2.62	0.100	mg/L	E298/EO	05-Oct-2023	05-Oct-2023	1171000
Chloride	16887-00-6	13.3	0.50	mg/L	E235.Cl/EO	05-Oct-2023	05-Oct-2023	1171075
Sulfate (as SO4)	14808-79-8	231	0.30	mg/L	E235.SO4/EO	05-Oct-2023	05-Oct-2023	1171071
Total Metals								
Sodium, total	7440-23-5	148	0.050	mg/L	E420/EO	06-Oct-2023	06-Oct-2023	1172199
Aggregate Organics								
Chemical oxygen demand [COD]	----	54	10	mg/L	E559-L/EO	-	05-Oct-2023	1171401

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2309082**	Page	: 1 of 7
Amendment	: **1**		
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B Oct 5,2023	Date Samples Received	: 05-Oct-2023 14:29
PO	: 0000236720	Issue Date	: 12-Oct-2023 12:37
C-O-C number	: ----		
Sampler	: TW		
Site	: Table 4.3B Chemistry		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) Pond B	E559-L	05-Oct-2023	----	----	----		05-Oct-2023	28 days	0 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Pond B	E298	05-Oct-2023	05-Oct-2023	28 days	0 days	✓	05-Oct-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Pond B	E235.Cl	05-Oct-2023	05-Oct-2023	28 days	0 days	✓	05-Oct-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Pond B	E235.SO4	05-Oct-2023	05-Oct-2023	28 days	0 days	✓	05-Oct-2023	28 days	0 days	✓
Physical Tests : pH by Meter										
HDPE Pond B	E108	05-Oct-2023	06-Oct-2023	0.25 hrs	27 hrs	× EHTR-FM	06-Oct-2023	0.25 hrs	28 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Pond B	E162	05-Oct-2023	----	----	----		06-Oct-2023	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Pond B	E160	05-Oct-2023	----	----	----		06-Oct-2023	7 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
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
Pond B	E420	05-Oct-2023	06-Oct-2023	7 hrs	24 hrs	× EHTL	06-Oct-2023	7 hrs	24 hrs	× EHTL

Legend & Qualifier Definitions

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

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

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)							
Ammonia by Fluorescence	E298	1171000	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1171401	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171075	1	17	5.8	5.0	✓
pH by Meter	E108	1173025	1	1	100.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1171071	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1172279	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1172199	1	1	100.0	5.0	✓
TSS by Gravimetry	E160	1172267	1	1	100.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	1171000	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1171401	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171075	1	17	5.8	5.0	✓
pH by Meter	E108	1173025	1	1	100.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1171071	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1172279	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1172199	1	1	100.0	5.0	✓
TSS by Gravimetry	E160	1172267	1	1	100.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	1171000	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1171401	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171075	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1171071	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1172279	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1172199	1	1	100.0	5.0	✓
TSS by Gravimetry	E160	1172267	1	1	100.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1171000	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1171401	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171075	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1171071	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1172199	1	1	100.0	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 ALS Environmental - Edmonton	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 ALS Environmental - Edmonton	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.
TDS by Gravimetry	E162 ALS Environmental - Edmonton	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Edmonton	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Edmonton	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.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Edmonton	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Edmonton	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.

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QUALITY CONTROL REPORT

Work Order	: **EO2309082**	Page	: 1 of 6
Amendment	: **1**		
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: Pond B Oct 5,2023	Date Samples Received	: 05-Oct-2023 14:29
PO	: 0000236720	Date Analysis Commenced	: 05-Oct-2023
C-O-C number	: ----	Issue Date	: 12-Oct-2023 12:40
Sampler	: TW 780 663 2513		
Site	: Table 4.3B Chemistry		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Daniel Nguyen	Lab Assistant	Edmonton Metals, Edmonton, Alberta
Leah Yee	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Michelle Schroder	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Edmonton Inorganics, Edmonton, Alberta
Saron Gebremariam	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Edmonton Inorganics, Edmonton, Alberta

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: 1172267)											
EO2309082-001	Pond B	Solids, total suspended [TSS]	----	E160	3.0	mg/L	22.0	20.2	1.8	Diff <2x LOR	----
Physical Tests (QC Lot: 1172279)											
EO2308941-003	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	550	554	0.724%	20%	----
Physical Tests (QC Lot: 1173025)											
EO2309082-001	Pond B	pH	----	E108	0.10	pH units	8.10	8.16	0.738%	3%	----
Anions and Nutrients (QC Lot: 1171000)											
FC2302826-007	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.736	0.741	0.609%	20%	----
Anions and Nutrients (QC Lot: 1171071)											
EO2309077-028	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1171075)											
EO2309077-028	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Total Metals (QC Lot: 1172199)											
EO2309082-001	Pond B	Sodium, total	7440-23-5	E420	0.050	mg/L	148	147	0.445%	20%	----
Aggregate Organics (QC Lot: 1171401)											
EO2308966-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	23	27	3	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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1172267)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1172279)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1171000)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1171071)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1171075)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1172199)						
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 1171401)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<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: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1172267)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	102	85.0	115	----
Physical Tests (QCLot: 1172279)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.8	85.0	115	----
Physical Tests (QCLot: 1173025)									
pH	----	E108	----	pH units	6 pH units	99.5	97.0	103	----
Anions and Nutrients (QCLot: 1171000)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.4	85.0	115	----
Anions and Nutrients (QCLot: 1171071)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1171075)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Total Metals (QCLot: 1172199)									
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	95.0	80.0	120	----
Aggregate Organics (QCLot: 1171401)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	108	85.0	115	----

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
Anions and Nutrients (QCLot: 1171000)										
FC2302826-007	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 1171071)										
EO2309077-028	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	95.3 mg/L	100 mg/L	95.3	75.0	125	----
Anions and Nutrients (QCLot: 1171075)										
EO2309077-028	Anonymous	Chloride	16887-00-6	E235.Cl	94.0 mg/L	100 mg/L	94.0	75.0	125	----
Total Metals (QCLot: 1172199)										
EO2309082-001	Pond B	Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
Aggregate Organics (QCLot: 1171401)										
EO2308967-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	102 mg/L	100 mg/L	102	75.0	125	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page of

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division
Edmonton
Work Order Reference
EO2309082

Telephone : +1 780 413 5227

Report To	Contact and company name below will appear on the final report
Company:	Clean Harbors Canada
Contact:	Todd Webb, Stan Yuha
Phone:	(780) 663-2513
	Company address below will appear on the final report
Street:	PO Box 390, 50114 Range Road 173
City/Province:	Ryley, AB
Postal Code:	T0B 4A0
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Clean Harbors Canada
Contact:	Stephanie Dennis

Project Information	
ALS Account # / Quote #:	EO22-CHES100-008
Job #:	Pond B Oct 5, 2023
PO / AFE:	
LSD:	Table 4.3B Chemistry

ALS Lab Work Order # (ALS use only): EO2309082

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	webb.todd@cleanharbors.com
Email 2	yuha.stan@cleanharbors.com
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Dennis.Stephanie@cleanharbors.com
Email 2	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Megha Walia **Sampler:** Todd Webb

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, ste

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contac

Analysis Reque

Indicate Filtered (F), Preserved (P) or Filtered and Pr

ALS Sample # (ALS 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: Table 4.3 B chemistry	SAMPLES ON HOLD	EXTENDED STORAGE REQ	SUSPECTED HAZARD (see I
	Pond B	5-Oct-23	10:00	Surface Water	E			

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please Rush.

Analyze as per Table 4.3B chemistry only (attached), no Bioassays

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
13.2							

SHIPMENT RELEASE (client use)

Released by: Todd Webb Date: 5-Oct-23 Time:

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: Oct 5/23 Time: 2:29

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: Time:

FEB 2022 FR

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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**.

CERTIFICATE OF ANALYSIS

Work Order	: **EO2309217**	Page	: 1 of 2
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B Oct 10,2023	Date Samples Received	: 10-Oct-2023 15:39
PO	: 236720	Date Analysis Commenced	: 11-Oct-2023
C-O-C number	: ----	Issue Date	: 18-Oct-2023 15:30
Sampler	: TW		
Site	: Table 4.3B - Oct 10 Trout, Daphnia, COD, Sheen		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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*
Amanda Powell	Account Manager	External Subcontracting, Edmonton, Alberta
Fahad Husain	Analyst	Inorganics, Edmonton, Alberta
Geoff Berg	Lab Analyst	Organics, Edmonton, Alberta

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
mg/L	milligrams per litre

>: greater than.
<: less than.

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.

Sample Comments

Sample	Client Id	*Comment*
EO2309217-001	Pond B	*Manual remark*Used preserved bottle used for visble sheen. Results should be reliable.

Analytical Results

EO2309217-001

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

Client sample ID: Pond B

Client sampling date / time: 10-Oct-2023

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method/Lab*	*Prep Date*	*Analysis Date*	*QCLot*
Bioassays								
Daphnia magna LC50	----	See attached	-	-	DAP-LC50-48/3D	-	11-Oct-2023	-
Trout bioassay LC50	----	See attached	-	-	TRT-LC50-96/3D	-	12-Oct-2023	-
Aggregate Organics								
Chemical oxygen demand [COD]	----	47	10	mg/L	E559-L/EO	-	12-Oct-2023	1181294
Oil & grease (visible sheen)	----	Absent	-	-	E566/EO	-	11-Oct-2023	-

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2309217**	Page	: 1 of 5
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: Pond B Oct 10,2023	Date Samples Received	: 10-Oct-2023 15:39
PO	: 236720	Issue Date	: 18-Oct-2023 15:33
C-O-C number	: ----		
Sampler	: TW		
Site	: Table 4.3B - Oct 10 Trout, Daphnia, COD, Sheen		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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: **Water**

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

Analyte Group : Analytical Method / 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 : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) Pond B	E559-L	10-Oct-2023	----	----	----		12-Oct-2023	28 days	2 days	✓
Aggregate Organics : Oil & Grease by Visible Sheen										
Amber glass (hydrochloric acid) Pond B	E566	10-Oct-2023	----	----	----		11-Oct-2023	28 days	1 days	✓
Bioassays : Survival/LC50 Daphnia Magna 48 hours										
HDPE Pond B	DAP-LC50-48	10-Oct-2023	----	----	----		11-Oct-2023	5 days	2 days	✓
Bioassays : Survival/LC50 Rainbow Trout (96 hours)										
HDPE Pail Pond B	TRT-LC50-96	10-Oct-2023	----	----	----		12-Oct-2023	5 days	2 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: **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)							
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1181294	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1181294	1	20	5.0	5.0	✓
Method Blanks (MB)							
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1181294	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1181294	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
Survival/LC50 Daphnia Magna 48 hours	DAP-LC50-48 Bureau Veritas (Edmonton) - 9331 - 48th Street Edmonton Alberta Canada T6B 2R4	Water	EPS1/RM/14	See attached report.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Edmonton	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Oil & Grease by Visible Sheen	E566 ALS Environmental - Edmonton	Water	Alberta Energy Regulator, Drilling waste Management, Directive 050, July 2016	Use a qualitivative visual observation of rainbow sheen to determine the presence or absence of oil and grease on water.
Survival/LC50 Rainbow Trout (96 hours)	TRT-LC50-96 Bureau Veritas (Edmonton) - 9331 - 48th Street Edmonton Alberta Canada T6B 2R4	Water	EPS1/RM/13	See attached report.

QUALITY CONTROL REPORT

Work Order	: **EO2309217**	Page	: 1 of 3
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: Pond B Oct 10,2023	Date Samples Received	: 10-Oct-2023 15:39
PO	: 236720	Date Analysis Commenced	: 11-Oct-2023
C-O-C number	: ----	Issue Date	: 18-Oct-2023 15:31
Sampler	: TW 780 663 2513		
Site	: Table 4.3B - Oct 10 Trout, Daphnia, COD, Sheen		
Quote number	: EO22-CHES100-008		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Amanda Powell	Account Manager	Bureau Veritas (Edmonton) External Subcontracting, Edmonton, Alberta
Fahad Husain	Analyst	Edmonton Inorganics, Edmonton, Alberta
Geoff Berg	Lab Analyst	Edmonton Organics, Edmonton, Alberta

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
Aggregate Organics (QC Lot: 1181294)											
EO2309209-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	59	61	2	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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aggregate Organics (QCLot: 1181294)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<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: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Aggregate Organics (QCLot: 1181294)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	107	85.0	115	----

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
Aggregate Organics (QCLot: 1181294)										
EO2309209-002	Anonymous	Chemical oxygen demand [COD]	----	E559-L	105 mg/L	100 mg/L	105	75.0	125	----

Your P.O. #: EO2309217
Your Project #: EO2309217
Your C.O.C. #: 146520

Attention: ALS Reporting Edmonton

ALS ENVIRONMENTAL
Bay 7, 1313 44th ave NE
CALGARY, AB
CANADA T2E 6L5

Report Date: 2023/10/18
Report #: R3412319
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C381928
Received: 2023/10/11, 10:30

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Daphnia magna LC50 Multi-Concentration	1	N/A	2023/10/11	EENVSOP-00154	EPS 1 RM14 2nd ed m
Rainbow Trout LC50 Multi-Concentration	1	N/A	2023/10/12	EENVSOP-00160	EPS 1 RM13 2nd ed m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Your P.O. #: EO2309217
Your Project #: EO2309217
Your C.O.C. #: 146520

Attention: ALS Reporting Edmonton

ALS ENVIRONMENTAL
Bay 7, 1313 44th ave NE
CALGARY, AB
CANADA T2E 6L5

Report Date: 2023/10/18
Report #: R3412319
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C381928
Received: 2023/10/11, 10:30

Encryption Key

Bureau Veritas
18 Oct 2023 14:39:40

Please direct all questions regarding this Certificate of Analysis to:
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (780) 577-7100

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		CBM263	
Sampling Date		2023/10/10 00:00	
COC Number		146520	
	UNITS	**EO2309217-001**	**QC Batch**
Daphnia Magna Bioassay			
LC50	% vol/vol	ATTACHED	B148840

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

TOXICOLOGY (WATER)

Bureau Veritas ID		CBM263	
Sampling Date		2023/10/10 00:00	
COC Number		146520	
	UNITS	**EO2309217-001**	**QC Batch**
Rainbow Trout Bioassay			
LC50	% vol/vol	ATTACHED	B149613

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	6.0°C
Package 3	5.7°C
Package 4	6.0°C
Package 5	5.0°C

Results relate only to the items tested.

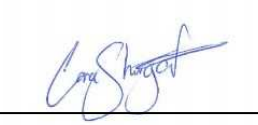
Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C381928
Report Date: 2023/10/18

ALS ENVIRONMENTAL
Client Project #: EO2309217
Your P.O. #: EO2309217

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Cara Shurgot, Analyst 2

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Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Chain of Custody
ALS Environmental - Edmonton
9450 - 17 Avenue NW
Edmonton AB Canada T6N 1M9

254(5)

146520

Destination Lab:	**Bureau Veritas (Edmonton)**
Address:	9331 - 48th Street Edmonton AB Canada T6B 2R4
Work Order Number:	**EO2309217**
Original Receipt Date/Time	Instructions Received
10/10/2023 15:39	

RUSH

Relinquished By	
Date/Time	
Received By	
Date/Time	
Receipt Temp	

Return as Indicated: Results: ALSEDClientServices@alsglobal.com Invoice: ALSEDClientServices@alsglobal.com Electronic Data: ALSEDClientServices@alsglobal.com

Attention: Megha Walia

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
EO2309217-001	Pond B	Water	HDPE	DAP-LC50-48	Survival/LC50 Daphnia Magna 48 hours	18-10-2023	10/10/2023 00:00	
EO2309217-001	Pond B	Water	HDPE			18-10-2023	10/10/2023 00:00	
EO2309217-001	Pond B	Water	HDPE Pail	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	18-10-2023	10/10/2023 00:00	
EO2309217-001	Pond B	Water	HDPE Pail			18-10-2023	10/10/2023 00:00	
EO2309217-001	Pond B	Water	HDPE Pail			18-10-2023	10/10/2023 00:00	
EO2309217-001	Pond B	Water	HDPE Pail			18-10-2023	10/10/2023 00:00	

76 Ave
4 pails
2 bottles

C381928

Deji Wu
2023/10/11 10:30

Temp. See ACTR

Page 1 of 1

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY Job Number: C381928

Client Project Name & Number: EO2309217 Sample Number: CBM263-02

Test Result:

48 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : EO2309217-001 Sample Matrix : Water

Description: Yellow, clear Sample Prior to Analysis:

Sample Collected: Oct 10, 2023 Sampling Method : N/A pH: 7.9

Sample Collected By: N/A Site Collection: N/A Temperature : 20 °C

Sample Received: Oct 11, 2023 10:30 AM Volume Received: 1L Dissolved Oxygen: 10.7 mg/L

Analysis Start : Oct 11, 2023 02:43 PM Avg Temp Arrival: 6 °C Sample Conductance: 818 µS/cm

End : Oct 13, 2023 01:49 PM Storage: 2-6°C Hardness: 180 mg $CaCO_3$/L

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hr	48 hrs	48 hrs
0	20	8.1	300	8.1	0	0	0	0	21	8.1	311	8.3
6.25	20	8.0	332	8.3	0	0	0	0	20	8.0	346	8.2
12.5	20	8.0	360	8.3	0	0	0	0	20	7.9	386	7.9
25	20	8.0	416	8.4	0	0	0	0	20	8.1	423	8.0
50	20	8.0	541	8.6	0	0	0	0	21	8.0	556	7.8
100	20	7.9	824	9.2	0	0	0	0	20	8.1	845	7.2

Concentration	Mortality (#)	Mortality (%)	Immobility (#)	Immobility (%)
% vol/vol	48 hrs	48 hrs	48 hrs	48 hrs
0	0	0	0	0
6.25	0	0	0	0
12.5	0	0	0	0
25	0	0	0	0
50	0	0	0	0
100	0	0	0	0

Comments : None

Culture/Control/Dilution Water: City of Edmonton dechlorinated tap water

Hardness: 180 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Pre-aeration Time :	30 min	Rate of Pre-aeration :	25-50 mL/min/L
Total # of Organisms Used :	60	Test Temperature :	20 ± 2 °C	Test Hardness Adjusted :	No
Test Volume :	150 mL	Vessel Volume :	200 mL	Test pH Adjusted:	No
Loading Density :	15.0 mL/Daphnia	Photoperiod :	16:8 (light: dark)		

Test Organism : *Daphnia magna* Source : In House Culture

Age at Test Initiation :	<24 hrs	Average Brood Size :	36.9
Culture Photoperiod :	16:8 (light: dark)	% Mortality within 7 days :	1.7
Culture Temperature :	20 ± 2 °C	Time To First Brood :	9 Days

Culture Diet Pseudokirchnriella and YTC at a ratio of 2 mL/L of culture daily. New cultures weekly, 63 daphnids distributed into 6 culture vessels and 3 reproductive vessels.

RESULTS OF *DAPHNIA MAGNA* LC50 MULTI-CONCENTRATION

Client :	70036	ALS ENVIRONMENTAL, CALGARY	Job Number:	C381928
Client Project Name & Number:	EO2309217		Sample Number:	CBM263-02

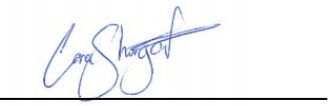
Reference chemical:	Sodium Chloride	Test Date:	Sep 29, 2023
Test Endpoint 48 hrs LC50 (95% confidence interval) :	6.96 (5.70, 8.50)g/L	Statistical Method :	Binomial
Historical Mean LC50 (warning limits) :	6.01 (4.52, 8.00) g/L	Concentration :	0,1.71,2.56,3.82,5.7,8.5 g/L

Test Method EPS 1/RM/14

Method Deviations: None

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters.This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Natasha Lloyd, Rayane Gama Santos, Svetlana Sofrenovic, Tami Horvath



Verified By : Cara Shurgot, Analyst 2 Date: Oct 18, 2023 12:31 PM

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY Job Number: C381928

Client Project Name & Number: EO2309217

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : EO2309217-001 Sample Matrix : Water

Description: Yellow, clear Sample Number: CBM263-01

Sample Collected: Oct 10, 2023 Sampling Method : N/A Site Collection: N/A

Sample Collected By: N/A Volume Received: 60 L Avg Temp Arrival: 6 °C Storage: 2-6°C

Sample Received: Oct 11, 2023 10:30 AM pH: 7.9 Dissolved Oxygen: 10.6 mg/L

Analysis Start : Oct 12, 2023 11:00 AM Temperature : 14 °C Sample Conductance: 706 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	7.9	277	9.4	0	0	0	0	0	0	0	0
6.25	14	7.9	318	9.4	0	0	0	0	0	0	0	0
12.5	14	7.8	329	9.6	0	0	0	0	0	0	0	0
25	14	7.8	383	9.7	0	0	0	0	0	0	0	0
50	14	7.9	486	9.7	0	0	0	0	0	0	0	0
100	13	7.9	703	9.9	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	7.7	280	9.5	0	0	0	0
6.25	0	0	0	0	14	7.7	315	9.5	0	0	0	0
12.5	0	0	0	0	14	7.7	325	9.4	0	0	0	0
25	0	0	0	0	14	7.8	380	9.6	0	0	0	0
50	0	0	0	0	14	7.5	488	8.4	0	0	0	0
100	0	0	0	0	14	7.8	712	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 170 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	120 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.2 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : LSL Trout Hatchery

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.4 ± 0.1 g	Length (Mean) +- SD :	3.63 ± 0.23 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.3 – 0.5 g	Length (Range) :	3.30 – 4.00 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0.4%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Oct 09, 2023

Test Endpoint 96 hrs LC50 (95% confidence interval) : 7.94 (<7.59, 8.65)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 8.96 (8.06, 9.95) mg/L Concentration : 0,7.59,9.15,11,13.3,16 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 70036 ALS ENVIRONMENTAL, CALGARY

Job Number: C381928

Client Project Name & Number: EO2309217

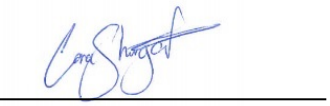
Sample Number: CBM263-01

Test Method EPS 1/RM/13

Method Deviations : The control chart result for this reference toxicant test was outside of 2SD limits. A check of all acclimation and test conditions was performed, and all requirements were met. The temperature of the 100% concentration was 13°C at test initiation which is below the minimum temperature of 14°C as specified in the reference method. All other culture and test quality indicators met requirements.

Note: The results contained in this report refer only to the testing of the sample submitted. Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation, including the toxicity parameters reported herein. The conductivity, dissolved oxygen and pH data contained within the toxicity report are provided for information purposes and are not individually accredited parameters. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Cara Shurgot, Kyle Monaghan, Svetlana Sofrenovic, Tami Horvath



Verified By : Cara Shurgot, Analyst 2

Date: Oct 18, 2023 02:32 PM

ALS ENVIRONMENTAL

Bureau Veritas Job Number: C381928
Report Date: 2023/10/18

Client Project #: EO2309217

Your P.O. #: EO2309217

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		CBM263	
Sampling Date		10/10/2023	
COC Number		146520	
	UNITS	**EO2309217-001**	**QC Batch**
Daphnia Magna Bioassay			
LC50	% vol/vol	ATTACHED	B148840

RDL = Reportable Detection Limit
N/A = Not Applicable

Results relate only to the items tested.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page of

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division
Edmonton
Work Order Reference
EO2309217

Telephone : +1 780 413 5227

Report To	Contact and company name below will appear on the final report
Company:	Clean Harbors Canada
Contact:	Todd Webb, Stan Yuha
Phone:	(780) 663-2513
	Company address below will appear on the final report
Street:	PO Box 390, 50114 Range Road 173
City/Province:	Ryley, AB
Postal Code:	T0B 4A0
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Clean Harbors Canada
Contact:	Stephanie Dennis

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax webb.todd@cleanharbors.com
Email 2 yuha.stan@cleanharbors.com
Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax Dennis.Stephanie@cleanharbors.com
Email 2

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge
☐ Same day [E2] if received by 10am M-S - 200% rush surc
Additional fees may apply to rush requests on wee
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, ple

Project Information

ALS Account # / Quote #:	EO22-CHES100-008
Job #:	Pond B Oct 10, 2023
PO / AFE:	236720
LSD:	Table 4.3B - Oct 10 Trout, Daphnia, COD, Sheen

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (ALS use only): EO2309217

ALS Contact: Megha Walia **Sampler:** Todd Webb

Analysis

Indicate Filtered (F), Preserved (P) or Filtere

NUMBER OF CONTAINERS

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	E559-L - COD	E566 - visible sheen	3D-DAP-LC50-48 (Daphnia LC50)	3D-TRT-LC50-96h (trout LC50)	SAMPLES ON HOLD	EXTENDED STORAGE REQU	SUSPECTED HAZARD (see no
	Pond B	10-Oct-23		Surface Water	P2	P2	P3	P3			

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Analyze as per Table 4.3B package (COD, visible Sheen, Trout LC50, Daphnia LC50 only) on quote

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.6							

SHIPMENT RELEASE (client use)

Released by:	Todd Webb	Date:	10-Oct-23	Time:

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:		Date:	10-Oct-2023	Time:	3:39

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 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**.

Appendix C

Ponds B, C and D

Annual Monitoring – TABLE 4.3-E

Analytical Report

September 2023

CERTIFICATE OF ANALYSIS

Work Order	: **EO2308479**	Page	: 1 of 12
Amendment	: **1**		
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: 2023 Table 4.3E Annual Pond chemistry	Date Samples Received	: 19-Sep-2023 15:43
PO	: 236266	Date Analysis Commenced	: 20-Sep-2023
C-O-C number	: ----	Issue Date	: 19-Oct-2023 13:11
Sampler	: TW		
Site	: Table 4.3E		
Quote number	: EO22-CHES100-008		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Alex Drake	Lab Analyst	Metals, Edmonton, Alberta
Amanda Powell	Client Service Manager	Internal Subcontracting, Kelso, Washington DC (District of Columbia)
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta
Daniel Nguyen	Lab Assistant	Metals, Edmonton, Alberta
Fahad Husain	Analyst	Inorganics, Edmonton, Alberta
Garrett Nodin	Lab Analyst	Inorganics, Edmonton, Alberta
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Jing Liu	Lab Assistant	Inorganics, Edmonton, Alberta
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Lee McTavish		Inorganics, Winnipeg, Manitoba
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Saron Gebremariam	Lab Assistant	Inorganics, Edmonton, Alberta
Yan Zhang	Lab Analyst	Organics, Edmonton, Alberta

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
%	percent
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.

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

EO2308479-001

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

Client sample ID: Pond B
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Alkalinity, bicarbonate (as HCO3)	71-52-3	173	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, carbonate (as CO3)	3812-32-6	12.7	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, hydroxide (as OH)	14280-30-9	<1.0	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, total (as CaCO3)	----	163	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Conductivity	----	874	1.0	µS/cm	E100/EO	20-Sep-2023	21-Sep-2023	1143527
Hardness (as CaCO3), dissolved	----	136	0.50	mg/L	EC100/EO	-	21-Sep-2023	-
pH	----	8.73	0.10	pH units	E108/EO	20-Sep-2023	21-Sep-2023	1143526
Solids, total dissolved [TDS], calculated	----	572	1.0	mg/L	EC103/EO	-	21-Sep-2023	-
Solids, total suspended [TSS]	----	23.6	3.0	mg/L	E160/EO	-	21-Sep-2023	1143359
Anions and Nutrients								
Ammonia, total (as N)	7664-41-7	0.401	0.0050	mg/L	E298/EO	20-Sep-2023	20-Sep-2023	1143947
Chloride	16887-00-6	26.1	0.50	mg/L	E235.Cl/EO	20-Sep-2023	20-Sep-2023	1143727
Fluoride	16984-48-8	1.53	0.020	mg/L	E235.F/EO	20-Sep-2023	20-Sep-2023	1143724
Nitrate (as N)	14797-55-8	0.145	0.020	mg/L	E235.NO3/EO	20-Sep-2023	20-Sep-2023	1143725
Nitrate + Nitrite (as N)	----	0.145	0.0224	mg/L	EC235.N+N/EO	-	21-Sep-2023	-
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/EO	20-Sep-2023	20-Sep-2023	1143726
Phosphorus, total	7723-14-0	0.392	0.020	mg/L	E372/WP	25-Sep-2023	26-Sep-2023	1152274
Phosphorus, total dissolved	7723-14-0	0.321	0.020	mg/L	E375-H/WP	25-Sep-2023	26-Sep-2023	1152267
Sulfate (as SO4)	14808-79-8	241	0.30	mg/L	E235.SO4/EO	20-Sep-2023	20-Sep-2023	1143728
Kjeldahl nitrogen, total [TKN]	----	1.24	0.200	mg/L	E318/EO	21-Sep-2023	21-Sep-2023	1143331
Cyanides								
Cyanide, weak acid dissociable	----	<0.0050	0.0050	mg/L	E336/WT	22-Sep-2023	22-Sep-2023	1146403
Organic / Inorganic Carbon								
Carbon, dissolved organic [DOC]	----	12.0	0.50	mg/L	E358-L/EO	20-Sep-2023	20-Sep-2023	1144576
Ion Balance								
Ion balance (cations/anions)	----	98.1	0.010	%	EC101/EO	-	21-Sep-2023	-
Total Metals								
Chromium, total	7440-47-3	0.00160	0.00050	mg/L	E420/EO	20-Sep-2023	20-Sep-2023	1143469
Mercury, total	7439-97-6	<0.0000050	0.0000050	mg/L	E508/EO	20-Sep-2023	20-Sep-2023	1143228
Sodium, total	7440-23-5	136	0.050	mg/L	E420/EO	20-Sep-2023	20-Sep-2023	1143469
Dissolved Metals								
Aluminum, dissolved	7429-90-5	0.0346	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Antimony, dissolved	7440-36-0	0.00083	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Arsenic, dissolved	7440-38-2	0.00461	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Barium, dissolved	7440-39-3	0.0487	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Beryllium, dissolved	7440-41-7	<0.000020	0.000020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Bismuth, dissolved	7440-69-9	<0.000050	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Boron, dissolved	7440-42-8	0.174	0.010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cadmium, dissolved	7440-43-9	0.000219	0.0000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Calcium, dissolved	7440-70-2	35.7	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cesium, dissolved	7440-46-2	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Chromium, dissolved	7440-47-3	<0.00050	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cobalt, dissolved	7440-48-4	0.00083	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Copper, dissolved	7440-50-8	0.00551	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Iron, dissolved	7439-89-6	0.026	0.010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515

Analytical Results

EO2308479-001

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

Client sample ID: Pond B
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Dissolved Metals								
Lead, dissolved	7439-92-1	0.000085	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Lithium, dissolved	7439-93-2	0.0433	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Magnesium, dissolved	7439-95-4	11.3	0.0050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Manganese, dissolved	7439-96-5	0.00804	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Molybdenum, dissolved	7439-98-7	0.722	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Nickel, dissolved	7440-02-0	0.0174	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Phosphorus, dissolved	7723-14-0	0.350	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Potassium, dissolved	7440-09-7	5.39	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Rubidium, dissolved	7440-17-7	0.00230	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Selenium, dissolved	7782-49-2	0.00186	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Silicon, dissolved	7440-21-3	0.352	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Silver, dissolved	7440-22-4	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Sodium, dissolved	7440-23-5	139	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Strontium, dissolved	7440-24-6	0.359	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Sulfur, dissolved	7704-34-9	80.3	0.50	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tellurium, dissolved	13494-80-9	<0.00020	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Thallium, dissolved	7440-28-0	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Thorium, dissolved	7440-29-1	<0.00010	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tin, dissolved	7440-31-5	<0.00010	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Titanium, dissolved	7440-32-6	0.00195	0.00030	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tungsten, dissolved	7440-33-7	0.00259	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Uranium, dissolved	7440-61-1	0.00333	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Vanadium, dissolved	7440-62-2	0.0174	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Zinc, dissolved	7440-66-6	0.0034	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Zirconium, dissolved	7440-67-7	0.00027	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Dissolved metals filtration location	----	Field	-	-	EP421/EO	-	20-Sep-2023	1143515
Speciated Metals								
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	<0.00050	0.00050	mg/L	E532A/EO	-	20-Sep-2023	1144038
Aggregate Organics								
Adsorbable organic halogens, [AOX], (as Cl)	----	0.020	10	mg/L	AOX/1D	-	06-Oct-2023	-
Chemical oxygen demand [COD]	----	37	10	mg/L	E559-L/EO	-	20-Sep-2023	1143738
Phenols, total (4AAP)	----	0.0019	0.0010	mg/L	E562/EO	21-Sep-2023	21-Sep-2023	1146134
Volatile Organic Compounds								
Benzene	71-43-2	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Toluene	108-88-3	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Hydrocarbons								
F1 (C6-C10)	----	<100	100	µg/L	E581.F1/EO	21-Sep-2023	21-Sep-2023	1143345
F1-BTEX	----	<100	100	µg/L	EC580/EO	-	25-Sep-2023	-
F2 (C10-C16)	----	<100	100	µg/L	E601/EO	20-Sep-2023	20-Sep-2023	1143263
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	105	1.0	%	E601/EO	20-Sep-2023	20-Sep-2023	1143263

Analytical Results

EO2308479-001

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

Client sample ID: Pond B
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	104	1.0	%	E581.F1/EO	21-Sep-2023	21-Sep-2023	1143345
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	89.1	1.0	%	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Difluorobenzene, 1,4-	540-36-3	93.9	1.0	%	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Chlorinated Phenolics								
Chlorophenol, 2-	95-57-8	<0.30	0.30	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dichlorophenol, 2,4-	120-83-2	<0.20	0.20	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dichlorophenol, 2,6-	87-65-0	<0.20	0.20	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 4-chloro-3-	59-50-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Pentachlorophenol [PCP]	87-86-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,4,5-	4901-51-3	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,4,6-	58-90-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,5,6-	935-95-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,3,4-	15950-66-0	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,3,5-	933-78-8	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,4,5-	95-95-4	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,4,6-	88-06-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Non-Chlorinated Phenolics								
Dimethylphenol, 2,4-	105-67-9	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dinitrophenol, 2,4-	51-28-5	<1.0	1.0	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 2-	95-48-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 3+4-	----	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenols, total	----	<0.75	0.75	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Nitrophenol, 2-	88-75-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Nitrophenol, 4-	100-02-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenol	108-95-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenol, 2-methyl-4,6-dinitro- [DNOC]	534-52-1	<2.0	2.0	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenolics Surrogates								
Tribromophenol, 2,4,6-	118-79-6	115	1.0	%	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Polychlorinated Biphenyls								
Aroclor 1016	12674-11-2	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1221	11104-28-2	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1232	11141-16-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1242	53469-21-9	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1248	12672-29-6	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1254	11097-69-1	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1260	11096-82-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1262	37324-23-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1268	11100-14-4	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Polychlorinated biphenyls [PCBs], total	----	<0.060	0.060	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Polychlorinated Biphenyls Surrogates								
Decachlorobiphenyl	2051-24-3	106	0.1	%	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Tetrachloro-m-xylene	877-09-8	96.6	0.1	%	E687/WT	25-Sep-2023	26-Sep-2023	1151415

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

EO2308479-002

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

Client sample ID: Pond C
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Alkalinity, bicarbonate (as HCO3)	71-52-3	141	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, carbonate (as CO3)	3812-32-6	13.8	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, hydroxide (as OH)	14280-30-9	<1.0	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, total (as CaCO3)	----	139	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Conductivity	----	914	1.0	µS/cm	E100/EO	20-Sep-2023	21-Sep-2023	1143527
Hardness (as CaCO3), dissolved	----	140	0.50	mg/L	EC100/EO	-	21-Sep-2023	-
pH	----	8.94	0.10	pH units	E108/EO	20-Sep-2023	21-Sep-2023	1143526
Solids, total dissolved [TDS], calculated	----	603	1.0	mg/L	EC103/EO	-	21-Sep-2023	-
Solids, total suspended [TSS]	----	14.6	3.0	mg/L	E160/EO	-	21-Sep-2023	1143359
Anions and Nutrients								
Ammonia, total (as N)	7664-41-7	0.0218	0.0050	mg/L	E298/EO	20-Sep-2023	20-Sep-2023	1143947
Chloride	16887-00-6	49.9	0.50	mg/L	E235.Cl/EO	20-Sep-2023	20-Sep-2023	1143727
Fluoride	16984-48-8	0.700	0.020	mg/L	E235.F/EO	20-Sep-2023	20-Sep-2023	1143724
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/EO	20-Sep-2023	20-Sep-2023	1143725
Nitrate + Nitrite (as N)	----	<0.0224	0.0224	mg/L	EC235.N+N/EO	-	21-Sep-2023	-
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/EO	20-Sep-2023	20-Sep-2023	1143726
Phosphorus, total	7723-14-0	0.040	0.020	mg/L	E372/WP	25-Sep-2023	26-Sep-2023	1152274
Phosphorus, total dissolved	7723-14-0	<0.020	0.020	mg/L	E375-H/WP	25-Sep-2023	26-Sep-2023	1152267
Sulfate (as SO4)	14808-79-8	258	0.30	mg/L	E235.SO4/EO	20-Sep-2023	20-Sep-2023	1143728
Kjeldahl nitrogen, total [TKN]	----	1.12	0.200	mg/L	E318/EO	21-Sep-2023	21-Sep-2023	1143331
Cyanides								
Cyanide, weak acid dissociable	----	<0.0050	0.0050	mg/L	E336/WT	22-Sep-2023	22-Sep-2023	1146403
Organic / Inorganic Carbon								
Carbon, dissolved organic [DOC]	----	9.95	0.50	mg/L	E358-L/EO	20-Sep-2023	20-Sep-2023	1144576
Ion Balance								
Ion balance (cations/anions)	----	96.1	0.010	%	EC101/EO	-	21-Sep-2023	-
Total Metals								
Chromium, total	7440-47-3	<0.00050	0.00050	mg/L	E420/EO	20-Sep-2023	20-Sep-2023	1143469
Mercury, total	7439-97-6	<0.0000050	0.0000050	mg/L	E508/EO	20-Sep-2023	20-Sep-2023	1143228
Sodium, total	7440-23-5	157	0.050	mg/L	E420/EO	20-Sep-2023	20-Sep-2023	1143469
Dissolved Metals								
Aluminum, dissolved	7429-90-5	0.0134	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Antimony, dissolved	7440-36-0	0.00055	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Arsenic, dissolved	7440-38-2	0.00348	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Barium, dissolved	7440-39-3	0.0147	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Beryllium, dissolved	7440-41-7	<0.000020	0.000020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Bismuth, dissolved	7440-69-9	<0.000050	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Boron, dissolved	7440-42-8	0.057	0.010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cadmium, dissolved	7440-43-9	0.0000238	0.0000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Calcium, dissolved	7440-70-2	35.9	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cesium, dissolved	7440-46-2	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Chromium, dissolved	7440-47-3	<0.00050	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cobalt, dissolved	7440-48-4	0.00018	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Copper, dissolved	7440-50-8	0.00275	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Iron, dissolved	7439-89-6	0.014	0.010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515

Analytical Results

EO2308479-002

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

Client sample ID: Pond C
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Dissolved Metals								
Lead, dissolved	7439-92-1	<0.000050	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Lithium, dissolved	7439-93-2	0.0240	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Magnesium, dissolved	7439-95-4	12.2	0.0050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Manganese, dissolved	7439-96-5	0.00953	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Molybdenum, dissolved	7439-98-7	0.0835	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Nickel, dissolved	7440-02-0	0.00705	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Phosphorus, dissolved	7723-14-0	<0.050	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Potassium, dissolved	7440-09-7	4.58	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Rubidium, dissolved	7440-17-7	0.00147	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Selenium, dissolved	7782-49-2	0.000536	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Silicon, dissolved	7440-21-3	1.40	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Silver, dissolved	7440-22-4	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Sodium, dissolved	7440-23-5	145	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Strontium, dissolved	7440-24-6	0.312	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Sulfur, dissolved	7704-34-9	84.9	0.50	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tellurium, dissolved	13494-80-9	<0.00020	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Thallium, dissolved	7440-28-0	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Thorium, dissolved	7440-29-1	0.00011	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tin, dissolved	7440-31-5	<0.00010	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Titanium, dissolved	7440-32-6	0.00054	0.00030	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tungsten, dissolved	7440-33-7	0.00064	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Uranium, dissolved	7440-61-1	0.00163	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Vanadium, dissolved	7440-62-2	0.00270	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Zinc, dissolved	7440-66-6	0.0016	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Zirconium, dissolved	7440-67-7	<0.00020	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Dissolved metals filtration location	----	Field	-	-	EP421/EO	-	20-Sep-2023	1143515
Speciated Metals								
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	<0.00050	0.00050	mg/L	E532A/EO	-	20-Sep-2023	1144038
Aggregate Organics								
Adsorbable organic halogens, [AOX], (as Cl)	----	0.020	10	mg/L	AOX/1D	-	06-Oct-2023	-
Chemical oxygen demand [COD]	----	58	10	mg/L	E559-L/EO	-	20-Sep-2023	1143738
Phenols, total (4AAP)	----	0.0012	0.0010	mg/L	E562/EO	21-Sep-2023	21-Sep-2023	1146134
Volatile Organic Compounds								
Benzene	71-43-2	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Toluene	108-88-3	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Hydrocarbons								
F1 (C6-C10)	----	<100	100	µg/L	E581.F1/EO	21-Sep-2023	21-Sep-2023	1143345
F1-BTEX	----	<100	100	µg/L	EC580/EO	-	25-Sep-2023	-
F2 (C10-C16)	----	<100	100	µg/L	E601/EO	20-Sep-2023	20-Sep-2023	1143263
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	103	1.0	%	E601/EO	20-Sep-2023	20-Sep-2023	1143263

Analytical Results

EO2308479-002

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

Client sample ID: Pond C
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	114	1.0	%	E581.F1/EO	21-Sep-2023	21-Sep-2023	1143345
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	92.4	1.0	%	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Difluorobenzene, 1,4-	540-36-3	93.6	1.0	%	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Chlorinated Phenolics								
Chlorophenol, 2-	95-57-8	<0.30	0.30	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dichlorophenol, 2,4-	120-83-2	<0.20	0.20	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dichlorophenol, 2,6-	87-65-0	<0.20	0.20	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 4-chloro-3-	59-50-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Pentachlorophenol [PCP]	87-86-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,4,5-	4901-51-3	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,4,6-	58-90-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,5,6-	935-95-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,3,4-	15950-66-0	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,3,5-	933-78-8	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,4,5-	95-95-4	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,4,6-	88-06-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Non-Chlorinated Phenolics								
Dimethylphenol, 2,4-	105-67-9	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dinitrophenol, 2,4-	51-28-5	<1.0	1.0	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 2-	95-48-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 3+4-	----	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenols, total	----	<0.75	0.75	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Nitrophenol, 2-	88-75-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Nitrophenol, 4-	100-02-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenol	108-95-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenol, 2-methyl-4,6-dinitro- [DNOC]	534-52-1	<2.0	2.0	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenolics Surrogates								
Tribromophenol, 2,4,6-	118-79-6	106	1.0	%	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Polychlorinated Biphenyls								
Aroclor 1016	12674-11-2	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1221	11104-28-2	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1232	11141-16-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1242	53469-21-9	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1248	12672-29-6	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1254	11097-69-1	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1260	11096-82-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1262	37324-23-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1268	11100-14-4	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Polychlorinated biphenyls [PCBs], total	----	<0.060	0.060	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Polychlorinated Biphenyls Surrogates								
Decachlorobiphenyl	2051-24-3	120	0.1	%	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Tetrachloro-m-xylene	877-09-8	96.2	0.1	%	E687/WT	25-Sep-2023	26-Sep-2023	1151415

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

EO2308479-003

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

Client sample ID: Tipping Pad Pond
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Alkalinity, bicarbonate (as HCO3)	71-52-3	64.3	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, carbonate (as CO3)	3812-32-6	36.7	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, hydroxide (as OH)	14280-30-9	<1.0	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Alkalinity, total (as CaCO3)	----	114	1.0	mg/L	E290/EO	20-Sep-2023	21-Sep-2023	1143528
Conductivity	----	1280	1.0	µS/cm	E100/EO	20-Sep-2023	21-Sep-2023	1143527
Hardness (as CaCO3), dissolved	----	77.6	0.50	mg/L	EC100/EO	-	21-Sep-2023	-
pH	----	9.85	0.10	pH units	E108/EO	20-Sep-2023	21-Sep-2023	1143526
Solids, total dissolved [TDS], calculated	----	873	1.0	mg/L	EC103/EO	-	21-Sep-2023	-
Solids, total suspended [TSS]	----	39.2	3.0	mg/L	E160/EO	-	21-Sep-2023	1143359
Anions and Nutrients								
Ammonia, total (as N)	7664-41-7	0.0217	0.0050	mg/L	E298/EO	20-Sep-2023	20-Sep-2023	1143947
Chloride	16887-00-6	6.02	0.50	mg/L	E235.Cl/EO	20-Sep-2023	20-Sep-2023	1143727
Fluoride	16984-48-8	1.25	0.020	mg/L	E235.F/EO	20-Sep-2023	20-Sep-2023	1143724
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/EO	20-Sep-2023	20-Sep-2023	1143725
Nitrate + Nitrite (as N)	----	<0.0224	0.0224	mg/L	EC235.N+N/EO	-	21-Sep-2023	-
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/EO	20-Sep-2023	20-Sep-2023	1143726
Phosphorus, total	7723-14-0	0.306	0.020	mg/L	E372/WP	25-Sep-2023	26-Sep-2023	1152274
Phosphorus, total dissolved	7723-14-0	0.090	0.020	mg/L	E375-H/WP	25-Sep-2023	26-Sep-2023	1152267
Sulfate (as SO4)	14808-79-8	504	0.30	mg/L	E235.SO4/EO	20-Sep-2023	20-Sep-2023	1143728
Kjeldahl nitrogen, total [TKN]	----	1.06	0.200	mg/L	E318/EO	21-Sep-2023	21-Sep-2023	1143331
Cyanides								
Cyanide, weak acid dissociable	----	<0.0050	0.0050	mg/L	E336/WT	22-Sep-2023	22-Sep-2023	1146403
Organic / Inorganic Carbon								
Carbon, dissolved organic [DOC]	----	8.24	0.50	mg/L	E358-L/EO	20-Sep-2023	20-Sep-2023	1144576
Ion Balance								
Ion balance (cations/anions)	----	96.9	0.010	%	EC101/EO	-	21-Sep-2023	-
Total Metals								
Chromium, total	7440-47-3	0.00388	0.00050	mg/L	E420/EO	20-Sep-2023	20-Sep-2023	1143469
Mercury, total	7439-97-6	<0.0000050	0.0000050	mg/L	E508/EO	20-Sep-2023	20-Sep-2023	1143228
Sodium, total	7440-23-5	266	0.050	mg/L	E420/EO	20-Sep-2023	20-Sep-2023	1143469
Dissolved Metals								
Aluminum, dissolved	7429-90-5	0.0701	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Antimony, dissolved	7440-36-0	0.00100	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Arsenic, dissolved	7440-38-2	0.00376	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Barium, dissolved	7440-39-3	0.0210	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Beryllium, dissolved	7440-41-7	<0.000020	0.000020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Bismuth, dissolved	7440-69-9	<0.000050	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Boron, dissolved	7440-42-8	0.063	0.010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cadmium, dissolved	7440-43-9	0.0000399	0.0000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Calcium, dissolved	7440-70-2	21.2	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cesium, dissolved	7440-46-2	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Chromium, dissolved	7440-47-3	0.00095	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Cobalt, dissolved	7440-48-4	0.00034	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Copper, dissolved	7440-50-8	0.00259	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Iron, dissolved	7439-89-6	0.040	0.010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515

Analytical Results

EO2308479-003

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

Client sample ID: Tipping Pad Pond
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Dissolved Metals								
Lead, dissolved	7439-92-1	0.000105	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Lithium, dissolved	7439-93-2	0.0545	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Magnesium, dissolved	7439-95-4	5.98	0.0050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Manganese, dissolved	7439-96-5	0.00090	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Molybdenum, dissolved	7439-98-7	0.104	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Nickel, dissolved	7440-02-0	0.00539	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Phosphorus, dissolved	7723-14-0	0.088	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Potassium, dissolved	7440-09-7	4.26	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Rubidium, dissolved	7440-17-7	0.00233	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Selenium, dissolved	7782-49-2	0.00986	0.000050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Silicon, dissolved	7440-21-3	0.659	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Silver, dissolved	7440-22-4	0.000012	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Sodium, dissolved	7440-23-5	252	0.050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Strontium, dissolved	7440-24-6	0.254	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Sulfur, dissolved	7704-34-9	168	0.50	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tellurium, dissolved	13494-80-9	<0.00020	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Thallium, dissolved	7440-28-0	<0.000010	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Thorium, dissolved	7440-29-1	0.00011	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tin, dissolved	7440-31-5	<0.00010	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Titanium, dissolved	7440-32-6	0.00241	0.00030	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Tungsten, dissolved	7440-33-7	0.00111	0.00010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Uranium, dissolved	7440-61-1	0.00391	0.000010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Vanadium, dissolved	7440-62-2	0.00327	0.00050	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Zinc, dissolved	7440-66-6	0.0016	0.0010	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Zirconium, dissolved	7440-67-7	<0.00020	0.00020	mg/L	E421/EO	20-Sep-2023	20-Sep-2023	1143515
Dissolved metals filtration location	----	Field	-	-	EP421/EO	-	20-Sep-2023	1143515
Speciated Metals								
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	<0.00050	0.00050	mg/L	E532A/EO	-	20-Sep-2023	1144038
Aggregate Organics								
Adsorbable organic halogens, [AOX], (as Cl)	----	0.020	10	mg/L	AOX/1D	-	06-Oct-2023	-
Chemical oxygen demand [COD]	----	55	10	mg/L	E559-L/EO	-	20-Sep-2023	1143738
Phenols, total (4AAP)	----	<0.0010	0.0010	mg/L	E562/EO	21-Sep-2023	21-Sep-2023	1146134
Volatile Organic Compounds								
Benzene	71-43-2	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Toluene	108-88-3	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Hydrocarbons								
F1 (C6-C10)	----	<100	100	µg/L	E581.F1/EO	21-Sep-2023	21-Sep-2023	1143345
F1-BTEX	----	<100	100	µg/L	EC580/EO	-	25-Sep-2023	-
F2 (C10-C16)	----	<100	100	µg/L	E601/EO	20-Sep-2023	20-Sep-2023	1143263
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	104	1.0	%	E601/EO	20-Sep-2023	20-Sep-2023	1143263

Analytical Results

EO2308479-003

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

Client sample ID: Tipping Pad Pond
Client sampling date / time: 19-Sep-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	103	1.0	%	E581.F1/EO	21-Sep-2023	21-Sep-2023	1143345
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	86.6	1.0	%	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Difluorobenzene, 1,4-	540-36-3	95.1	1.0	%	E611A/EO	21-Sep-2023	21-Sep-2023	1143344
Chlorinated Phenolics								
Chlorophenol, 2-	95-57-8	<0.30	0.30	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dichlorophenol, 2,4-	120-83-2	<0.20	0.20	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dichlorophenol, 2,6-	87-65-0	<0.20	0.20	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 4-chloro-3-	59-50-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Pentachlorophenol [PCP]	87-86-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,4,5-	4901-51-3	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,4,6-	58-90-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Tetrachlorophenol, 2,3,5,6-	935-95-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,3,4-	15950-66-0	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,3,5-	933-78-8	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,4,5-	95-95-4	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Trichlorophenol, 2,4,6-	88-06-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Non-Chlorinated Phenolics								
Dimethylphenol, 2,4-	105-67-9	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Dinitrophenol, 2,4-	51-28-5	<1.0	1.0	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 2-	95-48-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenol, 3+4-	----	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Methylphenols, total	----	<0.75	0.75	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Nitrophenol, 2-	88-75-5	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Nitrophenol, 4-	100-02-7	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenol	108-95-2	<0.50	0.50	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenol, 2-methyl-4,6-dinitro- [DNOC]	534-52-1	<2.0	2.0	µg/L	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Phenolics Surrogates								
Tribromophenol, 2,4,6-	118-79-6	111	1.0	%	E651C/WT	25-Sep-2023	26-Sep-2023	1152973
Polychlorinated Biphenyls								
Aroclor 1016	12674-11-2	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1221	11104-28-2	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1232	11141-16-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1242	53469-21-9	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1248	12672-29-6	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1254	11097-69-1	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1260	11096-82-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1262	37324-23-5	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Aroclor 1268	11100-14-4	<0.020	0.020	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Polychlorinated biphenyls [PCBs], total	----	<0.060	0.060	µg/L	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Polychlorinated Biphenyls Surrogates								
Decachlorobiphenyl	2051-24-3	94.6	0.1	%	E687/WT	25-Sep-2023	26-Sep-2023	1151415
Tetrachloro-m-xylene	877-09-8	92.6	0.1	%	E687/WT	25-Sep-2023	26-Sep-2023	1151415

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2308479**	Page	: 1 of 20
Amendment	: **1**		
Client	: **Clean Harbors Environmental Services, Inc.**	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780 663 2513	Telephone	: +1 780 413 5227
Project	: 2023 Table 4.3E Annual Pond chemistry	Date Samples Received	: 19-Sep-2023 15:43
PO	: 236266	Issue Date	: 19-Oct-2023 13:11
C-O-C number	: ----		
Sampler	: TW		
Site	: Table 4.3E		
Quote number	: EO22-CHES100-008		
No. of samples received	: 3		
No. of samples analysed	: 3		

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 : Analytical Method / 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 : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass/Teflon lined cap										
Pond B	AOX	19-Sep-2023	----	----	----		06-Oct-2023	180 days	17 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass/Teflon lined cap										
Pond C	AOX	19-Sep-2023	----	----	----		06-Oct-2023	180 days	17 days	✓
Aggregate Organics : Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration										
Amber glass/Teflon lined cap										
Tipping Pad Pond	AOX	19-Sep-2023	----	----	----		06-Oct-2023	180 days	17 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
Pond B	E559-L	19-Sep-2023	----	----	----		20-Sep-2023	28 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
Pond C	E559-L	19-Sep-2023	----	----	----		20-Sep-2023	28 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
Tipping Pad Pond	E559-L	19-Sep-2023	----	----	----		20-Sep-2023	28 days	1 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
Pond B	E562	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	21-Sep-2023	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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 : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
Pond C	E562	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	21-Sep-2023	28 days	2 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
Tipping Pad Pond	E562	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	21-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Pond B	E298	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Pond C	E298	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Tipping Pad Pond	E298	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Pond B	E235.Cl	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Pond C	E235.Cl	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Tipping Pad Pond	E235.Cl	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Pond B	E235.F	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Pond C	E235.F	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Tipping Pad Pond	E235.F	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
Pond B	E235.NO3	19-Sep-2023	20-Sep-2023	3 days	1 days	✓	20-Sep-2023	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
Pond C	E235.NO3	19-Sep-2023	20-Sep-2023	3 days	1 days	✓	20-Sep-2023	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
Tipping Pad Pond	E235.NO3	19-Sep-2023	20-Sep-2023	3 days	1 days	✓	20-Sep-2023	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Pond B	E235.NO2	19-Sep-2023	20-Sep-2023	3 days	1 days	✓	20-Sep-2023	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Pond C	E235.NO2	19-Sep-2023	20-Sep-2023	3 days	1 days	✓	20-Sep-2023	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Tipping Pad Pond	E235.NO2	19-Sep-2023	20-Sep-2023	3 days	1 days	✓	20-Sep-2023	3 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Pond B	E235.SO4	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Pond C	E235.SO4	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Tipping Pad Pond	E235.SO4	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass dissolved (sulfuric acid)										
Pond B	E375-H	19-Sep-2023	25-Sep-2023	28 days	6 days	✓	26-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass dissolved (sulfuric acid)										
Pond C	E375-H	19-Sep-2023	25-Sep-2023	28 days	6 days	✓	26-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass dissolved (sulfuric acid)										
Tipping Pad Pond	E375-H	19-Sep-2023	25-Sep-2023	28 days	6 days	✓	26-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Pond B	E318	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	21-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Pond C	E318	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	21-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Tipping Pad Pond	E318	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	21-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
Pond B	E372	19-Sep-2023	25-Sep-2023	28 days	6 days	✓	26-Sep-2023	28 days	7 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
Pond C	E372	19-Sep-2023	25-Sep-2023	28 days	6 days	✓	26-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
Tipping Pad Pond	E372	19-Sep-2023	25-Sep-2023	28 days	6 days	✓	26-Sep-2023	28 days	7 days	✓
Chlorinated Phenolics : Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS										
Amber glass/Teflon lined cap										
Pond B	E651C	19-Sep-2023	25-Sep-2023	14 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Chlorinated Phenolics : Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS										
Amber glass/Teflon lined cap										
Pond C	E651C	19-Sep-2023	25-Sep-2023	14 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Chlorinated Phenolics : Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS										
Amber glass/Teflon lined cap										
Tipping Pad Pond	E651C	19-Sep-2023	25-Sep-2023	14 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Pond B	E336	19-Sep-2023	22-Sep-2023	14 days	3 days	✓	22-Sep-2023	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Pond C	E336	19-Sep-2023	22-Sep-2023	14 days	3 days	✓	22-Sep-2023	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Tipping Pad Pond	E336	19-Sep-2023	22-Sep-2023	14 days	3 days	✓	22-Sep-2023	14 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Pond B	E421	19-Sep-2023	20-Sep-2023	180 days	1 days	✓	20-Sep-2023	180 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Pond C	E421	19-Sep-2023	20-Sep-2023	180 days	1 days	✓	20-Sep-2023	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Tipping Pad Pond	E421	19-Sep-2023	20-Sep-2023	180 days	1 days	✓	20-Sep-2023	180 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Pond B	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Pond C	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Tipping Pad Pond	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	14 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) Pond B	E601	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	20-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) Pond C	E601	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	20-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) Tipping Pad Pond	E601	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	20-Sep-2023	40 days	0 days	✓
Non-Chlorinated Phenolics : Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS										
Amber glass/Teflon lined cap Pond B	E651C	19-Sep-2023	25-Sep-2023	14 days	6 days	✓	26-Sep-2023	40 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Non-Chlorinated Phenolics : Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS										
Amber glass/Teflon lined cap										
Pond C	E651C	19-Sep-2023	25-Sep-2023	14 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Non-Chlorinated Phenolics : Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS										
Amber glass/Teflon lined cap										
Tipping Pad Pond	E651C	19-Sep-2023	25-Sep-2023	14 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
Pond B	E358-L	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
Pond C	E358-L	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
Tipping Pad Pond	E358-L	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Pond B	E290	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	21-Sep-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Pond C	E290	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	21-Sep-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Tipping Pad Pond	E290	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	21-Sep-2023	14 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Pond B	E100	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	21-Sep-2023	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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 : Conductivity in Water										
HDPE Pond C	E100	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	21-Sep-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Tipping Pad Pond	E100	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	21-Sep-2023	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE Pond B	E108	19-Sep-2023	20-Sep-2023	0.25 hrs	24 hrs	× EHTR-FM	21-Sep-2023	0.25 hrs	48 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Pond C	E108	19-Sep-2023	20-Sep-2023	0.25 hrs	24 hrs	× EHTR-FM	21-Sep-2023	0.25 hrs	48 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Tipping Pad Pond	E108	19-Sep-2023	20-Sep-2023	0.25 hrs	24 hrs	× EHTR-FM	21-Sep-2023	0.25 hrs	48 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE Pond B	E160	19-Sep-2023	----	----	----		21-Sep-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Pond C	E160	19-Sep-2023	----	----	----		21-Sep-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Tipping Pad Pond	E160	19-Sep-2023	----	----	----		21-Sep-2023	7 days	2 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap Pond B	E687	19-Sep-2023	25-Sep-2023	365 days	6 days	✓	26-Sep-2023	40 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap										
Pond C	E687	19-Sep-2023	25-Sep-2023	365 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap										
Tipping Pad Pond	E687	19-Sep-2023	25-Sep-2023	365 days	6 days	✓	26-Sep-2023	40 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - dissolved (sodium hydroxide)										
Pond B	E532A	19-Sep-2023	----	----	----		20-Sep-2023	28 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - dissolved (sodium hydroxide)										
Pond C	E532A	19-Sep-2023	----	----	----		20-Sep-2023	28 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - dissolved (sodium hydroxide)										
Tipping Pad Pond	E532A	19-Sep-2023	----	----	----		20-Sep-2023	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Pond B	E508	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Pond C	E508	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Tipping Pad Pond	E508	19-Sep-2023	20-Sep-2023	28 days	1 days	✓	20-Sep-2023	28 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Pond B	E420	19-Sep-2023	20-Sep-2023	180 days	1 days	✓	20-Sep-2023	180 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Pond C	E420	19-Sep-2023	20-Sep-2023	180 days	1 days	✓	20-Sep-2023	180 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Tipping Pad Pond	E420	19-Sep-2023	20-Sep-2023	180 days	1 days	✓	20-Sep-2023	180 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Pond B	E611A	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Pond C	E611A	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Tipping Pad Pond	E611A	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	14 days	2 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)							
Alkalinity Species by Titration	E290	1143528	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	1143947	1	20	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1143344	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1143345	1	14	7.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1143738	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	1143727	1	20	5.0	5.0	✓
Conductivity in Water	E100	1143527	1	15	6.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1144038	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1143515	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1144576	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	1143724	1	19	5.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1143725	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1143726	1	19	5.2	5.0	✓
pH by Meter	E108	1143526	1	20	5.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1146134	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1143728	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)	E375-H	1152267	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1143331	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1143228	1	5	20.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1143469	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1152274	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1143359	1	20	5.0	5.0	✓
WAD Cyanide	E336	1146403	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1143528	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	1143947	1	20	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1143344	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1143345	1	14	7.1	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1143263	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1143738	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	1143727	1	20	5.0	5.0	✓
Conductivity in Water	E100	1143527	1	15	6.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1144038	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1143515	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1144576	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	1143724	1	19	5.2	5.0	✓

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 Control Samples (LCS) - Continued							
Nitrate in Water by IC	E235.NO3	1143725	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1143726	1	19	5.2	5.0	✓
PCB Aroclors by GC-MS	E687	1151415	1	3	33.3	4.7	✓
pH by Meter	E108	1143526	1	20	5.0	5.0	✓
Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS	E651C	1152973	1	10	10.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1146134	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1143728	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)	E375-H	1152267	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1143331	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1143228	1	5	20.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1143469	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1152274	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1143359	1	20	5.0	5.0	✓
WAD Cyanide	E336	1146403	1	13	7.6	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1143528	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	1143947	1	20	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1143344	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1143345	1	14	7.1	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1143263	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1143738	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	1143727	1	20	5.0	5.0	✓
Conductivity in Water	E100	1143527	1	15	6.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1144038	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1143515	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1144576	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	1143724	1	19	5.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1143725	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1143726	1	19	5.2	5.0	✓
PCB Aroclors by GC-MS	E687	1151415	1	3	33.3	4.7	✓
Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS	E651C	1152973	1	10	10.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1146134	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1143728	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)	E375-H	1152267	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1143331	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1143228	1	5	20.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1143469	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1152274	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1143359	1	20	5.0	5.0	✓

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*
Method Blanks (MB) - Continued							
WAD Cyanide	E336	1146403	1	13	7.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1143947	1	20	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1143344	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1143738	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	1143727	1	20	5.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1144038	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1143515	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1144576	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	1143724	1	19	5.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1143725	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1143726	1	19	5.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1146134	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1143728	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)	E375-H	1152267	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1143331	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1143228	1	5	20.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1143469	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1152274	1	18	5.5	5.0	✓
WAD Cyanide	E336	1146403	1	13	7.6	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
Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	AOX Kelso - Environmental - 1317 South 13th Avenue Kelso Washington DC (District of Columbia) United States 98626	Water	EPA 1650C	Organic halide in water is determined by adsorption onto granular activated carbon (GAC), washing the adsorbed sample and GAC to remove inorganic halide, combustion of the sample and GAC to form the hydrogen halide, and titration of the hydrogen halide with a micro-coulometer.
Conductivity in Water	E100 ALS Environmental - Edmonton	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Edmonton	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 ALS Environmental - Edmonton	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.
Chloride in Water by IC	E235.Cl ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Edmonton	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Edmonton	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Edmonton	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Edmonton	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
WAD Cyanide	E336 ALS Environmental - Waterloo	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Edmonton	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.02 mg/L)	E372 ALS Environmental - Winnipeg	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.02 mg/L)	E375-H ALS Environmental - Winnipeg	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Edmonton	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.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Edmonton	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Edmonton	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A ALS Environmental - Edmonton	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. sample pretreatment involved field or lab filtration following by sample preservation.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Edmonton	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
CCME PHC - F1 by Headspace GC-FID	E581.F1 ALS Environmental - Edmonton	Water	CCME PHC in Soil - Tier 1	CCME Fraction 1 (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. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
CCME PHCs - F2-F4 by GC-FID	E601 ALS Environmental - Edmonton	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Edmonton	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.
Phenolics (Eastern Canada List with Nitro-Phenols) by GC-MS	E651C ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Phenolics are analyzed by GC-MS.
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Edmonton	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 ALS Environmental - Edmonton	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 ALS Environmental - Edmonton	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Edmonton	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
F1-BTEX	EC580 ALS Environmental - Edmonton	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).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Edmonton	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Edmonton	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Edmonton	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Winnipeg	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 ALS Environmental - Winnipeg	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Edmonton	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Edmonton	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 ALS Environmental - Edmonton	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Phenolics Extraction	EP651 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Phenolics are extracted from acidic aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

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QUALITY CONTROL REPORT

Work Order	: **EO2308479**	Page	: 1 of 17
Amendment	: **1**		
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: ALS Environmental - Edmonton
Contact	: Todd Webb	Account Manager	: Megha Walia
Address	: PO Box 390, 50114 Range Road 173 Ryley AB Canada T0B4A0	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: 2023 Table 4.3E Annual Pond chemistry	Date Samples Received	: 19-Sep-2023 15:43
PO	: 236266	Date Analysis Commenced	: 20-Sep-2023
C-O-C number	: ----	Issue Date	: 19-Oct-2023 13:12
Sampler	: TW 780 663 2513		
Site	: Table 4.3E		
Quote number	: EO22-CHES100-008		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
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Alex Drake	Lab Analyst	Edmonton Metals, Edmonton, Alberta
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Yan Zhang	Lab Analyst	Edmonton Organics, Edmonton, Alberta

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: 1143359)											
EO2308398-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	25.8	25.4	0.4	Diff <2x LOR	----
Physical Tests (QC Lot: 1143526)											
EO2308479-001	Pond B	pH	----	E108	0.10	pH units	8.73	8.73	0.00%	3%	----
Physical Tests (QC Lot: 1143527)											
EO2308479-001	Pond B	Conductivity	----	E100	1.0	µS/cm	874	860	1.61%	10%	----
Physical Tests (QC Lot: 1143528)											
EO2308479-001	Pond B	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	163	157	3.62%	20%	----
Anions and Nutrients (QC Lot: 1143331)											
EO2308461-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	10.0	mg/L	493	482	2.23%	20%	----
Anions and Nutrients (QC Lot: 1143724)											
EO2308481-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.158	0.158	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1143725)											
EO2308481-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.698	0.690	1.17%	20%	----
Anions and Nutrients (QC Lot: 1143726)											
EO2308481-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1143727)											
EO2308481-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	4.71	4.62	0.10	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1143728)											
EO2308481-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	377	371	1.48%	20%	----
Anions and Nutrients (QC Lot: 1143947)											
EO2308487-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.166	0.170	2.33%	20%	----
Anions and Nutrients (QC Lot: 1152267)											
WP2324034-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-H	0.020	mg/L	0.024	0.024	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1152274)											
WP2324027-002	Anonymous	Phosphorus, total	7723-14-0	E372	0.040	mg/L	1.29	1.30	0.543%	20%	----
Cyanides (QC Lot: 1146403)											
EO2308479-001	Pond B	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1144576)											
EO2308479-001	Pond B	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	12.0	12.8	6.50%	20%	----
Total Metals (QC Lot: 1143228)											

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*
Total Metals (QC Lot: 1143228) - continued											
EO2308478-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1143469)											
EO2308461-001	Anonymous	Chromium, total	7440-47-3	E420	0.00250	mg/L	0.0408	0.0424	3.89%	20%	----
		Sodium, total	7440-23-5	E420	0.250	mg/L	1690	1750	3.78%	20%	----
Dissolved Metals (QC Lot: 1143515)											
EO2308466-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.367	0.359	1.97%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00023	0.00016	0.00007	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.395	0.386	2.19%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.089	0.087	0.002	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000186	0.0000258	0.0000072	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	6.10	6.15	0.850%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000015	0.000013	0.000001	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.0183	0.0175	4.65%	20%	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00034	0.00032	0.00001	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00362	0.00359	0.737%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	1.00	1.00	0.119%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000411	0.000415	0.000004	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0019	0.0020	0.00008	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	3.17	3.12	1.68%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0257	0.0254	1.52%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00110	0.00105	4.80%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00842	0.00843	0.0828%	20%	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.062	0.058	0.003	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.07	1.05	1.60%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00066	0.00065	0.000009	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.93	3.01	2.73%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000031	0.000029	0.000002	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	7.37	7.34	0.392%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0132	0.0130	1.65%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.13	3.09	0.04	Diff <2x LOR	----

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*
Dissolved Metals (QC Lot: 1143515) - continued											
EO2308466-001	Anonymous	Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	0.00013	<0.00010	0.00003	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00015	0.00015	0.000002	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.0520	0.0525	1.07%	20%	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	0.00017	0.00016	0.00001	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00422	0.00423	0.000009	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.134	0.131	1.81%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	0.00101	0.00096	0.00005	Diff <2x LOR	----
Speciated Metals (QC Lot: 1144038)											
SK2304895-001	Anonymous	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1143738)											
EO2308450-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	24	27	2	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1146134)											
CG2313037-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1143344)											
EO2308461-001	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	1.21	1.15	0.06	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	13.8	12.6	9.13%	30%	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	6.70	6.84	2.08%	30%	----
Hydrocarbons (QC Lot: 1143345)											
EO2308479-001	Pond B	F1 (C6-C10)	----	E581.F1	100	µg/L	<100	<100	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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1143359)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1143527)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1143528)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 1143331)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1143724)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1143725)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1143726)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1143727)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1143728)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1143947)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1152267)						
Phosphorus, total dissolved	7723-14-0	E375-H	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1152274)						
Phosphorus, total	7723-14-0	E372	0.02	mg/L	<0.020	----
Cyanides (QCLot: 1146403)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1144576)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1143228)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 1143469)						
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1143515)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1143515) - continued						
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Speciated Metals (QCLot: 1144038)						
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
Aggregate Organics (QCLot: 1143738)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 1146134)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1143344)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	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: 1143263)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Hydrocarbons (QCLot: 1143345)						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----
Chlorinated Phenolics (QCLot: 1152973)						
Chlorophenol, 2-	95-57-8	E651C	0.3	µg/L	<0.30	----
Dichlorophenol, 2,4-	120-83-2	E651C	0.2	µg/L	<0.20	----
Dichlorophenol, 2,6-	87-65-0	E651C	0.2	µg/L	<0.20	----
Methylphenol, 4-chloro-3-	59-50-7	E651C	0.5	µg/L	<0.50	----
Pentachlorophenol [PCP]	87-86-5	E651C	0.5	µg/L	<0.50	----
Tetrachlorophenol, 2,3,4,5-	4901-51-3	E651C	0.5	µg/L	<0.50	----
Tetrachlorophenol, 2,3,4,6-	58-90-2	E651C	0.5	µg/L	<0.50	----
Tetrachlorophenol, 2,3,5,6-	935-95-5	E651C	0.5	µg/L	<0.50	----
Trichlorophenol, 2,3,4-	15950-66-0	E651C	0.5	µg/L	<0.50	----
Trichlorophenol, 2,3,5-	933-78-8	E651C	0.5	µg/L	<0.50	----
Trichlorophenol, 2,4,5-	95-95-4	E651C	0.5	µg/L	<0.50	----
Trichlorophenol, 2,4,6-	88-06-2	E651C	0.5	µg/L	<0.50	----
Non-Chlorinated Phenolics (QCLot: 1152973)						
Dimethylphenol, 2,4-	105-67-9	E651C	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Non-Chlorinated Phenolics (QCLot: 1152973) - continued						
Dinitrophenol, 2,4-	51-28-5	E651C	1	µg/L	<1.0	----
Methylphenol, 2-	95-48-7	E651C	0.5	µg/L	<0.50	----
Methylphenol, 3+4-	----	E651C	0.5	µg/L	<0.50	----
Nitrophenol, 2-	88-75-5	E651C	0.5	µg/L	<0.50	----
Nitrophenol, 4-	100-02-7	E651C	0.5	µg/L	<0.50	----
Phenol	108-95-2	E651C	0.5	µg/L	<0.50	----
Phenol, 2-methyl-4,6-dinitro- [DNOC]	534-52-1	E651C	2	µg/L	<2.0	----
Polychlorinated Biphenyls (QCLot: 1151415)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----

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: 1143359)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	100	85.0	115	----
Physical Tests (QCLot: 1143526)									
pH	----	E108	----	pH units	6 pH units	100	97.0	103	----
Physical Tests (QCLot: 1143527)									
Conductivity	----	E100	1	µS/cm	1412 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 1143528)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 1143331)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1143724)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.2	90.0	110	----
Anions and Nutrients (QCLot: 1143725)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1143726)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	99.4	90.0	110	----
Anions and Nutrients (QCLot: 1143727)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1143728)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	96.7	90.0	110	----
Anions and Nutrients (QCLot: 1143947)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
Anions and Nutrients (QCLot: 1152267)									
Phosphorus, total dissolved	7723-14-0	E375-H	0.02	mg/L	0.5 mg/L	96.0	80.0	120	----
Anions and Nutrients (QCLot: 1152274)									
Phosphorus, total	7723-14-0	E372	0.02	mg/L	0.5 mg/L	94.4	80.0	120	----
Cyanides (QCLot: 1146403)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	100	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1144576)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	107	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1143228)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Total Metals (QCLot: 1143469)									
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.0	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 1143515)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.9	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.9	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.6	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	100.0	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.2	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	112	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.5	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	110	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1143515) - continued									
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	96.5	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.0	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	90.2	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	107	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.2	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.5	80.0	120	----
Speciated Metals (QCLot: 1144038)									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Aggregate Organics (QCLot: 1143738)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	102	85.0	115	----
Aggregate Organics (QCLot: 1146134)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	94.6	85.0	115	----
Volatile Organic Compounds (QCLot: 1143344)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	83.9	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	82.1	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	83.0	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	92.2	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	98.4	70.0	130	----
Hydrocarbons (QCLot: 1143263)									
F2 (C10-C16)	----	E601	100	µg/L	3850 µg/L	106	70.0	130	----
Hydrocarbons (QCLot: 1143345)									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	104	70.0	130	----
Chlorinated Phenolics (QCLot: 1152973)									
Chlorophenol, 2-	95-57-8	E651C	0.3	µg/L	2.4 µg/L	85.4	50.0	130	----
Dichlorophenol, 2,4-	120-83-2	E651C	0.2	µg/L	2.4 µg/L	88.2	50.0	130	----
Dichlorophenol, 2,6-	87-65-0	E651C	0.2	µg/L	2.4 µg/L	86.9	50.0	130	----
Methylphenol, 4-chloro-3-	59-50-7	E651C	0.5	µg/L	2.4 µg/L	89.0	60.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Chlorinated Phenolics (QCLot: 1152973) - continued									
Pentachlorophenol [PCP]	87-86-5	E651C	0.5	µg/L	2.4 µg/L	108	40.0	140	----
Tetrachlorophenol, 2,3,4,5-	4901-51-3	E651C	0.5	µg/L	2.4 µg/L	102	60.0	130	----
Tetrachlorophenol, 2,3,4,6-	58-90-2	E651C	0.5	µg/L	2.4 µg/L	123	60.0	130	----
Tetrachlorophenol, 2,3,5,6-	935-95-5	E651C	0.5	µg/L	2.4 µg/L	99.0	60.0	130	----
Trichlorophenol, 2,3,4-	15950-66-0	E651C	0.5	µg/L	2.4 µg/L	90.6	50.0	130	----
Trichlorophenol, 2,3,5-	933-78-8	E651C	0.5	µg/L	2.4 µg/L	90.3	50.0	130	----
Trichlorophenol, 2,4,5-	95-95-4	E651C	0.5	µg/L	2.4 µg/L	95.9	50.0	130	----
Trichlorophenol, 2,4,6-	88-06-2	E651C	0.5	µg/L	2.4 µg/L	87.0	50.0	130	----
Non-Chlorinated Phenolics (QCLot: 1152973)									
Dimethylphenol, 2,4-	105-67-9	E651C	0.5	µg/L	2.4 µg/L	89.6	50.0	130	----
Dinitrophenol, 2,4-	51-28-5	E651C	1	µg/L	2.4 µg/L	104	40.0	130	----
Methylphenol, 2-	95-48-7	E651C	0.5	µg/L	2.4 µg/L	84.3	30.0	130	----
Methylphenol, 3+4-	----	E651C	0.5	µg/L	4.8 µg/L	83.7	50.0	130	----
Nitrophenol, 2-	88-75-5	E651C	0.5	µg/L	0.8 µg/L	86.0	40.0	140	----
Nitrophenol, 4-	100-02-7	E651C	0.5	µg/L	2.4 µg/L	89.2	40.0	140	----
Phenol	108-95-2	E651C	0.5	µg/L	2.4 µg/L	107	30.0	130	----
Phenol, 2-methyl-4,6-dinitro- [DNOC]	534-52-1	E651C	2	µg/L	2.4 µg/L	128	40.0	140	----
Polychlorinated Biphenyls (QCLot: 1151415)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	1 µg/L	102	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	1 µg/L	102	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	1 µg/L	102	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	1 µg/L	102	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	1 µg/L	81.0	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	1 µg/L	96.4	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	1 µg/L	97.0	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	1 µg/L	97.0	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	1 µg/L	97.0	60.0	140	----

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
Anions and Nutrients (QCLot: 1143331)										
EO2308461-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1143724)										
EO2308481-001	Anonymous	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1143725)										
EO2308481-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.39 mg/L	2.5 mg/L	95.7	75.0	125	----
Anions and Nutrients (QCLot: 1143726)										
EO2308481-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.478 mg/L	0.5 mg/L	95.6	75.0	125	----
Anions and Nutrients (QCLot: 1143727)										
EO2308481-001	Anonymous	Chloride	16887-00-6	E235.Cl	98.4 mg/L	100 mg/L	98.4	75.0	125	----
Anions and Nutrients (QCLot: 1143728)										
EO2308481-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 1143947)										
EO2308487-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 1152267)										
EO2308479-001	Pond B	Phosphorus, total dissolved	7723-14-0	E375-H	ND mg/L	0.25 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1152274)										
WP2324034-001	Anonymous	Phosphorus, total	7723-14-0	E372	0.241 mg/L	0.25 mg/L	96.4	70.0	130	----
Cyanides (QCLot: 1146403)										
EO2308479-001	Pond B	Cyanide, weak acid dissociable	----	E336	0.132 mg/L	0.125 mg/L	105	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1144576)										
EO2308479-001	Pond B	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 1143228)										
EO2308479-001	Pond B	Mercury, total	7439-97-6	E508	0.0000736 mg/L	0.0001 mg/L	73.6	70.0	130	----
Total Metals (QCLot: 1143469)										
EO2308461-002	Anonymous	Chromium, total	7440-47-3	E420	0.0448 mg/L	0.04 mg/L	112	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
Dissolved Metals (QCLot: 1143515)										

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
Dissolved Metals (QCLot: 1143515) - continued										
EO2308478-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.184 mg/L	0.2 mg/L	91.9	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00764 mg/L	0.01 mg/L	76.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.085 mg/L	0.1 mg/L	84.9	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00948 mg/L	0.01 mg/L	94.8	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.84 mg/L	2 mg/L	92.1	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0355 mg/L	0.04 mg/L	88.8	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	11.2 mg/L	10 mg/L	112	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.70 mg/L	4 mg/L	92.6	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.56 mg/L	10 mg/L	95.6	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00348 mg/L	0.004 mg/L	86.9	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00355 mg/L	0.004 mg/L	88.7	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----

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
Dissolved Metals (QCLot: 1143515) - continued										
EO2308478-001	Anonymous	Uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0990 mg/L	0.1 mg/L	99.0	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.353 mg/L	0.4 mg/L	88.2	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
Speciated Metals (QCLot: 1144038)										
SK2304895-001	Anonymous	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0485 mg/L	0.05 mg/L	97.0	70.0	130	----
Aggregate Organics (QCLot: 1143738)										
EO2308461-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	ND mg/L	100 mg/L	ND	75.0	125	----
Aggregate Organics (QCLot: 1146134)										
CG2313037-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0200 mg/L	0.02 mg/L	99.9	75.0	125	----
Volatile Organic Compounds (QCLot: 1143344)										
EO2308461-002	Anonymous	Benzene	71-43-2	E611A	93.6 µg/L	100 µg/L	93.6	50.0	140	----
		Ethylbenzene	100-41-4	E611A	83.8 µg/L	100 µg/L	83.8	50.0	140	----
		Toluene	108-88-3	E611A	90.8 µg/L	100 µg/L	90.8	50.0	140	----
		Xylene, m+p-	179601-23-1	E611A	184 µg/L	200 µg/L	92.0	50.0	140	----
		Xylene, o-	95-47-6	E611A	101 µg/L	100 µg/L	101	50.0	140	----

October 10, 2023 Service Request No:K2310695

Dana Brown
ALS Environmental - Canada
9450-17 Ave. NW
Edmonton, AB T6N 1M9

Laboratory Results for: EO2308479

Dear Dana,

Enclosed are the results of the sample(s) submitted to our laboratory September 22, 2023
For your reference, these analyses have been assigned our service request number **K2310695.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3260. You may also contact me via email at Luke.Rahn@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Luke Rahn
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: ALS Environmental - Canada
Project: EO2308479
Sample Matrix: Water

Service Request: K2310695
Date Received: 09/22/2023

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 09/22/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

Method 1650C, 10/06/2023:The analysis of samples in this delivery group were initially performed past the recommended holding time. The laboratory erred in correctly tracking the sample for this testing. Efforts were made to analyze the sample as soon as the error was identified. The data was flagged to indicate the holding time violation.

Approved by _____ Date 10/10/2023

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: ALS Environmental - Canada **Service Request:**K2310695
Project: EO2308479

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2310695-001	EO2308479-001	9/19/2023	1030
K2310695-002	EO2308479-002	9/19/2023	1030
K2310695-003	EO2308479-003	9/19/2023	1030

Chain of Custody

ALS Environmental - Edmonton
9450 - 17 Avenue NW
Edmonton AB Canada T6N 1M9

VN2310605 141826

Destination Lab:	**USA - Kelso**
Address:	1317 South 13th Avenue Kelso DC United States 98626
Client:	Clean Harbors Environmental Services, Inc.
Work Order Number:	**EO2308479**
Original Receipt Date/Time	Instructions Received
19/09/2023 14:43	

Relinquished By

Date/Time

Received By MC

Date/Time 9/22/23 1020

Receipt Temp

Return as Indicated: Results: ALSEDClientServices@alsglobal.com Invoice: ALSEDClientServices@alsglobal.com Electronic Data: ALSEDClientServices@alsglobal.com

Attention: Megha Walia

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
EO2308479-001	Pond B	Water	Amber glass/Teflon lined cap	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	11-10-2023	19/09/2023 10:30	
EO2308479-002	Pond C	Water	Amber glass/Teflon lined cap	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	11-10-2023	19/09/2023 10:30	
EO2308479-003	Tipping Pad Pond	Water	Amber glass/Teflon lined cap	AOX	Adsorbable Organic Halides (AOX) by Adsortption and Coulometric Titration	11-10-2023	19/09/2023 10:30	

PM LR

Cooler Receipt and Preservation Form

Client ALS Canada Service Request K23 10095

Received: 9/22/23 Opened: 9/22/23 By: VM Unloaded: 9/22/23 By: VM

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	5.8	IR06				773497802540	

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y (N)
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
All	250mL glass			X	HNO3	.5mL	HEI-160-G	VM	1130

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: ALS Environmental - Canada **Service Request:** K2310695
Project: EO2308479/

Sample Name: EO2308479-001 **Date Collected:** 09/19/23
Lab Code: K2310695-001 **Date Received:** 09/22/23
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		KABROWN

Sample Name: EO2308479-002 **Date Collected:** 09/19/23
Lab Code: K2310695-002 **Date Received:** 09/22/23
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		KABROWN

Sample Name: EO2308479-003 **Date Collected:** 09/19/23
Lab Code: K2310695-003 **Date Received:** 09/22/23
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1650C		KABROWN

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479	**Date Collected:**	09/19/23 10:30
Sample Matrix:	Water	**Date Received:**	09/22/23 10:20
Sample Name:	EO2308479-001	**Basis:**	NA
Lab Code:	K2310695-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	10/06/23 11:59	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479	**Date Collected:**	09/19/23 10:30
Sample Matrix:	Water	**Date Received:**	09/22/23 10:20
Sample Name:	EO2308479-002	**Basis:**	NA
Lab Code:	K2310695-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	10/06/23 11:59	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479	**Date Collected:**	09/19/23 10:30
Sample Matrix:	Water	**Date Received:**	09/22/23 10:20
Sample Name:	EO2308479-003	**Basis:**	NA
Lab Code:	K2310695-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	10/06/23 11:59	*

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Batch QC	**Basis:**	NA
Lab Code:	KQ2317671-09		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	**2.3**	mg/L	1.0	50	10/06/23 11:59	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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www.alsglobal.com

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2310695-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Halides, Adsorbable Organic (AOX)	1650C	ND U	mg/L	0.020	1	10/06/23 11:59	

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479/	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	10/06/2023
		Analysis Lot:	819707

Calibration and Method Blank Summary
Halides, Adsorbable Organic (AOX)
1650C

	Halide Check Standard (ug)	**Instrument Calibration Standard** (ug)	**PAR Standard** (ug/L)
True Value	3.64	10.0	0.100
Run A	3.52	10.9	0.104
Percent Recovery A	97	109	104
Run B	3.85	10.4	
Percent Recovery B	106	104	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2310695
Project:	EO2308479	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	10/6/23
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Halides, Adsorbable Organic (AOX)

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ2317671-09	**Basis:**	NA
Analysis Method:	1650C		
Prep Method:	None		

		Matrix Spike KQ2317671-09MS			Duplicate Matrix Spike KQ2317671-09DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Halides, Adsorbable Organic (AOX)	2.3	11.6	10.0	93	11.3	10.0	90	90-110	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page of

Environmental Division Edmonton

Work Order Reference EO2308479

Telephone : +1 780 413 5227

Report To	Contact and company name below will appear on the final report
Company:	Clean Harbors Canada
Contact:	Todd Webb, Stan Yuha
Phone:	(780) 663-2513
	Company address below will appear on the final report
Street:	PO Box 390, 50114 Range Road 173
City/Province:	Ryley, AB
Postal Code:	T0B 4A0
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Clean Harbors Canada
Contact:	Stephanie Dennis

Reports / Recipients

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

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: webb.todd@cleanharbors.com

Email 2: yuha.stan@cleanharbors.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Dennis.Stephanie@cleanharbors.com

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends,

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please con

Project Information

ALS Account # / Quote #:	EO22-CHES100-008
Job #:	2023 Table 4.3E Annual Pond chemistry
PO / AFE:	236266
LSD:	Table 4.3E

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (ALS use only): EO2308479

ALS Contact: Pamela Toledo Sampler: Todd Webb

Analysis Requ

ALS Sample # (ALS 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	Table 4.3 E	pH	COD	TDS	TSS	Ammonia	Chloride	Sodium	Sulphate	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Pond B	19-Sep-23	11:30	Surface Water		R	P2	P2	P2	P2	P2	P2	P2	P2			
	Pond C	19-Sep-23	11:30	Surface Water		R	P2	P2	P2	P2	P2	P2	P2	P2			
	Tipping Pad Pond	19-Sep-23	11:30	Surface Water		R	P2	P2	P2	P2	P2	P2	P2	P2			

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

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Analyze as per Table 4.3E package (attached). Please rush pH, COD, TDS, TSS, Ammonia, Chloride, Sodium, and Sulfate analysis. Report rush parameters asap. All other parameters routine turnaround

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C			
14.5	12.3	14.6				

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Todd Webb	19-Sep-23	14:30

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	19-Sept-2023	3:43 pm

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 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**.