



CERTIFICATE OF ANALYSIS

Work Order : **CG2401831**
Client : **Corix Group of Companies**
Contact : Rob Dechaine
Address : Corix Utilities Inc. 2 - 8515 48th Street SE
Calgary AB Canada T2C 2P8
Telephone : 4038036426
Project : FOOTHILLS Water Treatment Plant
PO : ----
C-O-C number : ----
Sampler : HK
Site : FOOTHILLS WATER TREATMENT PLANT
Quote number : Q57599 Schedule 4 Corix Utilities Inc.
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 12
Laboratory : ALS Environmental - Calgary
Account Manager : Lyudmyla Shvets
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 14-Feb-2024 15:10
Date Analysis Commenced : 15-Feb-2024
Issue Date : 23-Feb-2024 14:27

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Archana Neupane	Lab Assistant	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Lewis	Inorganics Analyst	Inorganics, Waterloo, Ontario
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Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Joshua Stessun	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Livia Ciolan	Analyst	Organics, Winnipeg, Manitoba
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Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Stephanie Pinheiro	Analyst	LCMS, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario



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).

<i>Unit</i>	<i>Description</i>
-	no units
%	percent
% T/cm	% transmittance per centimetre
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
AU/cm	absorbance units per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLI	Detection Limit Raised: Dilution required to address Internal Standard response problems caused by matrix interference.
PNS	Test performed on non-preserved sample



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	---	---	---	---
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	---	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Physical Tests										
Absorbance, UV (@ 254nm)	---	E404/CG	0.0050	AU/cm	0.0190	---	---	---	---	
Colour, true	---	E329/CG	5.0	CU	<5.0	---	---	---	---	
Hardness (as CaCO3), dissolved	---	EC100/CG	0.50	mg/L	205	---	---	---	---	
Turbidity	---	E121/CG	0.10	NTU	0.19	---	---	---	---	
Transmittance, UV (@ 254nm)	---	E404/CG	1.0	% T/cm	95.7	---	---	---	---	
Conductivity	---	E100/CG	2.0	µS/cm	577	---	---	---	---	
pH	---	E108/CG	0.10	pH units	7.95	---	---	---	---	
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/CG	1.0	mg/L	189	---	---	---	---	
Alkalinity, carbonate (as CO3)	3812-32-6	E290/CG	1.0	mg/L	<1.0	---	---	---	---	
Alkalinity, hydroxide (as OH)	14280-30-9	E290/CG	1.0	mg/L	<1.0	---	---	---	---	
Alkalinity, total (as CaCO3)	---	E290/CG	2.0	mg/L	155	---	---	---	---	
Solids, total dissolved [TDS], calculated	---	EC103/CG	1.0	mg/L	338	---	---	---	---	
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/CG	0.0050	mg/L	<0.0050	---	---	---	---	
Chloride	16887-00-6	E235.Cl/CG	0.50	mg/L	54.8	---	---	---	---	
Fluoride	16984-48-8	E235.F/CG	0.020	mg/L	0.111	---	---	---	---	
Nitrate (as N)	14797-55-8	E235.NO3/CG	0.020	mg/L	1.50	---	---	---	---	
Nitrite (as N)	14797-65-0	E235.NO2/CG	0.010	mg/L	<0.010	---	---	---	---	
Sulfate (as SO4)	14808-79-8	E235.SO4/CG	0.30	mg/L	66.7	---	---	---	---	
Nitrate + Nitrite (as N)	---	EC235.N+N/C G	0.0500	mg/L	1.50	---	---	---	---	
Cyanides										
Cyanide, strong acid dissociable (Total)	---	E333/WT	0.0020	mg/L	<0.0020	---	---	---	---	
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	---	E355-L/CG	0.50	mg/L	1.00	---	---	---	---	
Inorganics										
Chlorine, free	7782-50-5	E327-H/CG	0.10	mg/L	0.84	---	---	---	---	
Chlorine, total	7782-50-5	E326-H/CG	0.10	mg/L	0.94	---	---	---	---	
Total Sulfides										



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	---	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Total Sulfides										
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L	<0.0015	---	---	---	---	
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L	<0.0016	---	---	---	---	
Ion Balance										
Anion sum	---	EC101/CG	0.10	meq/L	6.14	---	---	---	---	
Cation sum	---	EC101/CG	0.10	meq/L	5.85	---	---	---	---	
Ion balance (APHA)	---	EC101/CG	0.01	%	-2.42	---	---	---	---	
Ion balance (cations/anions)	---	EC101/CG	0.010	%	95.3	---	---	---	---	
Total Metals										
Aluminum, total	7429-90-5	E420/CG	0.0030	mg/L	0.0514	---	---	---	---	
Antimony, total	7440-36-0	E420/CG	0.00010	mg/L	<0.00010	---	---	---	---	
Arsenic, total	7440-38-2	E420/CG	0.00010	mg/L	0.00012	---	---	---	---	
Barium, total	7440-39-3	E420/CG	0.00010	mg/L	0.0456	---	---	---	---	
Boron, total	7440-42-8	E420/CG	0.010	mg/L	0.023	---	---	---	---	
Cadmium, total	7440-43-9	E420/CG	0.0000050	mg/L	<0.0000050	---	---	---	---	
Calcium, total	7440-70-2	E420/CG	0.050	mg/L	54.4	---	---	---	---	
Chromium, total	7440-47-3	E420/CG	0.00050	mg/L	<0.00050	---	---	---	---	
Copper, total	7440-50-8	E420/CG	0.00050	mg/L	0.00104	---	---	---	---	
Iron, total	7439-89-6	E420/CG	0.010	mg/L	<0.010	---	---	---	---	
Lead, total	7439-92-1	E420/CG	0.000050	mg/L	0.000080	---	---	---	---	
Magnesium, total	7439-95-4	E420/CG	0.0050	mg/L	19.0	---	---	---	---	
Manganese, total	7439-96-5	E420/CG	0.00010	mg/L	0.00381	---	---	---	---	
Mercury, total	7439-97-6	E508/CG	0.0000050	mg/L	<0.0000050	---	---	---	---	
Nickel, total	7440-02-0	E420/CG	0.00050	mg/L	0.00061	---	---	---	---	
Potassium, total	7440-09-7	E420/CG	0.050	mg/L	2.71	---	---	---	---	
Selenium, total	7782-49-2	E420/CG	0.000050	mg/L	0.000631	---	---	---	---	
Silver, total	7440-22-4	E420/CG	0.000010	mg/L	<0.000010	---	---	---	---	
Sodium, total	7440-23-5	E420/CG	0.050	mg/L	40.8	---	---	---	---	
Uranium, total	7440-61-1	E420/CG	0.000010	mg/L	0.000293	---	---	---	---	
Zinc, total	7440-66-6	E420/CG	0.0030	mg/L	0.0037	---	---	---	---	
Dissolved Metals										



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Dissolved Metals										
Calcium, dissolved	7440-70-2	E421/CG	0.050	mg/L	52.1	---	---	---	---	
Iron, dissolved	7439-89-6	E421/CG	0.010	mg/L	<0.010	---	---	---	---	
Magnesium, dissolved	7439-95-4	E421/CG	0.0050	mg/L	18.1	---	---	---	---	
Manganese, dissolved	7439-96-5	E421/CG	0.00010	mg/L	0.00029	---	---	---	---	
Potassium, dissolved	7440-09-7	E421/CG	0.050	mg/L	2.66	---	---	---	---	
Sodium, dissolved	7440-23-5	E421/CG	0.050	mg/L	38.9	---	---	---	---	
Dissolved metals filtration location	----	EP421/CG	-	-	Laboratory	---	---	---	---	
Aggregate Organics										
Nitritotriacetic acid [NTA]	139-13-9	E394/WT	0.40	mg/L	<0.40	---	---	---	---	
Volatile Organic Compounds										
Acetone	67-64-1	E611K/CG	20	µg/L	<20	---	---	---	---	
Acrolein	107-02-8	E611K/CG	50	µg/L	<50	---	---	---	---	
Acrylonitrile	107-13-1	E611K/CG	20	µg/L	<20	---	---	---	---	
Benzene	71-43-2	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Bromodichloromethane	75-27-4	E611K/CG	0.50	µg/L	3.94	---	---	---	---	
Bromoform	75-25-2	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Bromomethane	74-83-9	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Carbon disulfide	75-15-0	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Carbon tetrachloride	56-23-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Chlorobenzene	108-90-7	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Chloroethane	75-00-3	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Chloroform	67-66-3	E611K/CG	0.50	µg/L	15.8	---	---	---	---	
Chloromethane	74-87-3	E611K/CG	5.00	µg/L	<5.00	---	---	---	---	
Dibromochloromethane	124-48-1	E611K/CG	0.50	µg/L	1.08	---	---	---	---	
Dibromoethane, 1,2-	106-93-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dibromomethane	74-95-3	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloro-2-butene, cis-1,4-	1476-11-5	E611K/CG	5.0	µg/L	<5.0	---	---	---	---	
Dichloro-2-butene, trans-1,4-	110-57-6	E611K/CG	5.0	µg/L	<5.0	---	---	---	---	
Dichlorobenzene, 1,2-	95-50-1	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichlorobenzene, 1,3-	541-73-1	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	---	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds										
Dichlorobenzene, 1,4-	106-46-7	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichlorodifluoromethane	75-71-8	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethane, 1,1-	75-34-3	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethane, 1,2-	107-06-2	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, 1,1-	75-35-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, cis-1,2-	156-59-2	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, trans-1,2-	156-60-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloromethane	75-09-2	E611K/CG	1.00	µg/L	<1.00	---	---	---	---	
Dichloropropane, 1,2-	78-87-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloropropylene, cis-1,3-	10061-01-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Dichloropropylene, trans-1,3-	10061-02-6	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Ethanol	64-17-5	E611K/CG	250	µg/L	<250	---	---	---	---	
Ethyl methacrylate	97-63-2	E611K/CG	5.0	µg/L	<5.0	---	---	---	---	
Ethylbenzene	100-41-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Hexanone, 2-	591-78-6	E611K/CG	20	µg/L	<20	---	---	---	---	
Iodomethane	74-88-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Methyl ethyl ketone [MEK]	78-93-3	E611K/CG	20	µg/L	<20	---	---	---	---	
Methyl isobutyl ketone [MIBK]	108-10-1	E611K/CG	20	µg/L	<20	---	---	---	---	
Styrene	100-42-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethane, 1,1,2,2-	79-34-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethylene	127-18-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Toluene	108-88-3	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichlorobenzene, 1,2,3-	87-61-6	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichlorobenzene, 1,2,4-	120-82-1	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichlorobenzene, 1,3,5-	108-70-3	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethane, 1,1,1-	71-55-6	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethane, 1,1,2-	79-00-5	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethylene	79-01-6	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichlorofluoromethane	75-69-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Trichloropropane, 1,2,3-	96-18-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	---	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds										
Vinyl chloride	75-01-4	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
Xylene, m+p-	179601-23-1	E611K/CG	0.40	µg/L	<0.40	---	---	---	---	
Xylene, o-	95-47-6	E611K/CG	0.30	µg/L	<0.30	---	---	---	---	
Xylenes, total	1330-20-7	E611K/CG	0.50	µg/L	<0.50	---	---	---	---	
BTEX, total	---	E611K/CG	1.0	µg/L	<1.0	---	---	---	---	
Trihalomethanes [THMs], total	---	E611K/CG	1.0	µg/L	20.8	---	---	---	---	
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611K/CG	1.0	%	93.9	---	---	---	---	
Difluorobenzene, 1,4-	540-36-3	E611K/CG	1.0	%	97.0	---	---	---	---	
Polycyclic Aromatic Hydrocarbons										
Benzo(a)pyrene	50-32-8	E641A/CG	0.0050	µg/L	<0.0050	---	---	---	---	
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/CG	0.1	%	66.5	---	---	---	---	
Naphthalene-d8	1146-65-2	E641A/CG	0.1	%	92.8	---	---	---	---	
Phenanthrene-d10	1517-22-2	E641A/CG	0.1	%	78.4	---	---	---	---	
Disinfectant By-Products										
Chlorate	14866-68-3	E409.CLO3/W T	0.010	mg/L	0.084	---	---	---	---	
Chlorite	14998-27-7	E409.CLO2/W T	0.010	mg/L	<0.010	---	---	---	---	
Haloacetic Acids										
Bromochloroacetic acid	5589-96-8	E750/WT	1.00	µg/L	1.94	---	---	---	---	
Dibromoacetic acid	631-64-1	E750/WT	1.00	µg/L	<1.00	---	---	---	---	
Dichloroacetic acid	79-43-6	E750/WT	1.00	µg/L	10.8	---	---	---	---	
Monobromoacetic acid	79-08-3	E750/WT	1.00	µg/L	<1.00	---	---	---	---	
Monochloroacetic acid	79-11-8	E750/WT	1.00	µg/L	1.72	---	---	---	---	
Trichloroacetic acid	76-03-9	E750/WT	1.00	µg/L	12.6	---	---	---	---	
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L	25.1	---	---	---	---	
Chlorinated Phenolics										
Dichlorophenol, 2,4-	120-83-2	E651D/WT	0.30	µg/L	<0.30	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Chlorinated Phenolics										
Pentachlorophenol [PCP]	87-86-5	E651D/WT	0.50	µg/L	<0.50	---	---	---	---	
Tetrachlorophenol, 2,3,4,6-	58-90-2	E651D/WT	0.50	µg/L	<0.50	---	---	---	---	
Trichlorophenol, 2,4,6-	88-06-2	E651D/WT	0.50	µg/L	<0.50	---	---	---	---	
Phenolics Surrogates										
Tribromophenol, 2,4,6-	118-79-6	E651D/WT	1.0	%	96.3	---	---	---	---	
Organochlorine Pesticides										
Aldrin	309-00-2	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Chlordane, cis- (alpha)	5103-71-9	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Chlordane, total	57-74-9	E660F/WT	0.011	µg/L	<0.011	---	---	---	---	
Chlordane, trans- (gamma)	5103-74-2	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
DDD, 2,4'-	53-19-0	E660F/WT	0.0040	µg/L	<0.0040	---	---	---	---	
DDD, 4,4'-	72-54-8	E660F/WT	0.0040	µg/L	<0.0040	---	---	---	---	
DDD, total	----	E660F/WT	0.0060	µg/L	<0.0060	---	---	---	---	
DDE, 2,4'-	3424-82-6	E660F/WT	0.0040	µg/L	<0.0040	---	---	---	---	
DDE, 4,4'-	72-55-9	E660F/WT	0.0040	µg/L	<0.0040	---	---	---	---	
DDE, total	----	E660F/WT	0.0060	µg/L	<0.0060	---	---	---	---	
DDT, 2,4'-	789-02-6	E660F/WT	0.0040	µg/L	<0.0040	---	---	---	---	
DDT, 4,4'-	50-29-3	E660F/WT	0.0040	µg/L	<0.0040	---	---	---	---	
DDT, total	----	E660F/WT	0.0060	µg/L	<0.0060	---	---	---	---	
Dieldrin	60-57-1	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Endosulfan sulfate	1031-07-8	E660F/WT	0.0070	µg/L	<0.0070	---	---	---	---	
Endosulfan, alpha-	959-98-8	E660F/WT	0.0070	µg/L	<0.0070	---	---	---	---	
Endosulfan, beta-	33213-65-9	E660F/WT	0.0070	µg/L	<0.0070	---	---	---	---	
Endosulfan, total	----	E660F/WT	0.010	µg/L	<0.010	---	---	---	---	
Endrin	72-20-8	E660F/WT	0.010	µg/L	<0.010	---	---	---	---	
Endrin aldehyde	7421-93-4	E660F/WT	0.010	µg/L	<0.010	---	---	---	---	
Heptachlor	76-44-8	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Heptachlor epoxide	1024-57-3	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Hexachlorobenzene	118-74-1	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Hexachlorobutadiene	87-68-3	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Organochlorine Pesticides										
Hexachlorocyclohexane, alpha-	319-84-6	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Hexachlorocyclohexane, beta-	319-85-7	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Hexachlorocyclohexane, delta-	319-86-8	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Hexachlorocyclohexane, total	608-73-1	E660F/WT	0.016	µg/L	<0.016	---	---	---	---	
Hexachloroethane	67-72-1	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Methoxychlor	72-43-5	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Mirex	2385-85-5	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Nonachlor, trans-	39765-80-5	E660F/WT	0.010	µg/L	<0.010	---	---	---	---	
Oxychlorane	27304-13-8	E660F/WT	0.0080	µg/L	<0.0080	---	---	---	---	
Pentachloronitrobenzene	82-68-8	E660F/WT	0.010	µg/L	<0.010	---	---	---	---	
Aldrin + Dieldrin	----	E660F/WT	0.011	µg/L	<0.011	---	---	---	---	
DDT + metabolites, total	----	E660F/WT	0.010	µg/L	<0.010	---	---	---	---	
Heptachlor + Heptachlor epoxide	n/a	E660F/WT	0.011	µg/L	<0.011	---	---	---	---	
Organochlorine Pesticides Surrogates										
Decachlorobiphenyl	2051-24-3	E660F/WT	0.10	%	114	---	---	---	---	
Tetrachloro-m-xylene	877-09-8	E660F/WT	0.10	%	97.9	---	---	---	---	
Herbicides										
Acetic acid, 2-methyl-4-chlorophenoxy- [MCPA]	94-74-6	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Alachlor	15972-60-8	E755/WT	0.050	µg/L	<0.050 ^{PNS}	---	---	---	---	
Ametryn	834-12-8	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Atrazine	1912-24-9	E755/WT	0.050	µg/L	<0.050 ^{PNS}	---	---	---	---	
Atrazine + N-dealkylated metabolites	----	E755/WT	0.10	µg/L	<0.10 ^{PNS}	---	---	---	---	
Atrazine-desethyl	6190-65-4	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Bromoxynil	1689-84-5	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Cyanazine	21725-46-2	E755/WT	0.100	µg/L	<0.100 ^{PNS}	---	---	---	---	
Dicamba	1918-00-9	E706A/WT	0.10	µg/L	<0.10	---	---	---	---	
Dichlorophenoxyacetic acid, 2,4- [2,4-D]	94-75-7	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Dichlorprop [2,4-DP]	120-36-5	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Diclofop-methyl	51338-27-3	E755/WT	0.100	µg/L	<0.100 ^{PNS}	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Herbicides										
Dinoseb	88-85-7	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Diuron	330-54-1	E755/WT	0.050	µg/L	<0.050 ^{PNS}	---	---	---	---	
Fluazifop-p-butyl	79241-46-6	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Glyphosate	1071-83-6	E716A/WT	0.20	µg/L	<0.20	---	---	---	---	
Metolachlor	51218-45-2	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Metribuzin	21087-64-9	E755/WT	0.100	µg/L	<0.100 ^{PNS}	---	---	---	---	
Picloram	1918-02-1	E706A/WT	0.10	µg/L	<0.10	---	---	---	---	
Prometon	1610-18-0	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Prometryn	7287-19-6	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Propazine	139-40-2	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Simazine	122-34-9	E755/WT	0.100	µg/L	<0.100 ^{PNS}	---	---	---	---	
Terbutryn	886-50-0	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Triallate	2303-17-5	E755/WT	0.100	µg/L	<0.100 ^{PNS}	---	---	---	---	
Trichlorophenoxyacetic acid, 2,4,5- [2,4,5-T]	93-76-5	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Trichlorophenoxypropionic acid, 2,4,5- [2,4,5-TP]	93-72-1	E706A/WT	0.050	µg/L	<0.050	---	---	---	---	
Trifluralin	1582-09-8	E756/WT	0.10	µg/L	<0.10 ^{PNS}	---	---	---	---	
Herbicides Surrogates										
Dichlorophenylacetic acid, 2,4-	19719-28-9	E706A/WT	1.0	%	115	---	---	---	---	
Insecticides										
Azinphos-methyl	86-50-0	E755/WT	0.100	µg/L	<0.100 ^{PNS}	---	---	---	---	
Bendiocarb	22781-23-3	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Carbaryl	63-25-2	E755/WT	0.050	µg/L	<0.050 ^{PNS}	---	---	---	---	
Carbofuran	1563-66-2	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Chlorpyrifos	2921-88-2	E756/WT	0.10	µg/L	<0.10 ^{PNS}	---	---	---	---	
Diazinon	333-41-5	E755/WT	0.0250	µg/L	<0.250 ^{DLI, PNS}	---	---	---	---	
Dimethoate	60-51-5	E755/WT	0.050	µg/L	<0.050 ^{PNS}	---	---	---	---	
Malathion	121-75-5	E755/WT	0.0250	µg/L	<0.0250 ^{PNS}	---	---	---	---	
Parathion	56-38-2	E756/WT	0.10	µg/L	<0.10 ^{PNS}	---	---	---	---	
Parathion-methyl	298-00-0	E756/WT	0.10	µg/L	<0.10 ^{PNS}	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	PINEHURST	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Feb-2024 14:11	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	CG2401831-001	-----	-----	-----	-----	
					Result	----	----	----	----	
Insecticides										
Phorate	298-02-2	E755/WT	0.250	µg/L	<0.250 ^{PNS}	----	----	----	----	
Temephos	3383-96-8	E755/WT	0.250	µg/L	<2.50 ^{DLL, PNS}	----	----	----	----	
Terbufos	13071-79-9	E755/WT	0.50	µg/L	<0.50 ^{PNS}	----	----	----	----	
Organic Parameters										
Microcystin	101043-37-2	E576/WP	0.20	µg/L	<0.20	----	----	----	----	

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.

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : CG2401831</p> <p>Client : Corix Group of Companies</p> <p>Contact : Rob Dechaine</p> <p>Address : Corix Utilities Inc. 2 - 8515 48th Street SE Calgary AB Canada T2C 2P8</p> <p>Telephone : 4038036426</p> <p>Project : Foothills Water Treatment Plant</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : HK</p> <p>Site : Foothills Water Treatment Plant</p> <p>Quote number : Q57599 Schedule 4 Corix Utilities Inc.</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 18</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Lyudmyla Shvets</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 14-Feb-2024 15:10</p> <p>Issue Date : 23-Feb-2024 14:27</p>
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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 Duplicate (MSD) outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- 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.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Anions and Nutrients	Anonymous	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	67.5 % ^{MS-B}	75.0-125%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Microcystin by ELISA (Extraction by Sonication)										
Amber glass vial PINEHURST	E576	14-Feb-2024	----	----	----		21-Feb-2024	14 days	7 days	✔
Aggregate Organics : Nitrilotriacetic Acid (NTA) in Water										
Amber glass/Teflon lined septa cap (sodium bisulfate + sodium thiosulfate) PINEHURST	E394	14-Feb-2024	----	----	----		21-Feb-2024	14 days	7 days	✔
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PINEHURST	E298	14-Feb-2024	15-Feb-2024	28 days	1 days	✔	15-Feb-2024	28 days	1 days	✔
Anions and Nutrients : Chloride in Water by IC										
HDPE PINEHURST	E235.Cl	14-Feb-2024	15-Feb-2024	28 days	1 days	✔	15-Feb-2024	28 days	1 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE PINEHURST	E235.F	14-Feb-2024	15-Feb-2024	28 days	1 days	✔	15-Feb-2024	28 days	1 days	✔
Anions and Nutrients : Nitrate in Water by IC										
HDPE PINEHURST	E235.NO3	14-Feb-2024	15-Feb-2024	3 days	1 days	✔	15-Feb-2024	3 days	1 days	✔
Anions and Nutrients : Nitrite in Water by IC										
HDPE PINEHURST	E235.NO2	14-Feb-2024	15-Feb-2024	3 days	1 days	✔	15-Feb-2024	3 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		
Anions and Nutrients : Sulfate in Water by IC											
HDPE PINEHURST	E235.SO4	14-Feb-2024	15-Feb-2024	28 days	1 days	✓	15-Feb-2024	28 days	1 days	✓	
Chlorinated Phenolics : Phenolics (Ontario Chlorophenols List) by GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) PINEHURST	E651D	14-Feb-2024	21-Feb-2024	14 days	7 days	✓	22-Feb-2024	40 days	1 days	✓	
Cyanides : Total Cyanide											
UV-inhibited HDPE - total (sodium hydroxide) PINEHURST	E333	14-Feb-2024	16-Feb-2024	14 days	2 days	✓	16-Feb-2024	14 days	2 days	✓	
Disinfectant By-Products : Chlorate (CLO3) in Waters by Ion Chromatography											
Opaque HDPE (EDA) PINEHURST	E409.CLO3	14-Feb-2024	20-Feb-2024	28 days	6 days	✓	20-Feb-2024	28 days	6 days	✓	
Disinfectant By-Products : Chlorite (CLO2) in Waters by Ion Chromatography											
Opaque HDPE (EDA) PINEHURST	E409.CLO2	14-Feb-2024	20-Feb-2024	14 days	6 days	✓	20-Feb-2024	14 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
Lab Split - Subsample from unpreserved bottle PINEHURST	E421	14-Feb-2024	17-Feb-2024	0 hrs	73 hrs	* UCP	20-Feb-2024	0 hrs	139 hrs	* UCP	
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS											
Glass vial (ammonium chloride) PINEHURST	E750	14-Feb-2024	16-Feb-2024	14 days	2 days	✓	16-Feb-2024	14 days	0 days	✓	
Herbicides : Chlorpyrifos, methyl and ethyl Parathion, Ethalfluralin and Trifluralin in Water by LC-MS-MS											
Amber glass/Teflon lined cap (sodium thiosulfate) - LCMS PINEHURST	E756	14-Feb-2024	16-Feb-2024	7 days	2 days	✓	21-Feb-2024	7 days	7 days	✓	
Herbicides : Glyphosate and AMPA in Water											
HDPE (sodium thiosulfate) - LCMS PINEHURST	E716A	14-Feb-2024	20-Feb-2024	20 days	6 days	✓	21-Feb-2024	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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Herbicides : Pesticides in Water by LC-MS-MS (Routine Level)										
Amber glass/Teflon lined cap (sodium thiosulfate) - LCMS PINEHURST	E755	14-Feb-2024	16-Feb-2024	7 days	2 days	✓	20-Feb-2024	7 days	6 days	✓
Herbicides : Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS										
Amber glass/Teflon lined cap PINEHURST	E706A	14-Feb-2024	20-Feb-2024	7 days	6 days	✓	22-Feb-2024	7 days	8 days	✓
Inorganics : Free Chlorine (Residual) by DPD Colourimetry										
HDPE PINEHURST	E327-H	14-Feb-2024	----	----	----		15-Feb-2024	0.25 hrs	25 hrs	* EHTR-FM
Inorganics : Total Chlorine (Residual) by DPD Colourimetry										
HDPE PINEHURST	E326-H	14-Feb-2024	----	----	----		16-Feb-2024	0.25 hrs	44 hrs	* EHTR-FM
Insecticides : Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by LC-MS-MS										
Amber glass/Teflon lined cap (sodium thiosulfate) - LCMS PINEHURST	E756	14-Feb-2024	16-Feb-2024	7 days	2 days	✓	21-Feb-2024	7 days	7 days	✓
Insecticides : Pesticides in Water by LC-MS-MS (Routine Level)										
Amber glass/Teflon lined cap (sodium thiosulfate) - LCMS PINEHURST	E755	14-Feb-2024	16-Feb-2024	7 days	2 days	✓	20-Feb-2024	7 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) PINEHURST	E355-L	14-Feb-2024	15-Feb-2024	28 days	1 days	✓	15-Feb-2024	28 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap PINEHURST	E660F	14-Feb-2024	16-Feb-2024	7 days	2 days	✓	21-Feb-2024	40 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PINEHURST	E290	14-Feb-2024	15-Feb-2024	14 days	1 days	✓	15-Feb-2024	14 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		
Physical Tests : Colour (True) by Spectrometer (5 CU)											
HDPE PINEHURST	E329	14-Feb-2024	17-Feb-2024	3 days	3 days	✓	17-Feb-2024	3 days	3 days	✓	
Physical Tests : Conductivity in Water											
HDPE PINEHURST	E100	14-Feb-2024	15-Feb-2024	28 days	1 days	✓	15-Feb-2024	28 days	1 days	✓	
Physical Tests : pH by Meter											
HDPE PINEHURST	E108	14-Feb-2024	15-Feb-2024	0.25 hrs	24 hrs	* EHTR-FM	15-Feb-2024	0.25 hrs	24 hrs	* EHTR-FM	
Physical Tests : Turbidity by Nephelometry											
HDPE PINEHURST	E121	14-Feb-2024	----	----	----		15-Feb-2024	3 days	1 days	✓	
Physical Tests : UV Absorbance and Transmittance by Spectrometry											
HDPE PINEHURST	E404	14-Feb-2024	----	----	----		15-Feb-2024	3 days	1 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) PINEHURST	E641A	14-Feb-2024	20-Feb-2024	14 days	6 days	✓	20-Feb-2024	40 days	0 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) PINEHURST	E508	14-Feb-2024	16-Feb-2024	28 days	2 days	✓	16-Feb-2024	28 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) PINEHURST	E420	14-Feb-2024	16-Feb-2024	180 days	2 days	✓	20-Feb-2024	180 days	6 days	✓	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)											
HDPE total (zinc acetate+sodium hydroxide) PINEHURST	E395	14-Feb-2024	----	----	----		21-Feb-2024	7 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (AB Projects List) by Headspace GC-MS										
Glass vial (sodium bisulfate) PINEHURST	E611K	14-Feb-2024	15-Feb-2024	14 days	1 days	✔	15-Feb-2024	14 days	1 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	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1334525	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1333818	1	19	5.2	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1337606	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1333934	1	16	6.2	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1337607	1	8	12.5	5.0	✓
Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by LC-MS-MS	E756	1335805	1	11	9.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1336448	1	10	10.0	5.0	✓
Conductivity in Water	E100	1334524	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1334690	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	1333938	1	11	9.0	5.0	✓
Free Chlorine (Residual) by DPD Colourimetry	E327-H	1334733	1	5	20.0	5.0	✓
Glyphosate and AMPA in Water	E716A	1337908	1	18	5.5	5.0	✓
Microcystin by ELISA (Extraction by Sonication)	E576	1339252	1	13	7.6	5.0	✓
Nitrate in Water by IC	E235.NO3	1333936	1	13	7.6	5.0	✓
Nitritotriacetic Acid (NTA) in Water	E394	1338993	1	18	5.5	5.0	✓
Nitrite in Water by IC	E235.NO2	1333937	1	11	9.0	5.0	✓
Pesticides in Water by LC-MS-MS (Routine Level)	E755	1335804	1	12	8.3	5.0	✓
pH by Meter	E108	1334523	1	20	5.0	5.0	✓
Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS	E706A	1337318	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1333935	1	12	8.3	5.0	✓
Total Chlorine (Residual) by DPD Colourimetry	E326-H	1335503	1	10	10.0	5.0	✓
Total Cyanide	E333	1335755	1	6	16.6	5.0	✓
Total Mercury in Water by CVAAS	E508	1334607	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1334692	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1334177	1	13	7.6	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1339737	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	1334000	1	20	5.0	5.0	✓
UV Absorbance and Transmittance by Spectrometry	E404	1334368	1	1	100.0	5.0	✓
VOCs (AB Projects List) by Headspace GC-MS	E611K	1334152	1	3	33.3	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1334525	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1333818	1	19	5.2	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1337606	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1333934	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1337607	1	8	12.5	5.0	✔
Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by LC-MS-MS	E756	1335805	1	11	9.0	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	1336448	1	10	10.0	5.0	✔
Conductivity in Water	E100	1334524	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1334690	1	4	25.0	5.0	✔
Fluoride in Water by IC	E235.F	1333938	1	11	9.0	5.0	✔
Free Chlorine (Residual) by DPD Colourimetry	E327-H	1334733	1	5	20.0	5.0	✔
Glyphosate and AMPA in Water	E716A	1337908	1	18	5.5	5.0	✔
Haloacetic Acids in Water by LC-MS/MS	E750	1335778	1	20	5.0	4.7	✔
Microcystin by ELISA (Extraction by Sonication)	E576	1339252	1	13	7.6	5.0	✔
Nitrate in Water by IC	E235.NO3	1333936	1	13	7.6	5.0	✔
Nitrioltriacetic Acid (NTA) in Water	E394	1338993	1	18	5.5	5.0	✔
Nitrite in Water by IC	E235.NO2	1333937	1	11	9.0	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1335787	1	9	11.1	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	1337399	1	3	33.3	5.0	✔
Pesticides in Water by LC-MS-MS (Routine Level)	E755	1335804	1	12	8.3	5.0	✔
pH by Meter	E108	1334523	1	20	5.0	5.0	✔
Phenolics (Ontario Chlorophenols List) by GC-MS	E651D	1338660	1	4	25.0	5.0	✔
Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS	E706A	1337318	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	1333935	1	12	8.3	5.0	✔
Total Chlorine (Residual) by DPD Colourimetry	E326-H	1335503	1	10	10.0	5.0	✔
Total Cyanide	E333	1335755	1	6	16.6	5.0	✔
Total Mercury in Water by CVAAS	E508	1334607	1	12	8.3	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1334692	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1334177	1	13	7.6	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1339737	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	1334000	1	20	5.0	5.0	✔
UV Absorbance and Transmittance by Spectrometry	E404	1334368	1	1	100.0	5.0	✔
VOCs (AB Projects List) by Headspace GC-MS	E611K	1334152	1	3	33.3	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1334525	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	1333818	1	19	5.2	5.0	✔
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1337606	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	1333934	1	16	6.2	5.0	✔
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1337607	1	8	12.5	5.0	✔
Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by LC-MS-MS	E756	1335805	1	11	9.0	5.0	✔



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB) - Continued							
Colour (True) by Spectrometer (5 CU)	E329	1336448	1	10	10.0	5.0	✔
Conductivity in Water	E100	1334524	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1334690	1	4	25.0	5.0	✔
Fluoride in Water by IC	E235.F	1333938	1	11	9.0	5.0	✔
Free Chlorine (Residual) by DPD Colourimetry	E327-H	1334733	1	5	20.0	5.0	✔
Glyphosate and AMPA in Water	E716A	1337908	1	18	5.5	5.0	✔
Haloacetic Acids in Water by LC-MS/MS	E750	1335778	1	20	5.0	4.7	✔
Microcystin by ELISA (Extraction by Sonication)	E576	1339252	1	13	7.6	5.0	✔
Nitrate in Water by IC	E235.NO3	1333936	1	13	7.6	5.0	✔
Nitritotriacetic Acid (NTA) in Water	E394	1338993	1	18	5.5	5.0	✔
Nitrite in Water by IC	E235.NO2	1333937	1	11	9.0	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1335787	1	9	11.1	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	1337399	1	3	33.3	5.0	✔
Pesticides in Water by LC-MS-MS (Routine Level)	E755	1335804	1	12	8.3	5.0	✔
Phenolics (Ontario Chlorophenols List) by GC-MS	E651D	1338660	1	4	25.0	5.0	✔
Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS	E706A	1337318	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	1333935	1	12	8.3	5.0	✔
Total Chlorine (Residual) by DPD Colourimetry	E326-H	1335503	1	10	10.0	5.0	✔
Total Cyanide	E333	1335755	1	6	16.6	5.0	✔
Total Mercury in Water by CVAAS	E508	1334607	1	12	8.3	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1334692	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1334177	1	13	7.6	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1339737	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	1334000	1	20	5.0	5.0	✔
UV Absorbance and Transmittance by Spectrometry	E404	1334368	1	1	100.0	5.0	✔
VOCs (AB Projects List) by Headspace GC-MS	E611K	1334152	1	3	33.3	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1333818	1	19	5.2	5.0	✔
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1337606	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	1333934	1	16	6.2	5.0	✔
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1337607	1	8	12.5	5.0	✔
Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by LC-MS-MS	E756	1335805	1	11	9.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1334690	1	4	25.0	5.0	✔
Fluoride in Water by IC	E235.F	1333938	1	11	9.0	5.0	✔
Glyphosate and AMPA in Water	E716A	1337908	1	18	5.5	5.0	✔
Haloacetic Acids in Water by LC-MS/MS	E750	1335778	1	20	5.0	4.7	✔
Microcystin by ELISA (Extraction by Sonication)	E576	1339252	1	13	7.6	5.0	✔



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
Matrix Spikes (MS) - Continued							
Nitrate in Water by IC	E235.NO3	1333936	1	13	7.6	5.0	✔
Nitrioltriacetic Acid (NTA) in Water	E394	1338993	1	18	5.5	5.0	✔
Nitrite in Water by IC	E235.NO2	1333937	1	11	9.0	5.0	✔
Pesticides in Water by LC-MS-MS (Routine Level)	E755	1335804	1	12	8.3	5.0	✔
Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS	E706A	1337318	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	1333935	1	12	8.3	5.0	✔
Total Cyanide	E333	1335755	1	6	16.6	5.0	✔
Total Mercury in Water by CVAAS	E508	1334607	1	12	8.3	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1334692	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1334177	1	13	7.6	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1339737	1	19	5.2	5.0	✔
VOCs (AB Projects List) by Headspace GC-MS	E611K	1334152	1	3	33.3	5.0	✔
Matrix Spike Duplicates (MSD)							
Haloacetic Acids in Water by LC-MS/MS	E750	1335778	1	20	5.0	4.7	✔



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
Conductivity in Water	E100 ALS Environmental - Calgary	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 - Calgary	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.
Turbidity by Nephelometry	E121 ALS Environmental - Calgary	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
Chloride in Water by IC	E235.Cl ALS Environmental - Calgary	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 - Calgary	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 - Calgary	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 - Calgary	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 - Calgary	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 - Calgary	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 - Calgary	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)



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Chlorine (Residual) by DPD Colourimetry	E326-H ALS Environmental - Calgary	Water	APHA 4500-Cl G (mod)	<p>Chlorine (residual), as free or total, is analyzed using the DPD colourimetric method. The recommended hold time for this test is 15 minutes and field testing is recommended when determining Chlorine concentrations at the time of sampling.</p> <p>Chlorine if present in a sample container after sampling can be rapidly consumed by any inorganic or organic matter in the sample and dissipates rapidly into headspace.</p> <p>Laboratory results may be requested when chlorine concentrations that may be present at the time of laboratory analysis are required for the interpretation of other laboratory analysis where the presence of Chlorine may affect results. e.g. laboratory toxicity testing</p>
Free Chlorine (Residual) by DPD Colourimetry	E327-H ALS Environmental - Calgary	Water	APHA 4500-Cl G (mod)	<p>Chlorine (residual), as free or total, is analyzed using the DPD colourimetric method. The recommended hold time for this test is 15 minutes and field testing is recommended when determining Chlorine concentrations at the time of sampling.</p> <p>Chlorine if present in a sample container after sampling can be rapidly consumed by any inorganic or organic matter in the sample and dissipates rapidly into headspace.</p> <p>Laboratory results may be requested when chlorine concentrations that may be present at the time of laboratory analysis are required for the interpretation of other laboratory analysis where the presence of Chlorine may affect results. e.g. laboratory toxicity testing</p>
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Calgary	Water	APHA 2120 C (mod)	<p>Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.</p>
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	<p>Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourimetric analysis.</p> <p>Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).</p>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Calgary	Water	APHA 5310 B (mod)	<p>Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been 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 total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).</p>
Nitritotriacetic Acid (NTA) in Water	E394 ALS Environmental - Waterloo	Water	EPA 430.1 (mod)	<p>NTA refers to the tri-sodium salt of nitritotriacetic acid, N(CH₂COONa)₃. Zinc forms a blue-coloured complex with 2 carboxy-2-hydroxy-5-sulfoformazylbenzene (Zincon) in a solution buffered to pH 9.2. When NTA is added to the sample, the Zinc-Zincon complex is broken which reduces the absorbance in proportion to the amount of NTA present. Samples are filtered with a 0.45 um membrane before analysis.</p>



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Sulfide by Colourimetry (Automated Flow)	E395 ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)
UV Absorbance and Transmittance by Spectrometry	E404 ALS Environmental - Calgary	Water	APHA 5910 B (mod)	UV Absorbance is determined by first filtering a sample through a 0.45 micron filter, followed by UV absorbance measurement in a quartz cell at 254 nm. The analysis is carried out without pH adjustment.
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity detection.
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity detection.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Calgary	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 - Calgary	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.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Calgary	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Microcystin by ELISA (Extraction by Sonication)	E576 ALS Environmental - Winnipeg	Water	ENVIROLOGIX QUANTIPLATE KIT CAT. EP022	Total Microcystins (intracellular and extracellular) in aqueous matrices is determined by the Enzyme-Linked Immunosorbent Assay (ELISA) method. Extraction is by sonication
VOCs (AB Projects List) by Headspace GC-MS	E611K ALS Environmental - Calgary	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.
PAHs by Hexane LVI GC-MS	E641A ALS Environmental - Calgary	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Phenolics (Ontario Chlorophenols List) by GC-MS	E651D ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Phenolics are analyzed by GC-MS.
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS
Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS	E706A ALS Environmental - Waterloo	Water	MOE E3552	Water samples are subjected to 0.2 µM RC filtration and analyzed by direct injection using liquid chromatography tandem mass spectrometry (LC-MS/MS).
Glyphosate and AMPA in Water	E716A ALS Environmental - Waterloo	Water	E3505	An aliquot of 4.0 ± 0.1 mL of a water sample is spiked with an Internal Standard, Glyphosate-13C2,15N, and derivatized to FMOC-Glyphosate and FMOC-AMPA, then analyzed by LC-MS/MS.
Haloacetic Acids in Water by LC-MS/MS	E750 ALS Environmental - Waterloo	Water	MOE E3478	An aliquot of sample is fortified with formic acid and internal standards and analyzed via direct injection by LCMSMS
Pesticides in Water by LC-MS-MS (Routine Level)	E755 ALS Environmental - Waterloo	Water	MECP E3553	Pesticides are determined in Water Samples by Direct Aqueous Injection coupled to LC-MS/MS
Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by LC-MS-MS	E756 ALS Environmental - Waterloo	Water	MECP E3553	Pesticides are determined in Aqueous Sample by Direct Injection coupled to LC-MS/MS
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Calgary	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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 - Calgary	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 - Calgary	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.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Calgary	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Calgary	Water		Preparation for Total Organic Carbon by Combustion
Dissolved Metals Water Filtration	EP421 ALS Environmental - Calgary	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Calgary	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 - Calgary	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.
Preparation of Phenoxy Herbicides and other Herbicides/Pesticides in Water by LC-MS-MS	EP706 ALS Environmental - Waterloo	Water	MOE E3552	Water samples are subjected to 0.2 µM RC filtration (drinking water samples are not filtered) and analyzed by direct injection using liquid chromatography tandem mass spectrometry (LC-MS/MS).
Preparation of Glyphosate and AMPA in Water	EP716 ALS Environmental - Waterloo	Water	MOE E3500	Preparation of Glyphosate and AMPA in Water

Page : 18 of 18
 Work Order : CG2401831
 Client : Corix Group of Companies
 Project : FOOTHILLS Water Treatment Plant



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation of Haloacetic acid in Water for LCMSMS	EP750 ALS Environmental - Waterloo	Water	E3478	An aliquot of samples is fortified with formic acid and internal standard to be analyzed by direct injection LCMSMS
Preparation of Pesticides for Direct Injection in Water by LC-MS-MS	EP755 ALS Environmental - Waterloo	Water	MECP E3553	Pesticides are determined in Water Samples by Direct Aqueous Injection coupled to LC-MS/MS
Preparation of Chlorpyrifos, methyl and ethyl Parathion, Ethalfuralin and Trifluralin in Water by Direct Injection	EP756 ALS Environmental - Waterloo	Water	MECP E3553	Pesticides are determined in Aqueous Sample by Direct Injection coupled to LC-MS/MS

QUALITY CONTROL REPORT

Work Order	: CG2401831	Page	: 1 of 29
Client	: Corix Group of Companies	Laboratory	: ALS Environmental - Calgary
Contact	: Rob Dechaine	Account Manager	: Lyudmyla Shvets
Address	: Corix Utilities Inc. 2 - 8515 48th Street SE Calgary AB Canada T2C 2P8	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	:	Telephone	: +1 403 407 1800
Project	: FOOTHILLS Water Treatment Plant	Date Samples Received	: 14-Feb-2024 15:10
PO	: ----	Date Analysis Commenced	: 15-Feb-2024
C-O-C number	: ----	Issue Date	: 23-Feb-2024 14:33
Sampler	: HK 4038036426		
Site	: FOOTHILLS WATER TREATMENT PLANT		
Quote number	: Q57599 Schedule 4 Corix Utilities Inc.		
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
- Matrix Spike Duplicate (MSD) Report; Relative Percent Difference (RPD)
- 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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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Page : 3 of 29
Work Order : CG2401831
Client : Corix Group of Companies
Project : FOOTHILLS Water Treatment Plant



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: 1334000)											
CG2401804-001	Anonymous	Turbidity	----	E121	0.10	NTU	0.46	0.44	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 1334368)											
CG2401831-001	PINEHURST	Absorbance, UV (@ 254nm)	----	E404	0.0050	AU/cm	0.0190	0.0210	0.0020	Diff <2x LOR	----
Physical Tests (QC Lot: 1334523)											
CG2401830-010	Anonymous	pH	----	E108	0.10	pH units	7.76	7.74	0.258%	4%	----
Physical Tests (QC Lot: 1334524)											
CG2401830-010	Anonymous	Conductivity	----	E100	2.0	µS/cm	431	433	0.463%	10%	----
Physical Tests (QC Lot: 1334525)											
CG2401830-010	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	255	261	2.09%	20%	----
Physical Tests (QC Lot: 1336448)											
CG2401831-001	PINEHURST	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1333818)											
CG2401827-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	1.25	mg/L	29.5	26.4	10.9%	20%	----
Anions and Nutrients (QC Lot: 1333934)											
CG2401832-001	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	61.8	60.5	2.11%	20%	----
Anions and Nutrients (QC Lot: 1333935)											
CG2401832-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	34.8	33.4	3.90%	20%	----
Anions and Nutrients (QC Lot: 1333936)											
CG2401832-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.100	mg/L	1.56	1.54	1.29%	20%	----
Anions and Nutrients (QC Lot: 1333937)											
CG2401832-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1333938)											
CG2401832-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.118	0.116	0.001	Diff <2x LOR	----
Cyanides (QC Lot: 1335755)											
CG2401810-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1334177)											
CG2401845-008	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.63	1.37	0.25	Diff <2x LOR	----
Inorganics (QC Lot: 1334733)											
CG2401810-001	Anonymous	Chlorine, free	7782-50-5	E327-H	0.10	mg/L	1.06	1.11	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
Inorganics (QC Lot: 1335503)											
CG2401810-001	Anonymous	Chlorine, total	7782-50-5	E326-H	0.10	mg/L	1.07	1.06	0.001	Diff <2x LOR	----
Total Sulfides (QC Lot: 1339737)											
CG2401831-001	PINEHURST	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
Total Metals (QC Lot: 1334607)											
CG2401810-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1334692)											
CG2401788-004	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
Sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----		
Uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----		
Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----		
Dissolved Metals (QC Lot: 1334690)											
CG2401829-002	Anonymous	Calcium, dissolved	7440-70-2	E421	25.0	mg/L	114000	114000	0.326%	20%	----
		Iron, dissolved	7439-89-6	E421	5.00	mg/L	<5.00	<5.00	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	2.50	mg/L	11900	11800	0.684%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.0500	mg/L	5.18	5.18	0.0481%	20%	----
		Potassium, dissolved	7440-09-7	E421	25.0	mg/L	7980	8030	0.613%	20%	----
		Sodium, dissolved	7440-23-5	E421	25.0	mg/L	16000	16000	0.132%	20%	----
Aggregate Organics (QC Lot: 1338993)											



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: 1338993) - continued											
CG2401810-001	Anonymous	Nitritotriacetic acid [NTA]	139-13-9	E394	0.40	mg/L	<0.40	<0.40	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1339252)											
CG2401810-001	Anonymous	Microcystin	101043-37-2	E576	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1334152)											
CG2401640-001	Anonymous	Acetone	67-64-1	E611K	20	µg/L	0.024 mg/L	24	0.3	Diff <2x LOR	----
		Acrolein	107-02-8	E611K	50	µg/L	<0.050 mg/L	<50	0	Diff <2x LOR	----
		Acrylonitrile	107-13-1	E611K	20	µg/L	<0.020 mg/L	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Carbon disulfide	75-15-0	E611K	0.50	µg/L	0.00078 mg/L	0.85	0.07	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Chloroethane	75-00-3	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611K	0.50	µg/L	0.00150 mg/L	1.50	0.006	Diff <2x LOR	----
		Chloromethane	74-87-3	E611K	5.00	µg/L	<0.00500 mg/L	<5.00	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dibromomethane	74-95-3	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	----
		Dichloro-2-butene, trans-1,4-	110-57-6	E611K	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611K	0.50	µg/L	0.00277 mg/L	2.79	0.02	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	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: 1334152) - continued											
CG2401640-001	Anonymous	Dichloroethane, 1,2-	107-06-2	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611K	1.00	µg/L	<0.00100 mg/L	<1.00	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Ethanol	64-17-5	E611K	250	µg/L	<0.25 mg/L	<250	0	Diff <2x LOR	----
		Ethyl methacrylate	97-63-2	E611K	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Hexanone, 2-	591-78-6	E611K	20	µg/L	<0.020 mg/L	<20	0	Diff <2x LOR	----
		Iodomethane	74-88-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611K	20	µg/L	<0.020 mg/L	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611K	20	µg/L	<0.020 mg/L	<20	0	Diff <2x LOR	----
		Styrene	100-42-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611K	0.50	µg/L	0.00106 mg/L	1.06	0.003	Diff <2x LOR	----
		Trichlorobenzene, 1,2,3-	87-61-6	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Trichlorobenzene, 1,2,4-	120-82-1	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Trichlorobenzene, 1,3,5-	108-70-3	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	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: 1334152) - continued											
CG2401640-001	Anonymous	Trichloropropane, 1,2,3-	96-18-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611K	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611K	0.40	µg/L	0.00111 mg/L	1.14	0.03	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611K	0.30	µg/L	0.00042 mg/L	0.43	0.007	Diff <2x LOR	----
Disinfectant By-Products (QC Lot: 1337606)											
CG2401810-001	Anonymous	Chlorate	14866-68-3	E409.CLO3	0.010	mg/L	0.040	0.040	0.0004	Diff <2x LOR	----
Disinfectant By-Products (QC Lot: 1337607)											
CG2401810-001	Anonymous	Chlorite	14998-27-7	E409.CLO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Herbicides (QC Lot: 1335804)											
TY2401315-001	Anonymous	Alachlor	15972-60-8	E755	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Ametryn	834-12-8	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Atrazine	1912-24-9	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Atrazine-desethyl	6190-65-4	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Cyanazine	21725-46-2	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Diclofop-methyl	51338-27-3	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Diuron	330-54-1	E755	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Fluazifop-p-butyl	79241-46-6	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Metolachlor	51218-45-2	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Metribuzin	21087-64-9	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Prometon	1610-18-0	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Prometryn	7287-19-6	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Propazine	139-40-2	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Simazine	122-34-9	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
Terbutryn	886-50-0	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----		
Triallate	2303-17-5	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----		
Herbicides (QC Lot: 1335805)											
TY2401315-002	Anonymous	Trifluralin	1582-09-8	E756	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
Herbicides (QC Lot: 1337318)											
CG2401810-001	Anonymous	Acetic acid, 2-methyl-4-chlorophenoxy-[MCPA]	94-74-6	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoxynil	1689-84-5	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Dicamba	1918-00-9	E706A	0.10	µg/L	<0.10	<0.10	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
Herbicides (QC Lot: 1337318) - continued											
CG2401810-001	Anonymous	Dichlorophenoxyacetic acid, 2,4-[2,4-D]	94-75-7	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorprop [2,4-DP]	120-36-5	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Dinoseb	88-85-7	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Picloram	1918-02-1	E706A	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Trichlorophenoxyacetic acid, 2,4,5-[2,4,5-T]	93-76-5	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Trichlorophenoxypropionic acid, 2,4,5-[2,4,5-TP]	93-72-1	E706A	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
Herbicides (QC Lot: 1337908)											
TY2401315-001	Anonymous	Glyphosate	1071-83-6	E716A	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
Insecticides (QC Lot: 1335804)											
TY2401315-001	Anonymous	Azinphos-methyl	86-50-0	E755	0.100	µg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Bendiocarb	22781-23-3	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Carbaryl	63-25-2	E755	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Carbofuran	1563-66-2	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Diazinon	333-41-5	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Dimethoate	60-51-5	E755	0.050	µg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Malathion	121-75-5	E755	0.0250	µg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Phorate	298-02-2	E755	0.250	µg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Temephos	3383-96-8	E755	0.250	µg/L	<0.250	<0.250	0	Diff <2x LOR	----
Terbufos	13071-79-9	E755	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----		
Insecticides (QC Lot: 1335805)											
TY2401315-002	Anonymous	Chlorpyrifos	2921-88-2	E756	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Parathion	56-38-2	E756	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Parathion-methyl	298-00-0	E756	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----



Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1334000)						
Turbidity	---	E121	0.1	NTU	<0.10	---
Physical Tests (QCLot: 1334368)						
Absorbance, UV (@ 254nm)	---	E404	0.005	AU/cm	<0.0050	---
Physical Tests (QCLot: 1334524)						
Conductivity	---	E100	1	µS/cm	1.2	---
Physical Tests (QCLot: 1334525)						
Alkalinity, total (as CaCO3)	---	E290	1	mg/L	<1.0	---
Physical Tests (QCLot: 1336448)						
Colour, true	---	E329	5	CU	<5.0	---
Anions and Nutrients (QCLot: 1333818)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
Anions and Nutrients (QCLot: 1333934)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
Anions and Nutrients (QCLot: 1333935)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Anions and Nutrients (QCLot: 1333936)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	---
Anions and Nutrients (QCLot: 1333937)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	---
Anions and Nutrients (QCLot: 1333938)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Cyanides (QCLot: 1335755)						
Cyanide, strong acid dissociable (Total)	---	E333	0.002	mg/L	<0.0020	---
Organic / Inorganic Carbon (QCLot: 1334177)						
Carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
Inorganics (QCLot: 1334733)						
Chlorine, free	7782-50-5	E327-H	0.1	mg/L	<0.10	---
Inorganics (QCLot: 1335503)						
Chlorine, total	7782-50-5	E326-H	0.1	mg/L	<0.10	---
Total Sulfides (QCLot: 1339737)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	---
Total Metals (QCLot: 1334607)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1334607) - continued						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 1334692)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Dissolved Metals (QCLot: 1334690)						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 1338993)						
Nitritotriacetic acid [NTA]	139-13-9	E394	0.4	mg/L	<0.40	----
Aggregate Organics (QCLot: 1339252)						
Microcystin	101043-37-2	E576	0.2	µg/L	<0.20	----
Volatile Organic Compounds (QCLot: 1334152)						
Acetone	67-64-1	E611K	20	µg/L	<20	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1334152) - continued						
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	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1334152) - continued						
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	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1337399)						
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Disinfectant By-Products (QCLot: 1337606)						
Chlorate	14866-68-3	E409.CLO3	0.01	mg/L	<0.010	----
Disinfectant By-Products (QCLot: 1337607)						
Chlorite	14998-27-7	E409.CLO2	0.01	mg/L	<0.010	----
Haloacetic Acids (QCLot: 1335778)						
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	<0.50	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	<1.00	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	<1.00	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	<0.20	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	<0.50	----
Trichloroacetic acid	76-03-9	E750	1	µg/L	<1.00	----
Chlorinated Phenolics (QCLot: 1338660)						
Dichlorophenol, 2,4-	120-83-2	E651D	0.3	µg/L	<0.30	----
Pentachlorophenol [PCP]	87-86-5	E651D	0.5	µg/L	<0.50	----
Tetrachlorophenol, 2,3,4,6-	58-90-2	E651D	0.5	µg/L	<0.50	----
Trichlorophenol, 2,4,6-	88-06-2	E651D	0.5	µg/L	<0.50	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1335787)						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	----
DDD, 2,4'-	53-19-0	E660F	0.004	µg/L	<0.0040	----
DDD, 4,4'-	72-54-8	E660F	0.004	µg/L	<0.0040	----
DDE, 2,4'-	3424-82-6	E660F	0.004	µg/L	<0.0040	----
DDE, 4,4'-	72-55-9	E660F	0.004	µg/L	<0.0040	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	----
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	----
Endosulfan sulfate	1031-07-8	E660F	0.007	µg/L	<0.0070	----
Endosulfan, alpha-	959-98-8	E660F	0.007	µg/L	<0.0070	----
Endosulfan, beta-	33213-65-9	E660F	0.007	µg/L	<0.0070	----
Endrin	72-20-8	E660F	0.01	µg/L	<0.010	----
Endrin aldehyde	7421-93-4	E660F	0.01	µg/L	<0.010	----
Heptachlor	76-44-8	E660F	0.008	µg/L	<0.0080	----
Heptachlor epoxide	1024-57-3	E660F	0.008	µg/L	<0.0080	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorobutadiene	87-68-3	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, alpha-	319-84-6	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, beta-	319-85-7	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, delta-	319-86-8	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	----
Hexachloroethane	67-72-1	E660F	0.008	µg/L	<0.0080	----
Methoxychlor	72-43-5	E660F	0.008	µg/L	<0.0080	----
Mirex	2385-85-5	E660F	0.008	µg/L	<0.0080	----
Nonachlor, trans-	39765-80-5	E660F	0.01	µg/L	<0.010	----
Oxychlordane	27304-13-8	E660F	0.008	µg/L	<0.0080	----
Pentachloronitrobenzene	82-68-8	E660F	0.01	µg/L	<0.010	----
Herbicides (QCLot: 1335804)						
Alachlor	15972-60-8	E755	0.05	µg/L	<0.050	----
Ametryn	834-12-8	E755	0.025	µg/L	<0.0250	----
Atrazine	1912-24-9	E755	0.05	µg/L	<0.050	----
Atrazine-desethyl	6190-65-4	E755	0.025	µg/L	<0.0250	----
Cyanazine	21725-46-2	E755	0.1	µg/L	<0.100	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Herbicides (QCLot: 1335804) - continued						
Diclofop-methyl	51338-27-3	E755	0.1	µg/L	<0.100	----
Diuron	330-54-1	E755	0.05	µg/L	<0.050	----
Fluazifop-p-butyl	79241-46-6	E755	0.025	µg/L	<0.0250	----
Metolachlor	51218-45-2	E755	0.025	µg/L	<0.0250	----
Metribuzin	21087-64-9	E755	0.1	µg/L	<0.100	----
Prometon	1610-18-0	E755	0.025	µg/L	<0.0250	----
Prometryn	7287-19-6	E755	0.025	µg/L	<0.0250	----
Propazine	139-40-2	E755	0.025	µg/L	<0.0250	----
Simazine	122-34-9	E755	0.1	µg/L	<0.100	----
Terbutryn	886-50-0	E755	0.025	µg/L	<0.0250	----
Triallate	2303-17-5	E755	0.1	µg/L	<0.100	----
Herbicides (QCLot: 1335805)						
Trifluralin	1582-09-8	E756	0.1	µg/L	<0.10	----
Herbicides (QCLot: 1337318)						
Acetic acid, 2-methyl-4-chlorophenoxy- [MCPA]	94-74-6	E706A	0.05	µg/L	<0.050	----
Bromoxynil	1689-84-5	E706A	0.05	µg/L	<0.050	----
Dicamba	1918-00-9	E706A	0.1	µg/L	<0.10	----
Dichlorophenoxyacetic acid, 2,4- [2,4-D]	94-75-7	E706A	0.05	µg/L	<0.050	----
Dichloroprop [2,4-DP]	120-36-5	E706A	0.05	µg/L	<0.050	----
Dinoseb	88-85-7	E706A	0.05	µg/L	<0.050	----
Picloram	1918-02-1	E706A	0.1	µg/L	<0.10	----
Trichlorophenoxyacetic acid, 2,4,5- [2,4,5-T]	93-76-5	E706A	0.05	µg/L	<0.050	----
Trichlorophenoxypropionic acid, 2,4,5- [2,4,5-TP]	93-72-1	E706A	0.05	µg/L	<0.050	----
Herbicides (QCLot: 1337908)						
Glyphosate	1071-83-6	E716A	0.2	µg/L	<0.20	----
Insecticides (QCLot: 1335804)						
Azinphos-methyl	86-50-0	E755	0.1	µg/L	<0.100	----
Bendiocarb	22781-23-3	E755	0.025	µg/L	<0.0250	----
Carbaryl	63-25-2	E755	0.05	µg/L	<0.050	----
Carbofuran	1563-66-2	E755	0.025	µg/L	<0.0250	----
Diazinon	333-41-5	E755	0.025	µg/L	<0.0250	----
Dimethoate	60-51-5	E755	0.05	µg/L	<0.050	----
Malathion	121-75-5	E755	0.025	µg/L	<0.0250	----
Phorate	298-02-2	E755	0.25	µg/L	<0.250	----
Temephos	3383-96-8	E755	0.25	µg/L	<0.250	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
Insecticides (QCLot: 1335804) - continued						
Terbufos	13071-79-9	E755	0.5	µg/L	<0.50	----
Insecticides (QCLot: 1335805)						
Chlorpyrifos	2921-88-2	E756	0.1	µg/L	<0.10	----
Parathion	56-38-2	E756	0.1	µg/L	<0.10	----
Parathion-methyl	298-00-0	E756	0.1	µg/L	<0.10	----



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				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Physical Tests (QCLot: 1334000)									
Turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 1334368)									
Absorbance, UV (@ 254nm)	----	E404	0.005	AU/cm	0.16 AU/cm	106	70.0	130	----
Physical Tests (QCLot: 1334523)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1334524)									
Conductivity	----	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	----
Physical Tests (QCLot: 1334525)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1336448)									
Colour, true	----	E329	5	CU	100 CU	103	85.0	115	----
Anions and Nutrients (QCLot: 1333818)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.3	85.0	115	----
Anions and Nutrients (QCLot: 1333934)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1333935)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	----
Anions and Nutrients (QCLot: 1333936)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 1333937)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	97.5	90.0	110	----
Anions and Nutrients (QCLot: 1333938)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Cyanides (QCLot: 1335755)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	94.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1334177)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Inorganics (QCLot: 1334733)									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Inorganics (QCLot: 1334733) - continued									
Chlorine, free	7782-50-5	E327-H	0.1	mg/L	1 mg/L	91.2	75.0	125	----
Inorganics (QCLot: 1335503)									
Chlorine, total	7782-50-5	E326-H	0.1	mg/L	1 mg/L	93.7	75.0	125	----
Total Sulfides (QCLot: 1339737)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	95.2	80.0	120	----
Total Metals (QCLot: 1334607)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
Total Metals (QCLot: 1334692)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.9	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.1	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.1	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.5	80.0	120	----
Dissolved Metals (QCLot: 1334690)									
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	117	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	
Dissolved Metals (QCLot: 1334690) - continued									
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Aggregate Organics (QCLot: 1338993)									
Nitritotriacetic acid [NTA]	139-13-9	E394	0.4	mg/L	1 mg/L	97.7	75.0	125	----
Aggregate Organics (QCLot: 1339252)									
Microcystin	101043-37-2	E576	0.2	µg/L	0.5 µg/L	85.0	70.0	130	----
Volatile Organic Compounds (QCLot: 1334152)									
Acetone	67-64-1	E611K	20	µg/L	100 µg/L	88.8	70.0	130	----
Acrolein	107-02-8	E611K	50	µg/L	1000 µg/L	94.0	70.0	130	----
Acrylonitrile	107-13-1	E611K	20	µg/L	1000 µg/L	89.7	70.0	130	----
Benzene	71-43-2	E611K	0.5	µg/L	100 µg/L	85.3	70.0	130	----
Bromodichloromethane	75-27-4	E611K	0.5	µg/L	100 µg/L	92.1	70.0	130	----
Bromoform	75-25-2	E611K	0.5	µg/L	100 µg/L	97.0	70.0	130	----
Bromomethane	74-83-9	E611K	0.5	µg/L	100 µg/L	86.5	60.0	140	----
Carbon disulfide	75-15-0	E611K	0.5	µg/L	100 µg/L	82.2	70.0	130	----
Carbon tetrachloride	56-23-5	E611K	0.5	µg/L	100 µg/L	91.6	70.0	130	----
Chlorobenzene	108-90-7	E611K	0.5	µg/L	100 µg/L	87.0	70.0	130	----
Chloroethane	75-00-3	E611K	0.5	µg/L	100 µg/L	86.1	60.0	140	----
Chloroform	67-66-3	E611K	0.5	µg/L	100 µg/L	89.5	70.0	130	----
Chloromethane	74-87-3	E611K	5	µg/L	100 µg/L	76.6	60.0	140	----
Dibromochloromethane	124-48-1	E611K	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611K	0.5	µg/L	100 µg/L	85.2	70.0	130	----
Dibromomethane	74-95-3	E611K	0.5	µg/L	100 µg/L	91.1	70.0	130	----
Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	5	µg/L	1000 µg/L	88.7	70.0	130	----
Dichloro-2-butene, trans-1,4-	110-57-6	E611K	5	µg/L	1000 µg/L	93.1	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611K	0.5	µg/L	100 µg/L	103	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611K	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611K	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611K	0.5	µg/L	100 µg/L	87.6	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611K	0.5	µg/L	100 µg/L	81.8	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611K	0.5	µg/L	100 µg/L	90.4	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611K	0.5	µg/L	100 µg/L	85.1	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611K	0.5	µg/L	100 µg/L	91.7	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611K	0.5	µg/L	100 µg/L	91.0	70.0	130	----



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Volatile Organic Compounds (QCLot: 1334152) - continued									
Dichloromethane	75-09-2	E611K	1	µg/L	100 µg/L	88.7	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611K	0.5	µg/L	100 µg/L	92.4	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611K	0.5	µg/L	100 µg/L	92.4	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611K	0.5	µg/L	100 µg/L	85.0	70.0	130	----
Ethanol	64-17-5	E611K	250	µg/L	1000 µg/L	88.8	70.0	130	----
Ethyl methacrylate	97-63-2	E611K	5	µg/L	1000 µg/L	88.4	70.0	130	----
Ethylbenzene	100-41-4	E611K	0.5	µg/L	100 µg/L	85.3	70.0	130	----
Hexanone, 2-	591-78-6	E611K	20	µg/L	100 µg/L	88.2	70.0	130	----
Iodomethane	74-88-4	E611K	0.5	µg/L	250 µg/L	104	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611K	20	µg/L	100 µg/L	90.7	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611K	20	µg/L	100 µg/L	97.2	70.0	130	----
Styrene	100-42-5	E611K	0.5	µg/L	100 µg/L	91.9	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	0.5	µg/L	100 µg/L	99.0	70.0	130	----
Tetrachloroethylene	127-18-4	E611K	0.5	µg/L	100 µg/L	86.2	70.0	130	----
Toluene	108-88-3	E611K	0.5	µg/L	100 µg/L	85.6	70.0	130	----
Trichlorobenzene, 1,2,3-	87-61-6	E611K	0.5	µg/L	100 µg/L	92.3	70.0	130	----
Trichlorobenzene, 1,2,4-	120-82-1	E611K	0.5	µg/L	100 µg/L	92.5	70.0	130	----
Trichlorobenzene, 1,3,5-	108-70-3	E611K	0.5	µg/L	100 µg/L	92.5	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611K	0.5	µg/L	100 µg/L	98.0	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611K	0.5	µg/L	100 µg/L	86.5	70.0	130	----
Trichloroethylene	79-01-6	E611K	0.5	µg/L	100 µg/L	92.0	70.0	130	----
Trichlorofluoromethane	75-69-4	E611K	0.5	µg/L	100 µg/L	92.2	60.0	140	----
Trichloropropane, 1,2,3-	96-18-4	E611K	0.5	µg/L	100 µg/L	98.3	70.0	130	----
Vinyl chloride	75-01-4	E611K	0.5	µg/L	100 µg/L	93.8	60.0	140	----
Xylene, m+p-	179601-23-1	E611K	0.4	µg/L	200 µg/L	87.4	70.0	130	----
Xylene, o-	95-47-6	E611K	0.3	µg/L	100 µg/L	85.0	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1337399)									
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	118	60.0	130	----
Disinfectant By-Products (QCLot: 1337606)									
Chlorate	14866-68-3	E409.CLO3	0.01	mg/L	1 mg/L	98.3	85.0	115	----
Disinfectant By-Products (QCLot: 1337607)									
Chlorite	14998-27-7	E409.CLO2	0.01	mg/L	1 mg/L	99.8	85.0	115	----
Haloacetic Acids (QCLot: 1335778)									



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Haloacetic Acids (QCLot: 1335778) - continued									
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	2.5 µg/L	115	70.0	130	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	5 µg/L	116	70.0	130	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	5 µg/L	110	70.0	130	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	1 µg/L	113	70.0	130	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	2.5 µg/L	103	70.0	130	----
Trichloroacetic acid	76-03-9	E750	1	µg/L	5 µg/L	114	70.0	130	----
Chlorinated Phenolics (QCLot: 1338660)									
Dichlorophenol, 2,4-	120-83-2	E651D	0.3	µg/L	4.8 µg/L	90.4	50.0	140	----
Pentachlorophenol [PCP]	87-86-5	E651D	0.5	µg/L	4.8 µg/L	88.3	50.0	140	----
Tetrachlorophenol, 2,3,4,6-	58-90-2	E651D	0.5	µg/L	4.8 µg/L	118	50.0	140	----
Trichlorophenol, 2,4,6-	88-06-2	E651D	0.5	µg/L	4.8 µg/L	89.9	50.0	140	----
Organochlorine Pesticides (QCLot: 1335787)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	82.2	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	104	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	91.7	50.0	150	----
DDD, 2,4'-	53-19-0	E660F	0.004	µg/L	0.2 µg/L	101	50.0	150	----
DDD, 4,4'-	72-54-8	E660F	0.004	µg/L	0.2 µg/L	92.3	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F	0.004	µg/L	0.2 µg/L	95.6	50.0	150	----
DDE, 4,4'-	72-55-9	E660F	0.004	µg/L	0.2 µg/L	95.5	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	94.8	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	90.9	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	90.6	50.0	150	----
Endosulfan sulfate	1031-07-8	E660F	0.007	µg/L	0.2 µg/L	88.8	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F	0.007	µg/L	0.2 µg/L	108	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F	0.007	µg/L	0.2 µg/L	94.6	50.0	150	----
Endrin	72-20-8	E660F	0.01	µg/L	0.2 µg/L	91.1	50.0	150	----
Endrin aldehyde	7421-93-4	E660F	0.01	µg/L	0.2 µg/L	102	50.0	150	----
Heptachlor	76-44-8	E660F	0.008	µg/L	0.2 µg/L	91.6	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F	0.008	µg/L	0.2 µg/L	92.0	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	94.9	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F	0.008	µg/L	0.2 µg/L	66.0	50.0	150	----
Hexachlorocyclohexane, alpha-	319-84-6	E660F	0.008	µg/L	0.2 µg/L	100	50.0	150	----
Hexachlorocyclohexane, beta-	319-85-7	E660F	0.008	µg/L	0.2 µg/L	92.7	50.0	150	----
Hexachlorocyclohexane, delta-	319-86-8	E660F	0.008	µg/L	0.2 µg/L	94.3	50.0	150	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Organochlorine Pesticides (QCLot: 1335787) - continued									
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	102	50.0	150	----
Hexachloroethane	67-72-1	E660F	0.008	µg/L	0.2 µg/L	73.6	50.0	150	----
Methoxychlor	72-43-5	E660F	0.008	µg/L	0.2 µg/L	82.2	50.0	150	----
Mirex	2385-85-5	E660F	0.008	µg/L	0.2 µg/L	108	50.0	150	----
Nonachlor, trans-	39765-80-5	E660F	0.01	µg/L	0.2 µg/L	100	50.0	150	----
Oxychlorodane	27304-13-8	E660F	0.008	µg/L	0.2 µg/L	88.5	50.0	150	----
Pentachloronitrobenzene	82-68-8	E660F	0.01	µg/L	0.2 µg/L	112	50.0	150	----
Herbicides (QCLot: 1335804)									
Alachlor	15972-60-8	E755	0.05	µg/L	1.25 µg/L	101	60.0	140	----
Ametryn	834-12-8	E755	0.025	µg/L	1.25 µg/L	105	60.0	140	----
Atrazine	1912-24-9	E755	0.05	µg/L	1.25 µg/L	104	60.0	140	----
Atrazine-desethyl	6190-65-4	E755	0.025	µg/L	1.25 µg/L	102	60.0	140	----
Cyanazine	21725-46-2	E755	0.1	µg/L	1.25 µg/L	90.8	60.0	140	----
Diclofop-methyl	51338-27-3	E755	0.1	µg/L	1.25 µg/L	97.6	60.0	140	----
Diuron	330-54-1	E755	0.05	µg/L	1.25 µg/L	102	60.0	140	----
Fluazifop-p-butyl	79241-46-6	E755	0.025	µg/L	1.25 µg/L	123	60.0	140	----
Metolachlor	51218-45-2	E755	0.025	µg/L	1.25 µg/L	114	60.0	140	----
Metribuzin	21087-64-9	E755	0.1	µg/L	1.25 µg/L	101	60.0	140	----
Prometon	1610-18-0	E755	0.025	µg/L	1.25 µg/L	117	60.0	140	----
Prometryn	7287-19-6	E755	0.025	µg/L	1.25 µg/L	109	60.0	140	----
Propazine	139-40-2	E755	0.025	µg/L	1.25 µg/L	113	60.0	140	----
Simazine	122-34-9	E755	0.1	µg/L	1.25 µg/L	105	60.0	140	----
Terbutryn	886-50-0	E755	0.025	µg/L	1.25 µg/L	114	60.0	140	----
Triallate	2303-17-5	E755	0.1	µg/L	1.25 µg/L	84.8	60.0	140	----
Herbicides (QCLot: 1335805)									
Trifluralin	1582-09-8	E756	0.1	µg/L	1.25 µg/L	114	60.0	140	----
Herbicides (QCLot: 1337318)									
Acetic acid, 2-methyl-4-chlorophenoxy- [MCPA]	94-74-6	E706A	0.05	µg/L	1 µg/L	83.5	65.0	130	----
Bromoxynil	1689-84-5	E706A	0.05	µg/L	1 µg/L	98.5	65.0	130	----
Dicamba	1918-00-9	E706A	0.1	µg/L	2 µg/L	89.8	50.0	150	----
Dichlorophenoxyacetic acid, 2,4- [2,4-D]	94-75-7	E706A	0.05	µg/L	1 µg/L	87.6	65.0	130	----
Dichlorprop [2,4-DP]	120-36-5	E706A	0.05	µg/L	1 µg/L	88.3	65.0	130	----
Dinoseb	88-85-7	E706A	0.05	µg/L	1 µg/L	89.8	65.0	130	----
Picloram	1918-02-1	E706A	0.1	µg/L	2 µg/L	84.6	50.0	150	----
Trichlorophenoxyacetic acid, 2,4,5- [2,4,5-T]	93-76-5	E706A	0.05	µg/L	1 µg/L	82.7	65.0	130	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	
Herbicides (QCLot: 1337318) - continued									
Trichlorophenoxypropionic acid, 2,4,5- [2,4,5-TP]	93-72-1	E706A	0.05	µg/L	1 µg/L	82.8	65.0	130	----
Herbicides (QCLot: 1337908)									
Glyphosate	1071-83-6	E716A	0.2	µg/L	5 µg/L	82.4	70.0	130	----
Insecticides (QCLot: 1335804)									
Azinphos-methyl	86-50-0	E755	0.1	µg/L	1.25 µg/L	81.5	60.0	140	----
Bendiocarb	22781-23-3	E755	0.025	µg/L	1.25 µg/L	123	60.0	140	----
Carbaryl	63-25-2	E755	0.05	µg/L	1.25 µg/L	111	60.0	140	----
Carbofuran	1563-66-2	E755	0.025	µg/L	1.25 µg/L	102	60.0	140	----
Diazinon	333-41-5	E755	0.025	µg/L	1.25 µg/L	91.2	60.0	140	----
Dimethoate	60-51-5	E755	0.05	µg/L	1.25 µg/L	111	60.0	140	----
Malathion	121-75-5	E755	0.025	µg/L	1.25 µg/L	113	60.0	140	----
Phorate	298-02-2	E755	0.25	µg/L	1.25 µg/L	118	60.0	140	----
Temephos	3383-96-8	E755	0.25	µg/L	1.25 µg/L	116	60.0	140	----
Terbufos	13071-79-9	E755	0.5	µg/L	1.25 µg/L	122	60.0	140	----
Insecticides (QCLot: 1335805)									
Chlorpyrifos	2921-88-2	E756	0.1	µg/L	1.25 µg/L	110	60.0	140	----
Parathion	56-38-2	E756	0.1	µg/L	1.25 µg/L	117	60.0	140	----
Parathion-methyl	298-00-0	E756	0.1	µg/L	1.25 µg/L	110	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: 1333818)										
CG2401827-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 1333934)										
CG2401832-002	Anonymous	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1333935)										
CG2401832-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	97.9 mg/L	100 mg/L	97.9	75.0	125	----
Anions and Nutrients (QCLot: 1333936)										
CG2401832-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.69 mg/L	2.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 1333937)										
CG2401832-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.337 mg/L	0.5 mg/L	67.5	75.0	125	MS-B
Anions and Nutrients (QCLot: 1333938)										
CG2401832-002	Anonymous	Fluoride	16984-48-8	E235.F	0.978 mg/L	1 mg/L	97.8	75.0	125	----
Cyanides (QCLot: 1335755)										
CG2401810-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	10.6 mg/L	12.5 mg/L	84.5	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1334177)										
CG2401845-008	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.21 mg/L	5 mg/L	104	70.0	130	----
Total Sulfides (QCLot: 1339737)										
CG2401832-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.223 mg/L	0.2 mg/L	111	75.0	125	----
Total Metals (QCLot: 1334607)										
CG2401814-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000951 mg/L	0.0001 mg/L	95.1	70.0	130	----
Total Metals (QCLot: 1334692)										
CG2401808-001	Anonymous	Aluminum, total	7429-90-5	E420	2.09 mg/L	2 mg/L	105	70.0	130	----
		Antimony, total	7440-36-0	E420	0.195 mg/L	0.2 mg/L	97.5	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		Barium, total	7440-39-3	E420	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		Boron, total	7440-42-8	E420	1.02 mg/L	1 mg/L	102	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		Chromium, total	7440-47-3	E420	0.415 mg/L	0.4 mg/L	104	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
Total Metals (QCLot: 1334692) - continued										
CG2401808-001	Anonymous	Copper, total	7440-50-8	E420	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		Iron, total	7439-89-6	E420	20.3 mg/L	20 mg/L	102	70.0	130	----
		Lead, total	7439-92-1	E420	0.195 mg/L	0.2 mg/L	97.5	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	0.396 mg/L	0.4 mg/L	99.1	70.0	130	----
		Potassium, total	7440-09-7	E420	39.7 mg/L	40 mg/L	99.3	70.0	130	----
		Selenium, total	7782-49-2	E420	0.417 mg/L	0.4 mg/L	104	70.0	130	----
		Silver, total	7440-22-4	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		Uranium, total	7440-61-1	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		Zinc, total	7440-66-6	E420	3.97 mg/L	4 mg/L	99.2	70.0	130	----
Dissolved Metals (QCLot: 1334690)										
CG2401829-003	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	24.0 mg/L	20 mg/L	120	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	20 mg/L	ND	70.0	130	----
Aggregate Organics (QCLot: 1338993)										
CG2401810-001	Anonymous	Nitritotriacetic acid [NTA]	139-13-9	E394	0.92 mg/L	1 mg/L	92.3	50.0	150	----
Aggregate Organics (QCLot: 1339252)										
CG2401810-001	Anonymous	Microcystin	101043-37-2	E576	0.70 µg/L	1 µg/L	69.7	50.0	150	----
Volatile Organic Compounds (QCLot: 1334152)										
CG2401640-001	Anonymous	Acetone	67-64-1	E611K	70 µg/L	100 µg/L	70.2	70.0	130	----
		Acrolein	107-02-8	E611K	818 µg/L	1000 µg/L	81.8	70.0	130	----
		Acrylonitrile	107-13-1	E611K	867 µg/L	1000 µg/L	86.7	70.0	130	----
		Benzene	71-43-2	E611K	82.8 µg/L	100 µg/L	82.8	70.0	130	----
		Bromodichloromethane	75-27-4	E611K	88.8 µg/L	100 µg/L	88.8	70.0	130	----
		Bromoform	75-25-2	E611K	89.5 µg/L	100 µg/L	89.5	70.0	130	----
		Bromomethane	74-83-9	E611K	83.1 µg/L	100 µg/L	83.1	60.0	140	----
		Carbon disulfide	75-15-0	E611K	74.8 µg/L	100 µg/L	74.8	70.0	130	----
		Carbon tetrachloride	56-23-5	E611K	88.3 µg/L	100 µg/L	88.3	70.0	130	----
		Chlorobenzene	108-90-7	E611K	83.6 µg/L	100 µg/L	83.6	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
Volatile Organic Compounds (QCLot: 1334152) - continued										
CG2401640-001	Anonymous	Chloroethane	75-00-3	E611K	82.1 µg/L	100 µg/L	82.1	60.0	140	----
		Chloroform	67-66-3	E611K	87.3 µg/L	100 µg/L	87.3	70.0	130	----
		Chloromethane	74-87-3	E611K	73.4 µg/L	100 µg/L	73.4	60.0	140	----
		Dibromochloromethane	124-48-1	E611K	85.4 µg/L	100 µg/L	85.4	70.0	130	----
		Dibromoethane, 1,2-	106-93-4	E611K	81.5 µg/L	100 µg/L	81.5	70.0	130	----
		Dibromomethane	74-95-3	E611K	88.0 µg/L	100 µg/L	88.0	70.0	130	----
		Dichloro-2-butene, cis-1,4-	1476-11-5	E611K	786 µg/L	1000 µg/L	78.6	70.0	130	----
		Dichloro-2-butene, trans-1,4-	110-57-6	E611K	876 µg/L	1000 µg/L	87.6	70.0	130	----
		Dichlorobenzene, 1,2-	95-50-1	E611K	95.4 µg/L	100 µg/L	95.4	70.0	130	----
		Dichlorobenzene, 1,3-	541-73-1	E611K	91.8 µg/L	100 µg/L	91.8	70.0	130	----
		Dichlorobenzene, 1,4-	106-46-7	E611K	95.9 µg/L	100 µg/L	95.9	70.0	130	----
		Dichlorodifluoromethane	75-71-8	E611K	73.3 µg/L	100 µg/L	73.3	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611K	78.9 µg/L	100 µg/L	78.9	70.0	130	----
		Dichloroethane, 1,2-	107-06-2	E611K	87.1 µg/L	100 µg/L	87.1	70.0	130	----
		Dichloroethylene, 1,1-	75-35-4	E611K	90.4 µg/L	100 µg/L	90.4	70.0	130	----
		Dichloroethylene, cis-1,2-	156-59-2	E611K	88.8 µg/L	100 µg/L	88.8	70.0	130	----
		Dichloroethylene, trans-1,2-	156-60-5	E611K	88.7 µg/L	100 µg/L	88.7	70.0	130	----
		Dichloromethane	75-09-2	E611K	86.3 µg/L	100 µg/L	86.3	70.0	130	----
		Dichloropropane, 1,2-	78-87-5	E611K	89.6 µg/L	100 µg/L	89.6	70.0	130	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611K	87.7 µg/L	100 µg/L	87.7	70.0	130	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611K	80.7 µg/L	100 µg/L	80.7	70.0	130	----
		Ethanol	64-17-5	E611K	870 µg/L	1000 µg/L	86.6	70.0	130	----
		Ethyl methacrylate	97-63-2	E611K	858 µg/L	1000 µg/L	85.8	70.0	130	----
		Ethylbenzene	100-41-4	E611K	81.5 µg/L	100 µg/L	81.5	70.0	130	----
		Hexanone, 2-	591-78-6	E611K	88 µg/L	100 µg/L	88.5	70.0	130	----
		Iodomethane	74-88-4	E611K	213 µg/L	250 µg/L	85.3	70.0	130	----
		Methyl ethyl ketone [MEK]	78-93-3	E611K	88 µg/L	100 µg/L	87.5	70.0	130	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611K	96 µg/L	100 µg/L	96.3	70.0	130	----
		Styrene	100-42-5	E611K	78.0 µg/L	100 µg/L	78.0	70.0	130	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611K	93.4 µg/L	100 µg/L	93.4	70.0	130	----
		Tetrachloroethylene	127-18-4	E611K	82.8 µg/L	100 µg/L	82.8	70.0	130	----
		Toluene	108-88-3	E611K	82.2 µg/L	100 µg/L	82.2	70.0	130	----
		Trichlorobenzene, 1,2,3-	87-61-6	E611K	85.1 µg/L	100 µg/L	85.1	70.0	130	----
		Trichlorobenzene, 1,2,4-	120-82-1	E611K	85.6 µg/L	100 µg/L	85.6	70.0	130	----
		Trichlorobenzene, 1,3,5-	108-70-3	E611K	84.2 µg/L	100 µg/L	84.2	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
Volatile Organic Compounds (QCLot: 1334152) - continued										
CG2401640-001	Anonymous	Trichloroethane, 1,1,1-	71-55-6	E611K	95.2 µg/L	100 µg/L	95.2	70.0	130	----
		Trichloroethane, 1,1,2-	79-00-5	E611K	83.6 µg/L	100 µg/L	83.6	70.0	130	----
		Trichloroethylene	79-01-6	E611K	88.8 µg/L	100 µg/L	88.8	70.0	130	----
		Trichlorofluoromethane	75-69-4	E611K	91.2 µg/L	100 µg/L	91.2	60.0	140	----
		Trichloropropane, 1,2,3-	96-18-4	E611K	92.5 µg/L	100 µg/L	92.5	70.0	130	----
		Vinyl chloride	75-01-4	E611K	73.7 µg/L	100 µg/L	73.7	60.0	140	----
		Xylene, m+p-	179601-23-1	E611K	167 µg/L	200 µg/L	83.5	70.0	130	----
		Xylene, o-	95-47-6	E611K	80.0 µg/L	100 µg/L	80.0	70.0	130	----
Disinfectant By-Products (QCLot: 1337606)										
CG2401810-001	Anonymous	Chlorate	14866-68-3	E409.CLO3	1.01 mg/L	1 mg/L	101	75.0	125	----
Disinfectant By-Products (QCLot: 1337607)										
CG2401810-001	Anonymous	Chlorite	14998-27-7	E409.CLO2	1.00 mg/L	1 mg/L	100	75.0	125	----
Haloacetic Acids (QCLot: 1335778)										
CG2401831-001	PINEHURST	Bromochloroacetic acid	5589-96-8	E750	2.94 µg/L	2.5 µg/L	118	70.0	130	----
		Dibromoacetic acid	631-64-1	E750	5.82 µg/L	5 µg/L	116	70.0	130	----
		Dichloroacetic acid	79-43-6	E750	ND µg/L	5 µg/L	ND	70.0	130	----
		Monobromoacetic acid	79-08-3	E750	1.04 µg/L	1 µg/L	104	70.0	130	----
		Monochloroacetic acid	79-11-8	E750	2.71 µg/L	2.5 µg/L	108	70.0	130	----
		Trichloroacetic acid	76-03-9	E750	ND µg/L	5 µg/L	ND	70.0	130	----
Herbicides (QCLot: 1335804)										
TY2401315-001	Anonymous	Alachlor	15972-60-8	E755	1.01 µg/L	1.25 µg/L	80.5	60.0	140	----
		Ametryn	834-12-8	E755	1.13 µg/L	1.25 µg/L	90.4	60.0	140	----
		Atrazine	1912-24-9	E755	1.18 µg/L	1.25 µg/L	94.7	60.0	140	----
		Atrazine-desethyl	6190-65-4	E755	0.963 µg/L	1.25 µg/L	77.0	60.0	140	----
		Cyanazine	21725-46-2	E755	1.72 µg/L	1.25 µg/L	138	60.0	140	----
		Diclofop-methyl	51338-27-3	E755	1.20 µg/L	1.25 µg/L	96.4	60.0	140	----
		Diuron	330-54-1	E755	1.09 µg/L	1.25 µg/L	87.5	60.0	140	----
		Fluazifop-p-butyl	79241-46-6	E755	1.46 µg/L	1.25 µg/L	117	60.0	140	----
		Metolachlor	51218-45-2	E755	1.17 µg/L	1.25 µg/L	93.3	60.0	140	----
		Metribuzin	21087-64-9	E755	1.07 µg/L	1.25 µg/L	86.0	60.0	140	----
		Prometon	1610-18-0	E755	1.34 µg/L	1.25 µg/L	107	60.0	140	----
		Prometryn	7287-19-6	E755	1.25 µg/L	1.25 µg/L	99.8	60.0	140	----
		Propazine	139-40-2	E755	1.28 µg/L	1.25 µg/L	102	60.0	140	----
		Simazine	122-34-9	E755	1.16 µg/L	1.25 µg/L	93.2	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
Herbicides (QCLot: 1335804) - continued										
TY2401315-001	Anonymous	Terbutryn	886-50-0	E755	1.27 µg/L	1.25 µg/L	101	60.0	140	----
		Triallate	2303-17-5	E755	0.926 µg/L	1.25 µg/L	74.1	60.0	140	----
Herbicides (QCLot: 1335805)										
TY2401315-002	Anonymous	Trifluralin	1582-09-8	E756	1.61 µg/L	1.25 µg/L	128	60.0	140	----
Herbicides (QCLot: 1337318)										
CG2401810-001	Anonymous	Acetic acid, 2-methyl-4-chlorophenoxy- [MCPA]	94-74-6	E706A	0.830 µg/L	1 µg/L	83.0	50.0	130	----
		Bromoxynil	1689-84-5	E706A	0.855 µg/L	1 µg/L	85.5	50.0	130	----
		Dicamba	1918-00-9	E706A	1.94 µg/L	2 µg/L	96.8	50.0	150	----
		Dichlorophenoxyacetic acid, 2,4- [2,4-D]	94-75-7	E706A	0.895 µg/L	1 µg/L	89.5	50.0	130	----
		Dichlorprop [2,4-DP]	120-36-5	E706A	0.848 µg/L	1 µg/L	84.8	50.0	130	----
		Dinoseb	88-85-7	E706A	0.923 µg/L	1 µg/L	92.3	50.0	130	----
		Picloram	1918-02-1	E706A	1.74 µg/L	2 µg/L	87.0	50.0	150	----
		Trichlorophenoxyacetic acid, 2,4,5- [2,4,5-T]	93-76-5	E706A	0.708 µg/L	1 µg/L	70.8	50.0	130	----
		Trichlorophenoxypropionic acid, 2,4,5- [2,4,5-TP]	93-72-1	E706A	0.561 µg/L	1 µg/L	56.1	50.0	130	----
Herbicides (QCLot: 1337908)										
TY2401315-001	Anonymous	Glyphosate	1071-83-6	E716A	4.01 µg/L	5 µg/L	80.2	70.0	130	----
Insecticides (QCLot: 1335804)										
TY2401315-001	Anonymous	Azinphos-methyl	86-50-0	E755	0.884 µg/L	1.25 µg/L	70.8	60.0	140	----
		Bendiocarb	22781-23-3	E755	1.18 µg/L	1.25 µg/L	94.2	60.0	140	----
		Carbaryl	63-25-2	E755	1.31 µg/L	1.25 µg/L	105	60.0	140	----
		Carbofuran	1563-66-2	E755	1.15 µg/L	1.25 µg/L	91.8	60.0	140	----
		Diazinon	333-41-5	E755	0.986 µg/L	1.25 µg/L	78.9	60.0	140	----
		Dimethoate	60-51-5	E755	1.19 µg/L	1.25 µg/L	95.0	60.0	140	----
		Malathion	121-75-5	E755	1.10 µg/L	1.25 µg/L	88.2	60.0	140	----
		Phorate	298-02-2	E755	1.50 µg/L	1.25 µg/L	120	60.0	140	----
		Temephos	3383-96-8	E755	1.37 µg/L	1.25 µg/L	110	60.0	140	----
		Terbufos	13071-79-9	E755	1.50 µg/L	1.25 µg/L	120	60.0	140	----
		Insecticides (QCLot: 1335805)								
TY2401315-002	Anonymous	Chlorpyrifos	2921-88-2	E756	1.35 µg/L	1.25 µg/L	108	60.0	140	----
		Parathion	56-38-2	E756	1.49 µg/L	1.25 µg/L	119	60.0	140	----
		Parathion-methyl	298-00-0	E756	1.32 µg/L	1.25 µg/L	106	60.0	140	----



Qualifiers

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Matrix Spike Duplicate (MSD) Report

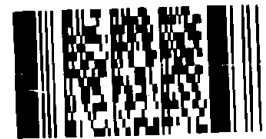
A Matrix Spike Duplicate (MSD) is a duplicate of a Matrix Spike (MS), which has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spike Duplicates provide information regarding method precision. ALS DQOs for Matrix Spike Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD).

Sub-Matrix: Water

					Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	MSD Result	RPD(%) or Difference	MSD Limits	Qualifier
Haloacetic Acids (QC Lot: 1335778)											
QC-133577-004		Bromochloroacetic acid	5589-96-8	E750	1.00	µg/L	4.88	4.56	11.6%	200%	----
		Dibromoacetic acid	631-64-1	E750	1.00	µg/L	6.06	5.62	7.14%	200%	----
		Dichloroacetic acid	79-43-6	E750	1.00	µg/L	17.7	15.2	----%	Diff <2x LOR	----
		Monobromoacetic acid	79-08-3	E750	1.00	µg/L	1.38	1.26	12.1%	200%	----
		Monochloroacetic acid	79-11-8	E750	1.00	µg/L	4.43	3.94	19.2%	200%	----
		Trichloroacetic acid	76-03-9	E750	1.00	µg/L	19.8	18.0	----%	Diff <2x LOR	----

Report To: Corix Utilities Inc. Report Format: PDF, EXCEL, EDD. Project Information: Foothills Water Treatment Plant. ALS Sample # table with columns for Sample ID, Location, Date, Time, and Sample Type. Includes sections for Analysis Request, Sample Condition, and Shipment Reception.

Environmental Division Calgary Work Order Reference CG2401831



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