CERTIFICATE OF ANALYSIS

Work Order	: **EO2302029**	Page	: 1 of 8
Client	: **Alberta Environment and**	Laboratory	: Edmonton -
Contact	**Parks** :	Account Manager	Environmental :
Address	: 111 - 4999 98 ave Edmonton AB Canada T6B 2X3	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: ----	Telephone	: : 13-Mar-2023
Project	: ABS 271	Date Samples Received	09:25 : 13-Mar-2023
PO	: ----	Date Analysis Commenced	: 15-Mar-2023 10:56
C-O-C number	: ----	Issue Date	
Sampler	: ----		
Site	: ----		
Quote number	: ABS 271		
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*
Geoff Berg	Lab Analyst	Organics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Remy Gatabazi	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).

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

>: greater than.
<: less than.

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

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

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

Analytical Results

EO2302029-001

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

Client sample ID: 23SWE12101
Client sampling date / time: 11-Mar-2023 13:15

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Aggregate Organics								
Naphthenic acids	----	<0.10	0.10	mg/L	E565-L	13-Mar-2023	15-Mar-2023	861482
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Acrolein	107-02-8	<50	50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Acrylonitrile	107-13-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Benzene	71-43-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromoform	75-25-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Carbon disulfide	75-15-0	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Carbon tetrachloride	56-23-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloroethane	75-00-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloroform	67-66-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloromethane	74-87-3	<5.00	5.00	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromoethane, 1,2-	106-93-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromomethane	74-95-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloro-2-butene, cis-1,4-	1476-11-5	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloro-2-butene, trans-1,4-	110-57-6	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloromethane	75-09-2	<1.00	1.00	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropylene, cis-1,3-	10061-01-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropylene, trans-1,3-	10061-02-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethanol	64-17-5	<250	250	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethyl methacrylate	97-63-2	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Hexanone, 2-	591-78-6	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Iodomethane	74-88-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Styrene	100-42-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Toluene	108-88-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorobenzene, 1,2,3-	87-61-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorobenzene, 1,2,4-	120-82-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409

Analytical Results

EO2302029-001

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

Client sample ID: 23SWE12101

Client sampling date / time: 11-Mar-2023 13:15

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Trichlorobenzene, 1,3,5-	108-70-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloropropane, 1,2,3-	96-18-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
BTEX, total	----	<1.0	1.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trihalomethanes [THMs], total	----	<1.0	1.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Volatile Organic Compounds [Fuels]								
Benzene	71-43-2	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Styrene	100-42-5	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Toluene	108-88-3	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
BTEX, total	----	<1.0	1.0	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
BTEX+Styrene, total	n/a	<1.5	1.5	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Hydrocarbons								
F1 (C6-C10)	----	<100	100	µg/L	E581.F1	13-Mar-2023	13-Mar-2023	861411
F1-BTEX	----	<100	100	µg/L	EC580	-	13-Mar-2023	-
F2 (C10-C16)	----	<100	100	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
F3 (C16-C34)	----	<250	250	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
F4 (C34-C50)	----	<250	250	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
TEH (C10-C50)	n/a	<400	400	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
TEH (C16-C50)	----	<400	400	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	96.5	1.0	%	E601	13-Mar-2023	13-Mar-2023	861280
Dichlorotoluene, 3,4-	95-75-0	117	1.0	%	E581.F1	13-Mar-2023	13-Mar-2023	861411
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	107	1.0	%	E611A	13-Mar-2023	13-Mar-2023	861410
Bromofluorobenzene, 4-	460-00-4	107	1.0	%	E611K	13-Mar-2023	13-Mar-2023	861409
Difluorobenzene, 1,4-	540-36-3	101	1.0	%	E611A	13-Mar-2023	13-Mar-2023	861410
Difluorobenzene, 1,4-	540-36-3	101	1.0	%	E611K	13-Mar-2023	13-Mar-2023	861409

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

Analytical Results

EO2302029-002

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

Client sample ID: 23SWE12102

Client sampling date / time: 11-Mar-2023 13:30

Analytical Results

EO2302029-002

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

Client sample ID: 23SWE12102
Client sampling date / time: 11-Mar-2023 13:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Aggregate Organics								
Naphthenic acids	----	<0.10	0.10	mg/L	E565-L	13-Mar-2023	15-Mar-2023	861482
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Acrolein	107-02-8	<50	50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Acrylonitrile	107-13-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Benzene	71-43-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromoform	75-25-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Carbon disulfide	75-15-0	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Carbon tetrachloride	56-23-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloroethane	75-00-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloroform	67-66-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloromethane	74-87-3	<5.00	5.00	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromoethane, 1,2-	106-93-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromomethane	74-95-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloro-2-butene, cis-1,4-	1476-11-5	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloro-2-butene, trans-1,4-	110-57-6	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloromethane	75-09-2	<1.00	1.00	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropylene, cis-1,3-	10061-01-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropylene, trans-1,3-	10061-02-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethanol	64-17-5	<250	250	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethyl methacrylate	97-63-2	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Hexanone, 2-	591-78-6	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Iodomethane	74-88-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Styrene	100-42-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Toluene	108-88-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorobenzene, 1,2,3-	87-61-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorobenzene, 1,2,4-	120-82-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409

Analytical Results

EO2302029-002

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

Client sample ID: 23SWE12102

Client sampling date / time: 11-Mar-2023 13:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Trichlorobenzene, 1,3,5-	108-70-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloropropane, 1,2,3-	96-18-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
BTEX, total	----	<1.0	1.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trihalomethanes [THMs], total	----	<1.0	1.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Volatile Organic Compounds [Fuels]								
Benzene	71-43-2	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Styrene	100-42-5	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Toluene	108-88-3	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
BTEX, total	----	<1.0	1.0	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
BTEX+Styrene, total	n/a	<1.5	1.5	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Hydrocarbons								
F1 (C6-C10)	----	<100	100	µg/L	E581.F1	13-Mar-2023	13-Mar-2023	861411
F1-BTEX	----	<100	100	µg/L	EC580	-	13-Mar-2023	-
F2 (C10-C16)	----	<100	100	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
F3 (C16-C34)	----	<250	250	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
F4 (C34-C50)	----	<250	250	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
TEH (C10-C50)	n/a	<400	400	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
TEH (C16-C50)	----	<400	400	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	94.9	1.0	%	E601	13-Mar-2023	13-Mar-2023	861280
Dichlorotoluene, 3,4-	95-75-0	119	1.0	%	E581.F1	13-Mar-2023	13-Mar-2023	861411
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	99.7	1.0	%	E611A	13-Mar-2023	13-Mar-2023	861410
Bromofluorobenzene, 4-	460-00-4	99.7	1.0	%	E611K	13-Mar-2023	13-Mar-2023	861409
Difluorobenzene, 1,4-	540-36-3	102	1.0	%	E611A	13-Mar-2023	13-Mar-2023	861410
Difluorobenzene, 1,4-	540-36-3	102	1.0	%	E611K	13-Mar-2023	13-Mar-2023	861409

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

Analytical Results

EO2302029-003

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

Client sample ID: 23SWE12103

Client sampling date / time: 11-Mar-2023 14:55

Analytical Results

EO2302029-003

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

Client sample ID: 23SWE12103
Client sampling date / time: 11-Mar-2023 14:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Aggregate Organics								
Naphthenic acids	----	<0.10	0.10	mg/L	E565-L	13-Mar-2023	15-Mar-2023	861482
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Acrolein	107-02-8	<50	50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Acrylonitrile	107-13-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Benzene	71-43-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromoform	75-25-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Carbon disulfide	75-15-0	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Carbon tetrachloride	56-23-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloroethane	75-00-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloroform	67-66-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Chloromethane	74-87-3	<5.00	5.00	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromoethane, 1,2-	106-93-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dibromomethane	74-95-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloro-2-butene, cis-1,4-	1476-11-5	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloro-2-butene, trans-1,4-	110-57-6	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloromethane	75-09-2	<1.00	1.00	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropylene, cis-1,3-	10061-01-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Dichloropropylene, trans-1,3-	10061-02-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethanol	64-17-5	<250	250	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethyl methacrylate	97-63-2	<5.0	5.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Hexanone, 2-	591-78-6	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Iodomethane	74-88-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Styrene	100-42-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Toluene	108-88-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorobenzene, 1,2,3-	87-61-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorobenzene, 1,2,4-	120-82-1	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409

Analytical Results

EO2302029-003

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

Client sample ID: 23SWE12103

Client sampling date / time: 11-Mar-2023 14:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Trichlorobenzene, 1,3,5-	108-70-3	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trichloropropane, 1,2,3-	96-18-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
BTEX, total	----	<1.0	1.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Trihalomethanes [THMs], total	----	<1.0	1.0	µg/L	E611K	13-Mar-2023	13-Mar-2023	861409
Volatile Organic Compounds [Fuels]								
Benzene	71-43-2	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Styrene	100-42-5	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Toluene	108-88-3	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
BTEX, total	----	<1.0	1.0	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
BTEX+Styrene, total	n/a	<1.5	1.5	µg/L	E611A	13-Mar-2023	13-Mar-2023	861410
Hydrocarbons								
F1 (C6-C10)	----	<100	100	µg/L	E581.F1	13-Mar-2023	13-Mar-2023	861411
F1-BTEX	----	<100	100	µg/L	EC580	-	13-Mar-2023	-
F2 (C10-C16)	----	<100	100	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
F3 (C16-C34)	----	<250	250	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
F4 (C34-C50)	----	<250	250	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
TEH (C10-C50)	n/a	<400	400	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
TEH (C16-C50)	----	<400	400	µg/L	E601	13-Mar-2023	13-Mar-2023	861280
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	93.6	1.0	%	E601	13-Mar-2023	13-Mar-2023	861280
Dichlorotoluene, 3,4-	95-75-0	123	1.0	%	E581.F1	13-Mar-2023	13-Mar-2023	861411
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	103	1.0	%	E611A	13-Mar-2023	13-Mar-2023	861410
Bromofluorobenzene, 4-	460-00-4	103	1.0	%	E611K	13-Mar-2023	13-Mar-2023	861409
Difluorobenzene, 1,4-	540-36-3	101	1.0	%	E611A	13-Mar-2023	13-Mar-2023	861410
Difluorobenzene, 1,4-	540-36-3	101	1.0	%	E611K	13-Mar-2023	13-Mar-2023	861409

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2302029**	Page	: 1 of 6
Client	: **Alberta Environment and**	Laboratory	: Edmonton - Environmental
Contact	**Parks** :	Account Manager	:
Address	: 111 - 4999 98 ave Edmonton AB Canada T6B 2X3	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N
Telephone	: ----	Telephone	1M9 :
Project	: ABS 271	Date Samples Received	: 13-Mar-2023 09:25
PO	: ----	Issue Date	: 15-Mar-2023 10:56
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ABS 271		
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)

- 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
Aggregate Organics : Naphthenics Acids by FT-IR (low level)										
Amber glass/Teflon lined cap										
23SWE12101	E565-L	11-Mar-2023	13-Mar-2023	----	----		15-Mar-2023	14 days	4 days	✓
Aggregate Organics : Naphthenics Acids by FT-IR (low level)										
Amber glass/Teflon lined cap										
23SWE12102	E565-L	11-Mar-2023	13-Mar-2023	----	----		15-Mar-2023	14 days	4 days	✓
Aggregate Organics : Naphthenics Acids by FT-IR (low level)										
Amber glass/Teflon lined cap										
23SWE12103	E565-L	11-Mar-2023	13-Mar-2023	----	----		15-Mar-2023	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
23SWE12101	E581.F1	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
23SWE12102	E581.F1	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
23SWE12103	E581.F1	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
23SWE12101	E601	11-Mar-2023	13-Mar-2023	14 days	2 days	✓	13-Mar-2023	40 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 23SWE12102	E601	11-Mar-2023	13-Mar-2023	14 days	2 days	✓	13-Mar-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 23SWE12103	E601	11-Mar-2023	13-Mar-2023	14 days	2 days	✓	13-Mar-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (AB Projects List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 23SWE12101	E611K	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Volatile Organic Compounds : VOCs (AB Projects List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 23SWE12102	E611K	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Volatile Organic Compounds : VOCs (AB Projects List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 23SWE12103	E611K	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 23SWE12101	E611A	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 23SWE12102	E611A	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 days	2 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) 23SWE12103	E611A	11-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	14 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)							
BTEX by Headspace GC-MS	E611A	861410	1	3	33.3	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	861411	1	3	33.3	5.0	✓
Naphthenics Acids by FT-IR (low level)	E565-L	861482	1	3	33.3	5.0	✓
VOCs (AB Projects List) by Headspace GC-MS	E611K	861409	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	861410	1	3	33.3	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	861411	1	3	33.3	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	861280	1	3	33.3	5.0	✓
Naphthenics Acids by FT-IR (low level)	E565-L	861482	1	3	33.3	5.0	✓
VOCs (AB Projects List) by Headspace GC-MS	E611K	861409	1	4	25.0	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	861410	1	3	33.3	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	861411	1	3	33.3	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	861280	1	3	33.3	5.0	✓
Naphthenics Acids by FT-IR (low level)	E565-L	861482	1	3	33.3	5.0	✓
VOCs (AB Projects List) by Headspace GC-MS	E611K	861409	1	4	25.0	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	861410	1	3	33.3	5.0	✓
Naphthenics Acids by FT-IR (low level)	E565-L	861482	1	3	33.3	5.0	✓
VOCs (AB Projects List) by Headspace GC-MS	E611K	861409	1	4	25.0	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
Naphthenics Acids by FT-IR (low level)	E565-L Edmonton - Environmental	Water	Syncrude Canada 1994	Naphthenic acids extract is analyzed by FTIR and the absorbances of the monomeric and dimeric forms of the carboxylic groups are measured.
CCME PHC - F1 by Headspace GC-FID	E581.F1 Edmonton - Environmental	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.
CCME PHCs - F2-F4 by GC-FID	E601 Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4).
BTEX by Headspace GC-MS	E611A Edmonton - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
VOCs (AB Projects List) by Headspace GC-MS	E611K Edmonton - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Naphthenic Acids Extraction	EP565 Edmonton - Environmental	Water	EPA 3510C (mod)	Naphthenic acids is extracted from aqueous sample using dichloromethane liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 Edmonton - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Edmonton - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **EO2302029**	Page	: 1 of 14
Client	: Alberta Environment and Parks	Laboratory	: Edmonton - Environmental
Contact	: 111 - 4999 98 ave	Account Manager	:
Address	Edmonton AB Canada T6B 2X3	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	:
Project	: ABS 271	Date Samples Received	: 13-Mar-2023 09:25
PO	: ----	Date Analysis Commenced	: 13-Mar-2023
C-O-C number	: ----	Issue Date	: 15-Mar-2023 10:56
Sampler	: ---- ----		
Site	: ----		
Quote number	: ABS 271		
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*
Geoff Berg	Lab Analyst	Edmonton Organics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Edmonton Organics, Edmonton, Alberta
Remy Gatabazi	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: 861482)											
EO2302029-001	23SWE12101	Naphthenic acids	----	E565-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 861409)											
EO2301893-001	Anonymous	Acetone	67-64-1	E611K	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Acrolein	107-02-8	E611K	50	µg/L	<50	<50	0	Diff <2x LOR	----
		Acrylonitrile	107-13-1	E611K	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon disulfide	75-15-0	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroethane	75-00-3	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloromethane	74-87-3	E611K	5.00	µg/L	<5.00	<5.00	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromomethane	74-95-3	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	5.0	µg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Dichloro-2-butene, trans-1,4-	110-57-6	E611K	5.0	µg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611K	1.00	µg/L	<1.00	<1.00	0	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*
Volatile Organic Compounds (QC Lot: 861409) - continued											
EO2301893-001	Anonymous	Dichloropropane, 1,2-	78-87-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethanol	64-17-5	E611K	250	µg/L	<250	<250	0	Diff <2x LOR	----
		Ethyl methacrylate	97-63-2	E611K	5.0	µg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexanone, 2-	591-78-6	E611K	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Iodomethane	74-88-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611K	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611K	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Styrene	100-42-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorobenzene, 1,2,3-	87-61-6	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorobenzene, 1,2,4-	120-82-1	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorobenzene, 1,3,5-	108-70-3	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloropropane, 1,2,3-	96-18-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611K	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611K	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611K	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 861410)											
EO2302029-001	23SWE12101	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		BTEX+Styrene, total	n/a	E611A	1.5	µg/L	<1.5	<1.5	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 861411)											

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*
Hydrocarbons (QC Lot: 861411) - continued											
EO2302029-001	23SWE12101	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
Aggregate Organics (QCLot: 861482)						
Naphthenic acids	----	E565-L	0.1	mg/L	<0.10	----
Volatile Organic Compounds (QCLot: 861409)						
Acetone	67-64-1	E611K	20	µg/L	<20	----
Acrolein	107-02-8	E611K	50	µg/L	<50	----
Acrylonitrile	107-13-1	E611K	20	µg/L	<20	----
Benzene	71-43-2	E611K	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611K	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611K	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611K	0.5	µg/L	<0.50	----
Carbon disulfide	75-15-0	E611K	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611K	0.5	µg/L	<0.50	----
Chlorobenzene	108-90-7	E611K	0.5	µg/L	<0.50	----
Chloroethane	75-00-3	E611K	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611K	0.5	µg/L	<0.50	----
Chloromethane	74-87-3	E611K	5	µg/L	<5.00	----
Dibromochloromethane	124-48-1	E611K	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611K	0.5	µg/L	<0.50	----
Dibromomethane	74-95-3	E611K	0.5	µg/L	<0.50	----
Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	5	µg/L	<5.0	----
Dichloro-2-butene, trans-1,4-	110-57-6	E611K	5	µg/L	<5.0	----
Dichlorobenzene, 1,2-	95-50-1	E611K	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611K	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611K	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611K	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611K	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611K	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611K	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611K	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611K	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611K	1	µg/L	<1.00	----
Dichloropropane, 1,2-	78-87-5	E611K	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611K	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 861409) - continued						
Dichloropropylene, trans-1,3-	10061-02-6	E611K	0.5	µg/L	<0.50	----
Ethanol	64-17-5	E611K	250	µg/L	<250	----
Ethyl methacrylate	97-63-2	E611K	5	µg/L	<5.0	----
Ethylbenzene	100-41-4	E611K	0.5	µg/L	<0.50	----
Hexanone, 2-	591-78-6	E611K	20	µg/L	<20	----
Iodomethane	74-88-4	E611K	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611K	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611K	20	µg/L	<20	----
Styrene	100-42-5	E611K	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611K	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611K	0.5	µg/L	<0.50	----
Trichlorobenzene, 1,2,3-	87-61-6	E611K	0.5	µg/L	<0.50	----
Trichlorobenzene, 1,2,4-	120-82-1	E611K	0.5	µg/L	<0.50	----
Trichlorobenzene, 1,3,5-	108-70-3	E611K	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611K	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611K	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611K	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611K	0.5	µg/L	<0.50	----
Trichloropropane, 1,2,3-	96-18-4	E611K	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611K	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611K	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611K	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 861410)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
BTEX, total	----	E611A	1	µg/L	<1.0	----
BTEX+Styrene, total	n/a	E611A	1.5	µg/L	<1.5	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 861280)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Hydrocarbons (QCLot: 861280) - continued						
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Hydrocarbons (QCLot: 861411)						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----

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: 861482)									
Naphthenic acids	----	E565-L	0.1	mg/L	1 mg/L	79.2	70.0	130	----
Volatile Organic Compounds (QCLot: 861409)									
Acetone	67-64-1	E611K	20	µg/L	100 µg/L	96.4	70.0	130	----
Acrolein	107-02-8	E611K	50	µg/L	100 µg/L	87.1	70.0	130	----
Acrylonitrile	107-13-1	E611K	20	µg/L	100 µg/L	103	70.0	130	----
Benzene	71-43-2	E611K	0.5	µg/L	100 µg/L	115	70.0	130	----
Bromodichloromethane	75-27-4	E611K	0.5	µg/L	100 µg/L	107	70.0	130	----
Bromoform	75-25-2	E611K	0.5	µg/L	100 µg/L	99.6	70.0	130	----
Bromomethane	74-83-9	E611K	0.5	µg/L	100 µg/L	115	60.0	140	----
Carbon disulfide	75-15-0	E611K	0.5	µg/L	100 µg/L	115	70.0	130	----
Carbon tetrachloride	56-23-5	E611K	0.5	µg/L	100 µg/L	112	70.0	130	----
Chlorobenzene	108-90-7	E611K	0.5	µg/L	100 µg/L	117	70.0	130	----
Chloroethane	75-00-3	E611K	0.5	µg/L	100 µg/L	109	60.0	140	----
Chloroform	67-66-3	E611K	0.5	µg/L	100 µg/L	112	70.0	130	----
Chloromethane	74-87-3	E611K	5	µg/L	100 µg/L	122	60.0	140	----
Dibromochloromethane	124-48-1	E611K	0.5	µg/L	100 µg/L	117	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611K	0.5	µg/L	100 µg/L	104	70.0	130	----
Dibromomethane	74-95-3	E611K	0.5	µg/L	100 µg/L	113	70.0	130	----
Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	5	µg/L	100 µg/L	109	70.0	130	----
Dichloro-2-butene, trans-1,4-	110-57-6	E611K	5	µg/L	100 µg/L	98.9	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611K	0.5	µg/L	100 µg/L	111	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611K	0.5	µg/L	100 µg/L	110	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611K	0.5	µg/L	100 µg/L	111	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611K	0.5	µg/L	100 µg/L	134	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611K	0.5	µg/L	100 µg/L	119	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611K	0.5	µg/L	100 µg/L	114	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611K	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611K	0.5	µg/L	100 µg/L	103	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611K	0.5	µg/L	100 µg/L	117	70.0	130	----
Dichloromethane	75-09-2	E611K	1	µg/L	100 µg/L	119	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611K	0.5	µg/L	100 µg/L	111	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611K	0.5	µg/L	100 µg/L	104	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 861409) - continued									
Dichloropropylene, trans-1,3-	10061-02-6	E611K	0.5	µg/L	100 µg/L	97.9	70.0	130	----
Ethanol	64-17-5	E611K	250	µg/L	100 µg/L	120	70.0	130	----
Ethyl methacrylate	97-63-2	E611K	5	µg/L	100 µg/L	83.9	70.0	130	----
Ethylbenzene	100-41-4	E611K	0.5	µg/L	100 µg/L	108	70.0	130	----
Hexanone, 2-	591-78-6	E611K	20	µg/L	100 µg/L	106	70.0	130	----
Iodomethane	74-88-4	E611K	0.5	µg/L	100 µg/L	113	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611K	20	µg/L	100 µg/L	120	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611K	20	µg/L	100 µg/L	117	70.0	130	----
Styrene	100-42-5	E611K	0.5	µg/L	100 µg/L	110	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	0.5	µg/L	100 µg/L	105	70.0	130	----
Tetrachloroethylene	127-18-4	E611K	0.5	µg/L	100 µg/L	116	70.0	130	----
Toluene	108-88-3	E611K	0.5	µg/L	100 µg/L	107	70.0	130	----
Trichlorobenzene, 1,2,3-	87-61-6	E611K	0.5	µg/L	100 µg/L	105	70.0	130	----
Trichlorobenzene, 1,2,4-	120-82-1	E611K	0.5	µg/L	100 µg/L	120	70.0	130	----
Trichlorobenzene, 1,3,5-	108-70-3	E611K	0.5	µg/L	100 µg/L	114	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611K	0.5	µg/L	100 µg/L	118	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611K	0.5	µg/L	100 µg/L	117	70.0	130	----
Trichloroethylene	79-01-6	E611K	0.5	µg/L	100 µg/L	108	70.0	130	----
Trichlorofluoromethane	75-69-4	E611K	0.5	µg/L	100 µg/L	102	60.0	140	----
Trichloropropane, 1,2,3-	96-18-4	E611K	0.5	µg/L	100 µg/L	106	70.0	130	----
Vinyl chloride	75-01-4	E611K	0.5	µg/L	100 µg/L	114	60.0	140	----
Xylene, m+p-	179601-23-1	E611K	0.4	µg/L	200 µg/L	114	70.0	130	----
Xylene, o-	95-47-6	E611K	0.3	µg/L	100 µg/L	107	70.0	130	----
Volatile Organic Compounds (QCLot: 861410)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	115	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	108	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	110	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	107	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	114	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	107	70.0	130	----
Hydrocarbons (QCLot: 861280)									
F2 (C10-C16)	----	E601	100	µg/L	3850 µg/L	107	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	123	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5460 µg/L	127	70.0	130	----
Hydrocarbons (QCLot: 861411)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Hydrocarbons (QCLot: 861411) - continued									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	103	70.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aggregate Organics (QCLot: 861482)										
EO2302029-002	23SWE12102	Naphthenic acids	----	E565-L	0.69 mg/L	1 mg/L	69.2	50.0	150	----
Volatile Organic Compounds (QCLot: 861409)										
EO2302029-001	23SWE12101	Acetone	67-64-1	E611K	64 µg/L	100 µg/L	63.8	60.0	140	----
		Acrolein	107-02-8	E611K	73 µg/L	100 µg/L	72.7	60.0	140	----
		Acrylonitrile	107-13-1	E611K	112 µg/L	100 µg/L	112	60.0	140	----
		Benzene	71-43-2	E611K	94.9 µg/L	100 µg/L	94.9	60.0	140	----
		Bromodichloromethane	75-27-4	E611K	102 µg/L	100 µg/L	102	60.0	140	----
		Bromoform	75-25-2	E611K	82.9 µg/L	100 µg/L	82.9	60.0	140	----
		Bromomethane	74-83-9	E611K	94.8 µg/L	100 µg/L	94.8	60.0	140	----
		Carbon disulfide	75-15-0	E611K	62.7 µg/L	100 µg/L	62.7	60.0	140	----
		Carbon tetrachloride	56-23-5	E611K	106 µg/L	100 µg/L	106	60.0	140	----
		Chlorobenzene	108-90-7	E611K	104 µg/L	100 µg/L	104	60.0	140	----
		Chloroethane	75-00-3	E611K	82.5 µg/L	100 µg/L	82.5	60.0	140	----
		Chloroform	67-66-3	E611K	110 µg/L	100 µg/L	110	60.0	140	----
		Chloromethane	74-87-3	E611K	89.6 µg/L	100 µg/L	89.6	60.0	140	----
		Dibromochloromethane	124-48-1	E611K	105 µg/L	100 µg/L	105	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611K	97.2 µg/L	100 µg/L	97.2	60.0	140	----
		Dibromomethane	74-95-3	E611K	110 µg/L	100 µg/L	110	60.0	140	----
		Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	95.5 µg/L	100 µg/L	95.5	60.0	140	----
		Dichloro-2-butene, trans-1,4-	110-57-6	E611K	89.1 µg/L	100 µg/L	89.1	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611K	102 µg/L	100 µg/L	102	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611K	100 µg/L	100 µg/L	100	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611K	107 µg/L	100 µg/L	107	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611K	114 µg/L	100 µg/L	114	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611K	108 µg/L	100 µg/L	108	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611K	106 µg/L	100 µg/L	106	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611K	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611K	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611K	104 µg/L	100 µg/L	104	60.0	140	----
		Dichloromethane	75-09-2	E611K	105 µg/L	100 µg/L	105	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611K	100 µg/L	100 µg/L	100	60.0	140	----

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
Volatile Organic Compounds (QCLot: 861409) - continued										
EO2302029-001	23SWE12101	Dichloropropylene, cis-1,3-	10061-01-5	E611K	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611K	88.2 µg/L	100 µg/L	88.2	60.0	140	----
		Ethanol	64-17-5	E611K	100 µg/L	100 µg/L	101	60.0	140	----
		Ethyl methacrylate	97-63-2	E611K	79.9 µg/L	100 µg/L	79.9	60.0	140	----
		Ethylbenzene	100-41-4	E611K	101 µg/L	100 µg/L	101	60.0	140	----
		Hexanone, 2-	591-78-6	E611K	114 µg/L	100 µg/L	114	60.0	140	----
		Iodomethane	74-88-4	E611K	101 µg/L	100 µg/L	101	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611K	115 µg/L	100 µg/L	115	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611K	109 µg/L	100 µg/L	109	60.0	140	----
		Styrene	100-42-5	E611K	102 µg/L	100 µg/L	102	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		Tetrachloroethylene	127-18-4	E611K	102 µg/L	100 µg/L	102	60.0	140	----
		Toluene	108-88-3	E611K	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		Trichlorobenzene, 1,2,3-	87-61-6	E611K	103 µg/L	100 µg/L	103	60.0	140	----
		Trichlorobenzene, 1,2,4-	120-82-1	E611K	112 µg/L	100 µg/L	112	60.0	140	----
		Trichlorobenzene, 1,3,5-	108-70-3	E611K	106 µg/L	100 µg/L	106	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611K	116 µg/L	100 µg/L	116	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611K	110 µg/L	100 µg/L	110	60.0	140	----
		Trichloroethylene	79-01-6	E611K	100.0 µg/L	100 µg/L	100.0	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611K	109 µg/L	100 µg/L	109	60.0	140	----
		Trichloropropane, 1,2,3-	96-18-4	E611K	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		Vinyl chloride	75-01-4	E611K	93.5 µg/L	100 µg/L	93.5	60.0	140	----
		Xylene, m+p-	179601-23-1	E611K	208 µg/L	200 µg/L	104	60.0	140	----
		Xylene, o-	95-47-6	E611K	99.3 µg/L	100 µg/L	99.3	60.0	140	----
Volatile Organic Compounds (QCLot: 861410)										
EO2302029-001	23SWE12101	Benzene	71-43-2	E611A	99.3 µg/L	100 µg/L	99.3	50.0	140	----
		Ethylbenzene	100-41-4	E611A	100 µg/L	100 µg/L	100	50.0	140	----
		Styrene	100-42-5	E611A	110 µg/L	100 µg/L	110	50.0	140	----
		Toluene	108-88-3	E611A	97.2 µg/L	100 µg/L	97.2	50.0	140	----
		Xylene, m+p-	179601-23-1	E611A	210 µg/L	200 µg/L	105	50.0	140	----
		Xylene, o-	95-47-6	E611A	108 µg/L	100 µg/L	108	50.0	140	----

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 14 -

Page 1 of 1

Environmental Division Edmonton
Work Order Reference
EO2302029

Telephone : +1 780 413 5227

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround T
Company:	Alberta Environment and Protected Areas	Select Report Format: ☑PDF ☑EXCEL ☐EDD (DIGITAL)	R ☐Regular (Standard TAT if received by 3 pm - busine
Contact:		Quality Control (QC) Report with Report	P ☐Priority (2-4 bus. days if received by 3pm) 50% surc
Address:	9triple* Jasper Building 9888 - Jasper Ave, Edmonton Alberta, T5J 1P1	☐Criteria on Report - provide details below if box checked Select Distribution: ☑EMAIL ☐MAIL ☐FAX	E ☑Emergency (1-2 bus. days if received by 3pm) 100% E2 ☐Same day or weekend emergency - contact ALS to c
Phone:		Email 1	Specify Date Required for E2,E or P:
		Email 2	Analysis Req
Invoice To	AEP.AWS-FinanceAP1@gov.ab.ca	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and
	Copy of Invoice with Report	Select Invoice Distribution: ☑EMAIL ☐MAIL ☐FAX	See *"Special Instructions"* section regrading fiel
Company:	Alberta Environment and Protected Areas	Email 1 AEP.AWS-FinanceAP1@gov.ab.ca	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	ABS 271	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)	ALS Contact: Dana Brown	SamplerID 1:	SamplerID 2:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Sample type: Surface Water	Nap Acids (FTIR)	BTXS-F1,F2,F3,F4-ED	VOCs	Number of Cont
	Sample Number: 23SWE12101	Station Number:	Station Discrip/ Name: Site 1			
	Sample DateMMMDDYYYY: March 11/2023	Time (MST): 13:15	Agency: 211	Matrix: 0	Type: 1	Collection code: 16
			✓	✓	✓	5
	Sample Number: 23SWE12102		Site 2			
	Sample DateMMMDDYYYY: March 11/2023	13:30	211	0	1	16
			✓	✓	✓	5
	Sample Number: 23SWE12103		Site 3			
	Sample DateMMMDDYYYY: March 11/2023	14: 55	211	0	1	16
			✓	✓	✓	5

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? NO Are samples for human drinking water use? NO	EMERGENCY SAMPLES; Spoke to Dana Brown and Kieran Tordoff; Need rush analysis for Nap Acids (FTIR), BTEX, F1-4, VOCs.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐	SIF Observations Yes ☐ No ☐
Ice packs Yes ☐ No ☐	Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐	

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.1					

Released by:	Date: 13 Mar 2023	Time: 08:00	INITIAL SHIPMENT RECEPTION (lab use only) Received by:	Date: 3/13/23	Time: 9:25 AM	FINAL SHIPMENT RECEPTION (lab use only) Received by:	Date:	Time:
N. Greenwood			Rm					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

WA-F44-0326e-v09 Front/04 January 2014

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.

Classification: Protected A