

CERTIFICATE OF ANALYSIS

Work Order	: VA23B3735	Page	: 1 of 10
Client	: Northwest Research and Monitoring Ltd.	Laboratory	: Vancouver - Environmental
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Project	: MWMt 2023	Date Samples Received	: 16-Jun-2023 17:45
PO	: ----	Date Analysis Commenced	: 18-Jun-2023
C-O-C number	: 20-1038106	Issue Date	: 28-Jun-2023 17:11
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	Position	Laboratory Department
Brieanna Allen	Production/Validation Manager	Inorganics, Burnaby, British Columbia
Cecilia Zhang	Account Manager Assistant	Administration, Burnaby, British Columbia
Chamoi Beckford	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Sukhman Khosa	Lab Assistant	Metals, Burnaby, British Columbia



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
°C	degrees celsius
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
mV	millivolts
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

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
HTP	Sample preparation or preservation hold time was exceeded.
RRV	Reported result verified by repeat analysis.



Analytical Results

Sub-Matrix: Water				Client sample ID	Shea Creek	Goshell Creek	Crystal Creek	Morice River	Shea Creek Duplicate
(Matrix: Water)									
Client sampling date / time					15-Jun-2023 12:05	15-Jun-2023 11:45	15-Jun-2023 11:20	15-Jun-2023 11:00	15-Jun-2023 12:05
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-001	VA23B3735-002	VA23B3735-003	VA23B3735-004	VA23B3735-005
					Result	Result	Result	Result	Result
Field Tests									
Conductivity, field	----	EF001/VA	0.10	µS/cm	34.500	55.500	50.700	42.000	34.500
Oxygen, dissolved saturation %, field	----	EF001/VA	0.1	%	94.5	97.5	98.4	97.6	94.5
Oxygen, dissolved, field	----	EF001/VA	0.01	mg/L	10.87	11.34	12.2	11.62	10.87
pH, field	----	EF001/VA	0.10	pH units	7.57	7.64	7.68	7.74	7.57
Temperature, field	----	EF001/VA	0.10	°C	9.20	8.80	6.10	7.80	9.20
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	17.5	27.2	23.7	16.8	17.5
Hardness (as CaCO3), dissolved	----	EC100/VA	0.50	mg/L	15.4	25.2	21.4	17.8	15.5
Oxidation-reduction potential [ORP]	----	E125/VA	0.10	mV	363	368	372	382	386
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	29	37	37	27	26
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0
Turbidity	----	E121/VA	0.10	NTU	0.67	2.03	1.14	0.53	0.70
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Kjeldahl nitrogen, total [TKN]	----	EC318/VA	0.050	mg/L	0.065	0.050	<0.050	<0.050	0.074
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	<0.0050	<0.0050	<0.0050	0.0333	<0.0050
Nitrate + Nitrite (as N)	----	EC235.N+N/V A	0.0050	mg/L	<0.0051	<0.0051	<0.0051	0.0333	<0.0051
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.065	0.050	<0.030	0.061	0.074
Nitrogen, total dissolved	----	E368/VA	0.030	mg/L	0.058	0.056	<0.030	0.057	0.061
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0044	0.0053	0.0034	0.0026	0.0046
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.72	2.12	1.20	<0.50	3.22
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0522	0.106	0.0662	0.0338	0.0644
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00027	<0.00010
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00018	0.00021	0.00018	0.00012	0.00017



Analytical Results

Sub-Matrix: Water					Client sample ID	Shea Creek	Goshell Creek	Crystal Creek	Morice River	Shea Creek Duplicate
(Matrix: Water)										
Client sampling date / time					15-Jun-2023 12:05	15-Jun-2023 11:45	15-Jun-2023 11:20	15-Jun-2023 11:00	15-Jun-2023 12:05	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-001	VA23B3735-002	VA23B3735-003	VA23B3735-004	VA23B3735-005	
					Result	Result	Result	Result	Result	
Total Metals										
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.0231	0.0158	0.00374	0.0146	0.0225	
Beryllium, total	7440-41-7	E420/VA	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, total	7440-42-8	E420/VA	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000071	<0.0000050	
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	5.30	9.05	8.23	6.72	5.30	
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	<0.000010	0.000011	<0.000010	<0.000010	<0.000010	
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	<0.00050	0.00065	0.00056	0.00099	<0.00050	
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.079	0.136	0.052	0.033	0.080	
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	0.822	0.988	0.635	0.532	0.812	
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.00893	0.0105	0.00201	0.00232	0.00894	
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L	<0.000050	0.000271	0.000706	0.000403	<0.000050	
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	0.120	0.127	0.152	0.252	0.121	
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	<0.00020	<0.00020	0.00022	0.00037	<0.00020	
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	0.000055	<0.000050	<0.000050	
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	2.26	2.73	2.53	1.51	2.25	
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	0.876	1.07	1.12	0.641	0.872	
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.0224	0.0333	0.0242	0.0298	0.0224	
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	<0.50	0.65	0.97	0.85	<0.50	
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	



Analytical Results

Sub-Matrix: Water					Client sample ID	Shea Creek	Goshell Creek	Crystal Creek	Morice River	Shea Creek Duplicate
(Matrix: Water)					Client sampling date / time	15-Jun-2023 12:05	15-Jun-2023 11:45	15-Jun-2023 11:20	15-Jun-2023 11:00	15-Jun-2023 12:05
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-001	VA23B3735-002	VA23B3735-003	VA23B3735-004	VA23B3735-005	
					Result	Result	Result	Result	Result	
Total Metals										
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	0.00107	<0.00390 ^{DLM}	0.00189	0.00070	0.00130	
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	<0.000010	<0.000010	0.000019	0.000026	<0.000010	
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	<0.00050	0.00072	0.00054	<0.00050	<0.00050	
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L	0.0146	0.0105	0.0104	0.0141	0.0157	
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00050 ^{DTMF}	<0.00010	
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	0.00013	0.00013	0.00018	<0.00010	0.00013	
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.0219	0.0149	0.00310	0.0149	0.0216	
Beryllium, dissolved	7440-41-7	E421/VA	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000051	<0.0000050	
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	4.84	8.46	7.52	6.20	4.86	
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L	0.00040	0.00044	0.00045	0.00089	0.00040	
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	0.034	0.035	<0.010	0.012	0.036	
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	0.815	0.986	0.633	0.558	0.826	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.00503	0.00649	0.00044	0.00419 ^{DTMF}	0.00516	
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L	<0.000050	0.000240	0.000708	0.000410	<0.000050	
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L	0.108	0.109	0.141	0.260	0.106	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	<0.00020	<0.00020	0.00024	0.00030	<0.00020	



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)									
Client sampling date / time					15-Jun-2023 12:05	15-Jun-2023 11:45	15-Jun-2023 11:20	15-Jun-2023 11:00	15-Jun-2023 12:05
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-001	VA23B3735-002	VA23B3735-003	VA23B3735-004	VA23B3735-005
					Result	Result	Result	Result	Result
Dissolved Metals									
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	<0.000050	<0.000050	0.000058	<0.000050	<0.000050
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	2.26	2.60	2.50	1.49	2.32
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L	0.884	1.11	1.14	0.672	0.891
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	0.0223	0.0328	0.0241	0.0298	0.0228
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	<0.50	1.04	1.60	1.33	<0.50
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L	<0.00010	<0.00010	0.00062 ^{DTMF}	<0.00010	<0.00010
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L	<0.000010	<0.000010	0.000016	0.000023	<0.000010
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	<0.0010	<0.0010	0.0019	0.0011	0.0021
Zirconium, dissolved	7440-67-7	E421/VA	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421/VA	-	-	Field	Field	Field	Field	Field

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

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



Analytical Results

Sub-Matrix: Water				Client sample ID	Field Blank	Travel Blank	----	----	----
(Matrix: Water)									
Client sampling date / time				15-Jun-2023 11:45	15-Jun-2023	----	----	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-006	VA23B3735-007	-----	-----	-----
					Result	Result	----	----	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	1.2	<1.0	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.50	mg/L	<0.50	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.50	mg/L	----	<0.50	----	----	----
Oxidation-reduction potential [ORP]	----	E125/VA	0.10	mV	447	490	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	<10	<10	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	<3.0	----	----	----
Turbidity	----	E121/VA	0.10	NTU	<0.10	<0.10	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	<0.0050	----	----	----
Kjeldahl nitrogen, total [TKN]	----	EC318/VA	0.050	mg/L	<0.050	<0.050	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	<0.0050	<0.0050	----	----	----
Nitrate + Nitrite (as N)	----	EC235.N+N/V A	0.0050	mg/L	<0.0051	<0.0051	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	<0.0010	<0.0010	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	<0.030	<0.030	----	----	----
Nitrogen, total dissolved	----	E368/VA	0.030	mg/L	<0.030	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	<0.0020	<0.0020 ^{HTP}	----	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	<0.50	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	<0.0030	<0.0030	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000020	mg/L	<0.000020	<0.000020	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L	<0.010	<0.010	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	<0.050	<0.050	----	----	----



Analytical Results

Sub-Matrix: Water					Client sample ID	Field Blank	Travel Blank	----	----	----
(Matrix: Water)										
Client sampling date / time					15-Jun-2023 11:45	15-Jun-2023				
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-006	VA23B3735-007	-----	-----	-----	
					Result	Result	----	----	----	
Total Metals										
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Chromium, total	7440-47-3	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Cobalt, total	7440-48-4	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Copper, total	7440-50-8	E420/VA	0.000050	mg/L	0.000051 ^{RRV}	<0.000050	----	----	----	
Iron, total	7439-89-6	E420/VA	0.010	mg/L	<0.010	<0.010	----	----	----	
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
Manganese, total	7439-96-5	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Nickel, total	7440-02-0	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050	<0.050	----	----	----	
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	<0.050	<0.050	----	----	----	
Rubidium, total	7440-17-7	E420/VA	0.000020	mg/L	<0.000020	<0.000020	----	----	----	
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	<0.10	<0.10	----	----	----	
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	0.286 ^{RRV}	<0.050	----	----	----	
Strontium, total	7440-24-6	E420/VA	0.000020	mg/L	<0.000020	<0.000020	----	----	----	
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	<0.50	<0.50	----	----	----	
Tellurium, total	13494-80-9	E420/VA	0.000020	mg/L	<0.000020	<0.000020	----	----	----	
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Thorium, total	7440-29-1	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Tin, total	7440-31-5	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Titanium, total	7440-32-6	E420/VA	0.000030	mg/L	<0.000030	<0.000030	----	----	----	
Tungsten, total	7440-33-7	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Vanadium, total	7440-62-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
Zirconium, total	7440-67-7	E420/VA	0.000020	mg/L	<0.000020	<0.000020	----	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Field Blank	Travel Blank	----	----	----
(Matrix: Water)										
Client sampling date / time					15-Jun-2023 11:45	15-Jun-2023				
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-006	VA23B3735-007	-----	-----	-----	-----
					Result	Result	---	---	---	---
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L	<0.0010	---	---	---	---	---
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Beryllium, dissolved	7440-41-7	E421/VA	0.000020	mg/L	<0.000020	---	---	---	---	---
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L	<0.000050	---	---	---	---	---
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L	<0.010	---	---	---	---	---
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	<0.0000050	---	---	---	---	---
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	<0.050	---	---	---	---	---
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	<0.000010	---	---	---	---	---
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L	<0.00050	---	---	---	---	---
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L	0.00049 ^{RRV}	---	---	---	---	---
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	<0.010	---	---	---	---	---
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L	<0.000050	---	---	---	---	---
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L	<0.0010	---	---	---	---	---
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	<0.0050	---	---	---	---	---
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L	<0.000050	---	---	---	---	---
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	<0.00050	---	---	---	---	---
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L	<0.050	---	---	---	---	---
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L	<0.050	---	---	---	---	---
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	<0.00020	---	---	---	---	---
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	<0.000050	---	---	---	---	---
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	<0.050	---	---	---	---	---
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L	<0.000010	---	---	---	---	---
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L	0.260 ^{RRV}	---	---	---	---	---
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	<0.00020	---	---	---	---	---
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	<0.50	---	---	---	---	---
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L	<0.00020	---	---	---	---	---



Analytical Results

Sub-Matrix: Water					Client sample ID	Field Blank	Travel Blank	----	----	----
(Matrix: Water)										
					Client sampling date / time	15-Jun-2023 11:45	15-Jun-2023	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3735-006	VA23B3735-007	-----	-----	-----	
					Result	Result	----	----	----	
Dissolved Metals										
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L	<0.000010	----	----	----	----	
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L	<0.00010	----	----	----	----	
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L	<0.00010	----	----	----	----	
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L	<0.00030	----	----	----	----	
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L	<0.00010	----	----	----	----	
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L	<0.000010	----	----	----	----	
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	<0.00050	----	----	----	----	
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	<0.0010	----	----	----	----	
Zirconium, dissolved	7440-67-7	E421/VA	0.00030	mg/L	<0.00030	----	----	----	----	
Dissolved metals filtration location	----	EP421/VA	-	-	Field	----	----	----	----	

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

Work Order	: VA23B3735	Page	: 1 of 19
Client	: Northwest Research and Monitoring Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Laura Guillon	Account Manager	: Sneha Sansare
Address	: PO Box 4357 Smithers BC Canada V0J 2N0	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: MWMT 2023	Date Samples Received	: 16-Jun-2023 17:45
PO	: ----	Issue Date	: 28-Jun-2023 17:11
C-O-C number	: 20-1038106		
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Crystal Creek	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Goshell Creek	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Morice Rlver	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Shea Creek	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Shea Creek Duplicate	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Travel Blank	E298	15-Jun-2023	23-Jun-2023	----	----		25-Jun-2023	28 days	9 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Crystal Creek	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Goshell Creek	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Morice Rlver	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Shea Creek	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Shea Creek Duplicate	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Crystal Creek	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✔



Matrix: **Water** Evaluation: **✖** = Holding time exceedance ; **✔** = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Goshell Creek	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Morice Rlver	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Shea Creek	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Shea Creek Duplicate	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	15-Jun-2023	18-Jun-2023	----	----		18-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Crystal Creek	E368	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Field Blank	E368	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Goshell Creek	E368	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Morice River	E368	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓



Matrix: **Water** Evaluation: **✖** = Holding time exceedance ; **✔** = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Shea Creek	E368	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Shea Creek Duplicate	E368	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Travel Blank	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Crystal Creek	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Field Blank	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Goshell Creek	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Morice River	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Shea Creek	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Shea Creek Duplicate	E366	15-Jun-2023	23-Jun-2023	----	----		26-Jun-2023	28 days	11 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	13 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Crystal Creek	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Field Blank	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Goshell Creek	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Morice Rlver	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Shea Creek	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Shea Creek Duplicate	E372-U	15-Jun-2023	23-Jun-2023	----	----		28-Jun-2023	28 days	14 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Crystal Creek	E421	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Goshell Creek	E421	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Morice River	E421	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Shea Creek	E421	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Shea Creek Duplicate	E421	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - total (lab preserved) Crystal Creek	EF001	15-Jun-2023	----	----	----		19-Jun-2023	----	----	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - total (lab preserved) Goshell Creek	EF001	15-Jun-2023	----	----	----		19-Jun-2023	----	----	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - total (lab preserved) Morice River	EF001	15-Jun-2023	----	----	----		19-Jun-2023	----	----	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - total (lab preserved) Shea Creek	EF001	15-Jun-2023	----	----	----		19-Jun-2023	----	----	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - total (lab preserved) Shea Creek Duplicate	EF001	15-Jun-2023	----	----	----		19-Jun-2023	----	----	



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Crystal Creek	E358-L	15-Jun-2023	23-Jun-2023	----	----		23-Jun-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	15-Jun-2023	23-Jun-2023	----	----		23-Jun-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Goshell Creek	E358-L	15-Jun-2023	23-Jun-2023	----	----		23-Jun-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Morice River	E358-L	15-Jun-2023	23-Jun-2023	----	----		23-Jun-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Shea Creek	E358-L	15-Jun-2023	23-Jun-2023	----	----		23-Jun-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Shea Creek Duplicate	E358-L	15-Jun-2023	23-Jun-2023	----	----		23-Jun-2023	28 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Crystal Creek	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Goshell Creek	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE Morice River	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Shea Creek	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Shea Creek Duplicate	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	15-Jun-2023	18-Jun-2023	----	----		19-Jun-2023	14 days	4 days	✓
Physical Tests : ORP by Electrode										
HDPE Travel Blank	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	204 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Shea Creek	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	207 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Shea Creek Duplicate	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	207 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Crystal Creek	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	208 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Field Blank	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	208 hrs	✖ EHTR-FM



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : ORP by Electrode										
HDPE Goshell Creek	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	208 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Morice River	E125	15-Jun-2023	----	----	----		24-Jun-2023	0.25 hrs	208 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Crystal Creek	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Goshell Creek	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Morice River	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Shea Creek	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Shea Creek Duplicate	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : TSS by Gravimetry										
HDPE Crystal Creek	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Goshell Creek	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Morice Rlver	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Shea Creek	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Shea Creek Duplicate	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160	15-Jun-2023	----	----	----		22-Jun-2023	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Crystal Creek	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Turbidity by Nephelometry										
HDPE Goshell Creek	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Morice River	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Shea Creek	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Shea Creek Duplicate	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Travel Blank	E121	15-Jun-2023	----	----	----		18-Jun-2023	3 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Crystal Creek	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Goshell Creek	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Morice River	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Shea Creek	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Shea Creek Duplicate	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Travel Blank	E420	15-Jun-2023	19-Jun-2023	----	----		20-Jun-2023	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended
 Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	995405	1	13	7.6	5.0	✔
Ammonia by Fluorescence	E298	1004262	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	996277	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1004260	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	995408	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	995409	1	18	5.5	5.0	✔
ORP by Electrode	E125	1006712	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	1002712	1	19	5.2	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1004267	1	6	16.6	5.0	✔
Total metals in Water by CRC ICPMS	E420	996245	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1004266	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1004264	1	18	5.5	5.0	✔
TSS by Gravimetry	E160	1002679	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	995151	2	29	6.9	5.0	✔
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	995405	1	13	7.6	5.0	✔
Ammonia by Fluorescence	E298	1004262	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	996277	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1004260	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	995408	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	995409	1	18	5.5	5.0	✔
ORP by Electrode	E125	1006712	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	1002712	1	19	5.2	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1004267	1	6	16.6	5.0	✔
Total metals in Water by CRC ICPMS	E420	996245	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1004266	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1004264	1	18	5.5	5.0	✔
TSS by Gravimetry	E160	1002679	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	995151	2	29	6.9	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	995405	1	13	7.6	5.0	✔
Ammonia by Fluorescence	E298	1004262	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	996277	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1004260	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	995408	1	19	5.2	5.0	✔



Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Nitrite in Water by IC (Low Level)	E235.NO2-L	995409	1	18	5.5	5.0	✔
TDS by Gravimetry	E162	1002712	1	19	5.2	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1004267	1	6	16.6	5.0	✔
Total metals in Water by CRC ICPMS	E420	996245	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1004266	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1004264	1	18	5.5	5.0	✔
TSS by Gravimetry	E160	1002679	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	995151	2	29	6.9	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1004262	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	996277	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1004260	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	995408	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	995409	1	18	5.5	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1004267	1	6	16.6	5.0	✔
Total metals in Water by CRC ICPMS	E420	996245	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1004266	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1004264	1	18	5.5	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Turbidity by Nephelometry	E121 Vancouver - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Vancouver - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^\circ\text{C}$, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Vancouver - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at $180 \pm 2^\circ\text{C}$ for 16 hours or to constant weight, with gravimetric measurement of the residue.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Vancouver - Environmental	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 Vancouver - Environmental	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)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Nitrogen by Colourimetry	E368 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Dissolved Nitrogen is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	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.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	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.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Vancouver - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Kjeldahl Nitrogen (Calculation)	EC318 Vancouver - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)].



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 Vancouver - Environmental	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Dissolved Nitrogen in water	EP368 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Samples are filtration through a 0.45 micron filter and then heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order	: VA23B3735	Page	: 1 of 18
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Project	: MWM T 2023	Date Samples Received	: 16-Jun-2023 17:45
PO	: ----	Date Analysis Commenced	: 18-Jun-2023
C-O-C number	: 20-1038106	Issue Date	: 28-Jun-2023 17:11
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
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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: 1002679)											
VA23B3733-004	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1002712)											
VA23B3733-004	Anonymous	Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1006712)											
VA23B3735-001	Shea Creek	Oxidation-reduction potential [ORP]	----	E125	0.10	mV	363	358	1.30%	15%	----
Physical Tests (QC Lot: 995151)											
FJ2301437-008	Anonymous	Turbidity	----	E121	0.10	NTU	1.47	1.39	5.61%	15%	----
Physical Tests (QC Lot: 995152)											
VA23B3735-003	Crystal Creek	Turbidity	----	E121	0.10	NTU	1.14	1.05	0.09	Diff <2x LOR	----
Physical Tests (QC Lot: 995405)											
KS2302093-003	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	185	186	0.431%	20%	----
Anions and Nutrients (QC Lot: 1004262)											
KS2302114-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.100	mg/L	12.0	11.4	4.52%	20%	----
Anions and Nutrients (QC Lot: 1004264)											
KS2302096-008	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.349	0.351	0.540%	20%	----
Anions and Nutrients (QC Lot: 1004266)											
KS2302114-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.600	mg/L	28.7	28.7	0.0234%	20%	----
Anions and Nutrients (QC Lot: 1004267)											
VA23B3735-001	Shea Creek	Nitrogen, total dissolved	----	E368	0.030	mg/L	0.058	0.059	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 995408)											
VA23B3737-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 995409)											
VA23B3737-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1004260)											
FJ2301356-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.14	4.62	0.48	Diff <2x LOR	----
Total Metals (QC Lot: 996245)											
KS2302095-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0035	0.0005	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	0.00015	0.00004	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00302	0.00314	3.80%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0634	0.0654	3.11%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 996245) - continued											
KS2302095-001	Anonymous	Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.040	0.040	0.000001	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.000185	mg/L	<0.000175	<0.000185	0.0000100	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	266	264	0.704%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000013	0.000020	0.000007	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00109	0.00112	0.00004	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00234	0.00243	0.00010	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	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0069	0.0068	0.0001	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	78.8	80.7	2.40%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00016	0.00017	0.000008	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	1.09	1.08	1.48%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00052	0.00002	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.076	0.062	0.014	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	13.4	13.9	3.34%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00489	0.00504	2.98%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000512	0.000550	6.99%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	17.2	17.8	3.74%	20%	----
		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	54.1	56.5	4.30%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	2.67	2.69	0.711%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	290	302	4.07%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	0.00030	0.00031	0.000008	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	0.00023	0.00013	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00090	mg/L	<0.00090	<0.00090	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.0246	0.0248	1.07%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0112	0.0117	3.99%	20%	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	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
Total Metals (QC Lot: 996245) - continued											
KS2302095-001	Anonymous	Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 996277)											
VA23B3733-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0061	0.0062	0.00007	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	0.00018	0.00001	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0184	0.0184	0.319%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	14.0	13.6	2.82%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.93	2.00	3.55%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000390	0.000417	0.000027	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.38	1.42	3.23%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00170	0.00170	0.000007	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000197	0.000257	0.000060	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.882	0.914	3.50%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.453	0.468	0.015	Diff <2x LOR	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.159	0.154	3.08%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.94	4.54	0.40	Diff <2x LOR	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	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
Dissolved Metals (QC Lot: 996277) - continued											
VA23B3733-001	Anonymous	Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000023	0.000024	0.0000005	Diff <2x LOR	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	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: 1002679)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1002712)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 995151)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 995152)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 995405)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 1004262)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1004264)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1004266)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1004267)						
Nitrogen, total dissolved	----	E368	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 995408)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 995409)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Organic / Inorganic Carbon (QCLot: 1004260)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 996245)						
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	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 996245) - continued						
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
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	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 996277)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 996277) - continued						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



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>
Dissolved Metals (QCLot: 996277) - continued						
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1002679)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	108	85.0	115	----
Physical Tests (QCLot: 1002712)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.0	85.0	115	----
Physical Tests (QCLot: 995151)									
Turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
Physical Tests (QCLot: 995152)									
Turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 995405)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	111	85.0	115	----
Anions and Nutrients (QCLot: 1004262)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 1004264)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.2	80.0	120	----
Anions and Nutrients (QCLot: 1004266)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1004267)									
Nitrogen, total dissolved	----	E368	0.03	mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 995408)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 995409)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110	----
Organic / Inorganic Carbon (QCLot: 1004260)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 996245)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit					
Total Metals (QCLot: 996245) - continued									
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.9	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.5	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	103	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.0	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	93.7	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.2	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.2	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.3	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	84.6	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	95.9	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.9	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	92.6	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	96.1	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.6	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	----
Dissolved Metals (QCLot: 996277)									



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 996277) - continued									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.1	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.8	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.9	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	104	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.8	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	94.3	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.7	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.8	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.2	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	91.2	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	92.4	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
AnalyteCAS NumberMethodLORUnit									
Dissolved Metals (QCLot: 996277) - continued									
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.7	80.0	120	----



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1004262)										
KS2302114-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	MS-B
Anions and Nutrients (QCLot: 1004264)										
KS2302096-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0447 mg/L	0.05 mg/L	89.4	70.0	130	----
Anions and Nutrients (QCLot: 1004266)										
KS2302114-002	Anonymous	Nitrogen, total	7727-37-9	E366	ND mg/L	8 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1004267)										
VA23B3735-002	Goshell Creek	Nitrogen, total dissolved	----	E368	0.415 mg/L	0.4 mg/L	104	70.0	130	----
Anions and Nutrients (QCLot: 995408)										
VA23B3737-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 995409)										
VA23B3737-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.395 mg/L	0.5 mg/L	79.0	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1004260)										
KS2302097-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 996245)										
KS2302097-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		Boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	95.8	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00406 mg/L	0.004 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.3	70.0	130	----
		Copper, total	7440-50-8	E420	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		Iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		Lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.5	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: 996245) - continued										
KS2302097-001	Anonymous	Lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.0 mg/L	10 mg/L	100	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	20.0 mg/L	20 mg/L	100	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		Tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0339 mg/L	0.04 mg/L	84.8	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		Zinc, total	7440-66-6	E420	0.391 mg/L	0.4 mg/L	97.8	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 996277)										
VA23B3733-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00900 mg/L	0.01 mg/L	90.0	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.2	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00414 mg/L	0.004 mg/L	103	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 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
Dissolved Metals (QCLot: 996277) - continued										
VA23B3733-002	Anonymous	Chromium, dissolved	7440-47-3	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	101	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.10 mg/L	4 mg/L	102	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00421 mg/L	0.004 mg/L	105	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	2.04 mg/L	2 mg/L	102	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	20.2 mg/L	20 mg/L	101	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00354 mg/L	0.004 mg/L	88.6	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.417 mg/L	0.4 mg/L	104	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----

Qualifiers

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

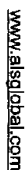


Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

Sub-Matrix:					Reference Material (RM) Report				
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Physical Tests (QCLot: 1006712)									
	RM	Oxidation-reduction potential [ORP]	----	E125	220 mV	101	95.0	105	----



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