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 Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-03	CC-05	DC-05
					Client sampling date / time	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022
						VA22C4666-001	VA22C4666-002	VA22C4666-003	VA22C4666-004	VA22C4666-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		72.8	43.2	119	94.6	53.5
conductivity	----	E100	2.0	µS/cm		138	84.6	226	187	111
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		63.4	35.5	117	94.4	48.7
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		63.2	34.8	108	86.5	47.7
pH	----	E108	0.10	pH units		8.01	7.81	8.26	8.18	7.93
solids, total dissolved [TDS]	----	E162	10	mg/L		89	64	122	122	73
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		0.44	0.80	0.82	0.60	0.24
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.057	0.046	0.060	0.064	0.040
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.102	0.092	0.147	0.096	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	0.0169	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	0.0014	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0017	0.0146	0.0134	0.0151	0.0044
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0084	0.0142	0.0145	0.0157	0.0042
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.29	0.98	6.37	3.89	2.85
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		2.20	3.42	4.56	4.30	1.74
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		3.75	3.24	4.43	3.89	1.79
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0394	0.0258	0.0144	0.0177	0.0192
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-03	CC-05	DC-05
					Client sampling date / time	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022
						VA22C4666-001	VA22C4666-002	VA22C4666-003	VA22C4666-004	VA22C4666-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00031	0.00110	0.00080	0.00084	0.00064
barium, total	7440-39-3	E420	0.00010	mg/L		0.0100	0.00474	0.00691	0.00682	0.00863
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	0.0000074	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		17.1	9.90	30.4	23.9	14.4
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.196	0.206	0.182	0.154	0.053
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		4.99	2.46	7.86	6.52	2.85
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0660	0.00827	0.0290	0.0165	0.00511
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000371	0.000615	0.00103	0.000976	0.000954
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		1.01	0.564	1.17	0.976	0.543
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000072
silicon, total	7440-21-3	E420	0.10	mg/L		8.72	6.84	6.73	6.79	6.13
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		4.52	3.58	4.91	4.74	3.73
strontium, total	7440-24-6	E420	0.00020	mg/L		0.106	0.0671	0.123	0.109	0.101
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	2.07	1.18	0.98
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00066	0.00065	0.00052	0.00057	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000091	0.000093	0.000198	0.000227	0.000290
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	0.00082	<0.00050	0.00051	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-03	CC-05	DC-05
					Client sampling date / time	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022
						VA22C4666-001	VA22C4666-002	VA22C4666-003	VA22C4666-004	VA22C4666-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0040	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0084	0.0173	0.0033	0.0061	0.0129
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00024	0.00097	0.00069	0.00083	0.00058
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00803	0.00450	0.00679	0.00680	0.00846
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000061	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		16.6	10.0	32.9	26.2	14.6
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.059	0.142	0.103	0.094	0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.32	2.55	8.50	7.05	2.97
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0272	0.00539	0.0180	0.00778	0.00348
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000344	0.000615	0.000996	0.000942	0.000956
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.763	0.568	1.14	0.974	0.549
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000051
silicon, dissolved	7440-21-3	E421	0.050	mg/L		8.84	7.09	6.63	6.83	6.01
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.49	3.66	4.95	4.85	3.81
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.102	0.0738	0.130	0.118	0.107

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-03	CC-05	DC-05
					Client sampling date / time	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022	11-Oct-2022
						VA22C4666-001	VA22C4666-002	VA22C4666-003	VA22C4666-004	VA22C4666-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	2.00	1.06	0.70
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	0.00032	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000082	0.000094	0.000194	0.000232	0.000289
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	0.00085	<0.00050	0.00059	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0014	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Duplicate 1	Field Blank	----	----	----
				Client sampling date / time	11-Oct-2022	11-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C4666-006	VA22C4666-007	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	119	<1.0	----	----	----
conductivity	----	E100	2.0	µS/cm	223	<2.0	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	116	<0.60	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	108	<0.60	----	----	----
pH	----	E108	0.10	pH units	8.25	5.43	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	148	<10	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	----	----	----
turbidity	----	E121	0.10	NTU	0.74	<0.10	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0061	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.067	<0.020	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.187	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0145	<0.0050	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0012	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0136	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0168	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.40	<0.30	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.24	<0.50	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.56	<0.50	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0141	<0.0030	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	Field Blank	----	----	----
					Client sampling date / time	11-Oct-2022	11-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C4666-006	VA22C4666-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00075	<0.00010	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00704	<0.00010	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		30.2	<0.050	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.180	<0.010	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		7.84	<0.100	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0279	<0.00010	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00103	<0.000050	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.15	<0.100	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.72	<0.10	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		4.91	<0.050	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.122	<0.00020	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		2.14	<0.50	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00055	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000193	<0.000010	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	Field Blank	----	----	----
					Client sampling date / time	11-Oct-2022	11-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C4666-006	VA22C4666-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0035	<0.0010	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00072	<0.00010	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00673	<0.00010	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		32.6	<0.050	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.105	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		8.51	<0.100	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0183	<0.00010	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000966	<0.000050	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.13	<0.100	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000053	<0.000050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.79	<0.050	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.96	<0.050	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.131	<0.00020	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	Field Blank	----	----	----
					Client sampling date / time	11-Oct-2022	11-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C4666-006	VA22C4666-007	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		2.20	<0.50	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000197	<0.000010	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C4666**	Page	: 1 of 30
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 13-Oct-2022 08:50
PO	: 10857	Issue Date	: 21-Oct-2022 13:52
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-03	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-10	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-03	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-05	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-05	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate 1	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	11-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-03	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-10	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-03	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-05	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-05	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Duplicate 1	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-03	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-10	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-03	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-05	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-05	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Duplicate 1	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-03	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-10	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-03	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-05	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-05	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Duplicate 1	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Field Blank	E378-U	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-03	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-10	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-03	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-05	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-05	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate 1	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-03	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-10	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-03	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-05	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-05	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Duplicate 1	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	11-Oct-2022	13-Oct-2022	3 days	2 days	✓	13-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
661-03	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
661-10	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
CC-03	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
CC-05	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
DC-05	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Duplicate 1	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO2-L	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-03	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-10	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-03	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-05	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-05	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate 1	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Field Blank	E235.SO4	11-Oct-2022	13-Oct-2022	----	----		13-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-03	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-10	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-03	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-05	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-05	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Duplicate 1	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E318	11-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-03	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-10	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-03	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-05	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-05	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Duplicate 1	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Field Blank	E372-U	11-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	28 days	10 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-03	E344	11-Oct-2022	----	----	----		19-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-10	E344	11-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-03	E344	11-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-05	E344	11-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-05	E344	11-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Duplicate 1	E344	11-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Field Blank	E344	11-Oct-2022	----	----	----		20-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-03	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-05	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Duplicate 1	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Field Blank	E333	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-03	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-03	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-05	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-05	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Duplicate 1	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Field Blank	E336	11-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-03	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-10	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-03	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-05	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-05	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate 1	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Field Blank	E509	11-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-03	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-10	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-03	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-05	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-05	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate 1	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Field Blank	E421	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
661-03	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
661-10	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-03	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-05	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
DC-05	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
Duplicate 1	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
Field Blank	E358-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
661-03	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-10	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-03	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-05	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-05	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate 1	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-03	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-10	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-03	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-05	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-05	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE Duplicate 1	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE Field Blank	E283	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-03	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-10	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-03	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-05	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-05	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate 1	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-03	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-10	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-03	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-05	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-05	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate 1	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 661-03	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-10	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-03	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-05	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-05	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate 1	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	11-Oct-2022	13-Oct-2022	----	----		16-Oct-2022	0.25 hrs	62.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-03	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-10	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-03	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-05	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-05	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Duplicate 1	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-03	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-10	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-03	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-05	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE DC-05	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Duplicate 1	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	11-Oct-2022	----	----	----		14-Oct-2022	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-03	E121	11-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-10	E121	11-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-03	E121	11-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-05	E121	11-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-05	E121	11-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Duplicate 1	E121	11-Oct-2022	----	----	----		14-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE										
Field Blank	E121	11-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
661-03	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
661-10	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-03	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-05	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
DC-05	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Duplicate 1	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Field Blank	E508	11-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
661-03	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-10	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-03	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-05	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-05	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Duplicate 1	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	11-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	180 days	7 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)							
Acidity by Titration	E283	695065	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	695053	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	696666	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	695058	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	695057	1	10	10.0	5.0	✓
Conductivity in Water	E100	695054	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	698578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698215	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	700023	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	695066	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	695055	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	695060	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	695059	1	13	7.6	5.0	✓
pH by Meter	E108	695052	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	695056	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	696294	2	29	6.9	5.0	✓
Thiocyanate by Colourimetry	E344	704728	2	39	5.1	5.0	✓
Total Cyanide	E333	701373	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	703717	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	699440	2	38	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	697403	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	700024	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	703162	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	696284	2	32	6.2	5.0	✓
Turbidity by Nephelometry	E121	695892	1	20	5.0	5.0	✓
WAD Cyanide	E336	701372	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	695065	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	695053	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	696666	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	695058	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	695057	1	10	10.0	5.0	✓
Conductivity in Water	E100	695054	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	698578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698215	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	700023	1	11	9.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	695066	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	695055	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	695060	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	695059	1	13	7.6	5.0	✓
pH by Meter	E108	695052	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	695056	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	696294	2	29	6.9	5.0	✓
Thiocyanate by Colourimetry	E344	704728	2	39	5.1	5.0	✓
Total Cyanide	E333	701373	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	703717	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	699440	2	38	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	697403	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	700024	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	703162	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	696284	2	32	6.2	5.0	✓
Turbidity by Nephelometry	E121	695892	1	20	5.0	5.0	✓
WAD Cyanide	E336	701372	1	18	5.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	695065	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	695053	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	696666	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	695058	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	695057	1	10	10.0	5.0	✓
Conductivity in Water	E100	695054	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	698578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698215	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	700023	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	695066	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	695055	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	695060	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	695059	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	695056	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	696294	2	29	6.9	5.0	✓
Thiocyanate by Colourimetry	E344	704728	2	39	5.1	5.0	✓
Total Cyanide	E333	701373	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	703717	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	699440	2	38	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	697403	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	700024	1	11	9.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	703162	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	696284	2	32	6.2	5.0	✓
Turbidity by Nephelometry	E121	695892	1	20	5.0	5.0	✓
WAD Cyanide	E336	701372	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	696666	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	695058	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	695057	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	698578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698215	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	700023	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	695066	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	695055	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	695060	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	695059	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	695056	1	10	10.0	5.0	✓
Thiocyanate by Colourimetry	E344	704728	2	39	5.1	5.0	✓
Total Cyanide	E333	701373	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	703717	1	16	6.2	5.0	✓
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Total metals in Water by CRC ICPMS	E420	697403	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	700024	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	703162	1	20	5.0	5.0	✓
WAD Cyanide	E336	701372	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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 Calgary - 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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - 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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), from total Ca/Mg” is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - 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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C4666**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 13-Oct-2022 08:50
PO	: 10857	Date Analysis Commenced	: 13-Oct-2022
C-O-C number	: ----	Issue Date	: 21-Oct-2022 13:52
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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
- 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*
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Elke Tabora		Calgary Inorganics, Calgary, Alberta
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Greg Pokocky	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Calgary Inorganics, Calgary, Alberta
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 695052)											
VA22C4636-003	Anonymous	pH	----	E108	0.10	pH units	7.22	7.22	0.00%	4%	----
Physical Tests (QC Lot: 695053)											
VA22C4636-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	10.9	10.8	0.922%	20%	----
Physical Tests (QC Lot: 695054)											
VA22C4657-001	Anonymous	conductivity	----	E100	2.0	µS/cm	18.5	18.1	0.4	Diff <2x LOR	----
Physical Tests (QC Lot: 695065)											
VA22C4666-002	661-10	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 695892)											
KS2203864-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 696284)											
KS2203867-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 696285)											
VA22C4666-007	Field Blank	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 696294)											
KS2203867-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	4010	4140	3.20%	20%	----
Physical Tests (QC Lot: 696295)											
VA22C4666-007	Field Blank	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 695055)											
VA22C4489-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	0.484	0.462	0.021	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 695056)											
VA22C4489-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	394	391	0.896%	20%	----
Anions and Nutrients (QC Lot: 695057)											
VA22C4489-001	Anonymous	chloride	16887-00-6	E235.Cl	10.0	mg/L	29.0	28.5	0.44	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 695058)											
VA22C4489-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 695059)											
VA22C4489-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	9.05	8.91	1.47%	20%	----
Anions and Nutrients (QC Lot: 695060)											
VA22C4489-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	60.3	59.7	1.03%	20%	----
Anions and Nutrients (QC Lot: 695066)											

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*
Anions and Nutrients (QC Lot: 695066) - continued											
VA22C4636-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 696666)											
VA22C4504-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0996	0.0981	1.52%	20%	----
Anions and Nutrients (QC Lot: 703162)											
CG2214389-010	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0027	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 703717)											
CG2214487-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.404	0.415	0.011	Diff <2x LOR	----
Cyanides (QC Lot: 701372)											
VA22C4666-001	661-03	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 701373)											
VA22C4666-001	661-03	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 704728)											
VA22C4546-007	Anonymous	thiocyanate	302-04-5	E344	25.0	mg/L	782	808	3.31%	20%	----
Cyanides (QC Lot: 706506)											
VA22C4666-002	661-10	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 700023)											
VA22C4666-001	661-03	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.20	2.16	0.04	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 700024)											
VA22C4666-001	661-03	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.75	3.26	0.49	Diff <2x LOR	----
Total Metals (QC Lot: 697403)											
VA22C4666-001	661-03	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0394	0.0357	9.74%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00031	0.00032	0.000005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0100	0.0101	0.476%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	17.1	16.7	2.42%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.196	0.198	0.964%	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: 697403) - continued											
VA22C4666-001	661-03	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	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	4.99	4.99	0.0850%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0660	0.0667	1.05%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000371	0.000345	0.000026	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	1.01	1.02	1.17%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	8.72	8.67	0.602%	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	4.52	4.41	2.37%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.106	0.105	0.596%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00066	0.00059	0.00007	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000091	0.000091	0.0000005	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0040	0.0040	0.00008	Diff <2x LOR	----
Total Metals (QC Lot: 699440)											
VA22C4286-007	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 699441)											
VA22C4666-003	CC-03	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 698215)											
VA22C4666-001	661-03	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0084	0.0084	0.00002	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	0.00024	0.00023	0.000005	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00803	0.00808	0.638%	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	16.6	16.8	1.22%	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*
Dissolved Metals (QC Lot: 698215) - continued											
VA22C4666-001	661-03	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	0.059	0.058	0.0005	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	0.100	mg/L	5.32	5.28	0.790%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0272	0.0270	0.681%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000344	0.000327	0.000016	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	0.100	mg/L	0.763	0.770	0.007	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	8.84	8.78	0.755%	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	4.49	4.48	0.0575%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.102	0.101	0.704%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000082	0.000086	0.000003	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	----
Dissolved Metals (QC Lot: 698578)											
KS2203867-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 695053)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 695054)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 695065)						
acidity (as CaCO3)	----	E283	2	mg/L	2.3	----
Physical Tests (QCLot: 695892)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 696284)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 696285)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 696294)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 696295)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 695055)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 695056)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 695057)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 695058)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 695059)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 695060)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 695066)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 696666)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 703162)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 703162) - continued						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 703717)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Cyanides (QCLot: 701372)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 701373)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 704728)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 706506)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 700023)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 700024)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 697403)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 697403) - continued						
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 699440)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 699441)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 698215)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 698215) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 698578)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 695052)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 695053)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	109	85.0	115	----
Physical Tests (QCLot: 695054)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.8	90.0	110	----
Physical Tests (QCLot: 695065)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	96.4	85.0	115	----
Physical Tests (QCLot: 695892)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 696284)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	88.2	85.0	115	----
Physical Tests (QCLot: 696285)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	91.2	85.0	115	----
Physical Tests (QCLot: 696294)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.8	85.0	115	----
Physical Tests (QCLot: 696295)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.8	85.0	115	----
Anions and Nutrients (QCLot: 695055)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 695056)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 695057)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.7	90.0	110	----
Anions and Nutrients (QCLot: 695058)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.3	85.0	115	----
Anions and Nutrients (QCLot: 695059)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.6	90.0	110	----
Anions and Nutrients (QCLot: 695060)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 695066)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.1	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 696666)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 703162)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	93.6	80.0	120	----
Anions and Nutrients (QCLot: 703717)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.1	75.0	125	----
Cyanides (QCLot: 701372)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	99.4	80.0	120	----
Cyanides (QCLot: 701373)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	82.9	80.0	120	----
Cyanides (QCLot: 704728)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.3	85.0	115	----
Cyanides (QCLot: 706506)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.3	85.0	115	----
Organic / Inorganic Carbon (QCLot: 700023)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	93.0	80.0	120	----
Organic / Inorganic Carbon (QCLot: 700024)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	97.9	80.0	120	----
Total Metals (QCLot: 697403)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	94.5	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	95.8	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	92.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	80.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	92.8	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	93.1	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.2	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	94.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	88.5	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	90.7	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 697403) - continued									
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	92.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.8	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	93.9	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	93.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.3	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	84.5	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.6	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	94.0	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	86.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	90.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	91.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	90.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	94.7	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	94.2	80.0	120	----
Total Metals (QCLot: 699440)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
Total Metals (QCLot: 699441)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----
Dissolved Metals (QCLot: 698215)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	112	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 698215) - continued									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	109	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	114	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.3	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: 695055)										
VA22C4489-002	Anonymous	fluoride	16984-48-8	E235.F	20.3 mg/L	20 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 695056)										
VA22C4489-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1940 mg/L	2000 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 695057)										
VA22C4489-002	Anonymous	chloride	16887-00-6	E235.Cl	1990 mg/L	2000 mg/L	99.5	75.0	125	----
Anions and Nutrients (QCLot: 695058)										
VA22C4489-002	Anonymous	bromide	24959-67-9	E235.Br-L	9.29 mg/L	10 mg/L	92.9	75.0	125	----
Anions and Nutrients (QCLot: 695059)										
VA22C4489-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	9.81 mg/L	10 mg/L	98.1	75.0	125	----
Anions and Nutrients (QCLot: 695060)										
VA22C4489-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	50 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 695066)										
VA22C4636-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0307 mg/L	0.03 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 696666)										
VA22C4504-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 703162)										
CG2214389-011	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0399 mg/L	0.05 mg/L	79.8	70.0	130	----
Anions and Nutrients (QCLot: 703717)										
CG2214487-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.30 mg/L	2.5 mg/L	92.1	70.0	130	----
Cyanides (QCLot: 701372)										
VA22C4666-001	661-03	cyanide, weak acid dissociable	----	E336	0.135 mg/L	0.125 mg/L	108	75.0	125	----
Cyanides (QCLot: 701373)										
VA22C4666-001	661-03	cyanide, strong acid dissociable (total)	----	E333	0.197 mg/L	0.25 mg/L	78.7	75.0	125	----
Cyanides (QCLot: 704728)										
VA22C4546-008	Anonymous	thiocyanate	302-04-5	E344	ND mg/L	10 mg/L	ND	75.0	125	----
Cyanides (QCLot: 706506)										
VA22C4666-003	CC-03	thiocyanate	302-04-5	E344	9.75 mg/L	10 mg/L	97.5	75.0	125	----

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
Organic / Inorganic Carbon (QCLot: 700023)										
VA22C4666-001	661-03	carbon, dissolved organic [DOC]	----	E358-L	4.61 mg/L	5 mg/L	92.3	70.0	130	----
Organic / Inorganic Carbon (QCLot: 700024)										
VA22C4666-001	661-03	carbon, total organic [TOC]	----	E355-L	4.80 mg/L	5 mg/L	96.0	70.0	130	----
Total Metals (QCLot: 697403)										
VA22C4666-002	661-10	aluminum, total	7429-90-5	E420	0.180 mg/L	0.2 mg/L	89.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0179 mg/L	0.02 mg/L	89.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		barium, total	7440-39-3	E420	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0348 mg/L	0.04 mg/L	87.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00914 mg/L	0.01 mg/L	91.4	70.0	130	----
		boron, total	7440-42-8	E420	0.079 mg/L	0.1 mg/L	78.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00384 mg/L	0.004 mg/L	96.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0364 mg/L	0.04 mg/L	91.1	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	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0174 mg/L	0.02 mg/L	87.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.0851 mg/L	0.1 mg/L	85.1	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	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		nickel, total	7440-02-0	E420	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		phosphorus, total	7723-14-0	E420	8.96 mg/L	10 mg/L	89.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.91 mg/L	4 mg/L	97.7	70.0	130	----
		selenium, total	7782-49-2	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		silicon, total	7440-21-3	E420	8.89 mg/L	10 mg/L	88.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00374 mg/L	0.004 mg/L	93.5	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	18.8 mg/L	20 mg/L	94.2	70.0	130	----
		thallium, total	7440-28-0	E420	0.00341 mg/L	0.004 mg/L	85.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0176 mg/L	0.02 mg/L	87.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0362 mg/L	0.04 mg/L	90.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00354 mg/L	0.004 mg/L	88.5	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: 697403) - continued										
VA22C4666-002	661-10	vanadium, total	7440-62-2	E420	0.0935 mg/L	0.1 mg/L	93.5	70.0	130	----
		zinc, total	7440-66-6	E420	0.372 mg/L	0.4 mg/L	93.0	70.0	130	----
Total Metals (QCLot: 699440)										
VA22C4620-001	Anonymous	mercury, total	7439-97-6	E508	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
Total Metals (QCLot: 699441)										
VA22C4666-004	CC-05	mercury, total	7439-97-6	E508	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 698215)										
VA22C4666-002	661-10	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00883 mg/L	0.01 mg/L	88.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.086 mg/L	0.1 mg/L	86.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0989 mg/L	0.1 mg/L	98.9	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	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0386 mg/L	0.04 mg/L	96.4	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	4.18 mg/L	4 mg/L	105	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.73 mg/L	10 mg/L	87.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.1 mg/L	20 mg/L	100	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: 698215) - continued										
VA22C4666-002	661-10	thallium, dissolved	7440-28-0	E421	0.00371 mg/L	0.004 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0974 mg/L	0.1 mg/L	97.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.386 mg/L	0.4 mg/L	96.5	70.0	130	----
Dissolved Metals (QCLot: 698578)										
KS2203867-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

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

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): 4666 **ALS Contact:** A. Springer **Sampler:** Avison

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
1	661-03	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
2	661-10	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
3	CC-03	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
4	CC-05	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
5	DC-05	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
6	Duplicate 1	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
7	Field Blank	11-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C4666

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			3	3	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 12 2022	Time: 930	Received by:	Date:	Time:	Received by: <Original signed b	Date: 13/10/22	Time: 850am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C4801**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 14-Oct-2022 09:00
PO	: 10857	Date Analysis Commenced	: 14-Oct-2022
C-O-C number	: ----	Issue Date	: 25-Oct-2022 16:20
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kyle Chang	Lab Assistant	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-20	CC-15	DC-20
					Client sampling date / time	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022
						VA22C4801-001	VA22C4801-002	VA22C4801-003	VA22C4801-004	VA22C4801-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	2.5	2.2	2.1
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		77.3	85.0	71.0	69.0	65.2
conductivity	----	E100	2.0	µS/cm		161	168	141	139	128
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		72.2	77.6	66.1	64.1	55.9
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		78.1	82.7	70.2	68.6	59.1
pH	----	E108	0.10	pH units		8.07	8.10	8.01	7.98	8.00
solids, total dissolved [TDS]	----	E162	10	mg/L		108	109	91	92	82
solids, total suspended [TSS]	----	E160	3.0	mg/L		19.9	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		1.36	0.99	0.93	0.82	0.57
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	0.0053	0.0146	0.0104
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.069	0.072	0.059	0.058	0.050
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.212	0.204	0.232	0.246	0.078
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0052	0.0064	0.0026	0.0029	0.0052
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0145	0.0156	0.0133	0.0136	0.0091
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.29	3.77	3.19	3.35	2.33
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.61	6.63	8.00	7.97	2.94
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		6.91	7.48	7.69	8.11	2.95
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0155	0.0138	0.0155	0.0193	0.0159
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-20	CC-15	DC-20
					Client sampling date / time	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022
						VA22C4801-001	VA22C4801-002	VA22C4801-003	VA22C4801-004	VA22C4801-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00067	0.00084	0.00064	0.00071	0.00063
barium, total	7440-39-3	E420	0.00010	mg/L		0.00789	0.00803	0.00680	0.00681	0.00935
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		22.2	23.4	20.1	19.7	16.5
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.266	0.270	0.133	0.129	0.237
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		5.50	5.90	4.85	4.72	4.35
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0286	0.0266	0.0218	0.0174	0.0196
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000898	0.00101	0.000673	0.000664	0.000798
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.952	1.00	0.791	0.786	0.666
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000085	0.000051	0.000078	0.000090	0.000061
silicon, total	7440-21-3	E420	0.10	mg/L		5.07	4.42	4.38	4.10	6.54
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		4.51	4.85	3.62	3.58	3.98
strontium, total	7440-24-6	E420	0.00020	mg/L		0.114	0.119	0.103	0.102	0.108
sulfur, total	7704-34-9	E420	0.50	mg/L		1.11	1.23	1.11	1.03	0.79
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00081	0.00070	0.00057	0.00071	0.00070
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000150	0.000185	0.000112	0.000119	0.000228
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00073	0.00072	0.00069	0.00067	0.00076

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-20	CC-15	DC-20
					Client sampling date / time	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022
						VA22C4801-001	VA22C4801-002	VA22C4801-003	VA22C4801-004	VA22C4801-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0026	0.0021	0.0038	0.0037	0.0068
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00066	0.00077	0.00054	0.00057	0.00057
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00741	0.00785	0.00645	0.00641	0.00913
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		20.7	22.2	19.4	18.8	16.2
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00033	0.00033	0.00036	0.00034	0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.199	0.220	0.106	0.098	0.197
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.98	5.38	4.29	4.16	3.76
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0202	0.0192	0.0167	0.0132	0.0157
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000969	0.00101	0.000674	0.000684	0.000822
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.900	0.988	0.742	0.754	0.658
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000067	<0.000050	<0.000050	0.000074	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.79	4.24	4.21	3.91	6.16
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.20	4.62	3.51	3.32	3.72
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.105	0.112	0.0990	0.0957	0.102

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-20	CC-15	DC-20
					Client sampling date / time	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022	12-Oct-2022
						VA22C4801-001	VA22C4801-002	VA22C4801-003	VA22C4801-004	VA22C4801-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.89	1.16	1.00	1.02	0.61
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000155	0.000189	0.000111	0.000114	0.000219
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	CC-10	----	----	----	----
				Client sampling date / time	12-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C4801-006	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	66.2	----	----	----	----
conductivity	----	E100	2.0	µS/cm	139	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	63.4	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	68.1	----	----	----	----
pH	----	E108	0.10	pH units	7.97	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	92	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU	0.63	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0115	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.059	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.563	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0077	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0306	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.43	----	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	----	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	9.27	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	9.46	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0122	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-10	----	----	----	----
					Client sampling date / time	12-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C4801-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00055	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00590	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		19.6	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.031	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.66	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00891	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000591	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.806	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000058	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		3.07	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.35	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0965	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.08	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00040	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000092	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00069	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-10	----	----	----	----
					Client sampling date / time	12-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C4801-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0020	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00049	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00548	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		18.6	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00034	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.016	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.11	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00604	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000590	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.770	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.97	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.18	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0922	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-10	----	----	----	----
					Client sampling date / time	12-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C4801-006	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.92	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000088	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C4801**	Page	: 1 of 28
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 14-Oct-2022 09:00
PO	: 10857	Issue Date	: 25-Oct-2022 16:18
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Dissolved Metals	Anonymous	Anonymous	silver, dissolved	7440-22-4	E421	63.1 % MES	70.0-130%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-15	E298	12-Oct-2022	15-Oct-2022	----	----		19-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-20	E298	12-Oct-2022	15-Oct-2022	----	----		19-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-30	E298	12-Oct-2022	15-Oct-2022	----	----		19-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-40	E298	12-Oct-2022	15-Oct-2022	----	----		19-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-10	E298	12-Oct-2022	16-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-20	E298	12-Oct-2022	16-Oct-2022	----	----		20-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-10	E235.Br-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-15	E235.Br-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-20	E235.Br-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-30	E235.Br-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-40	E235.Br-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-20	E235.Br-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-10	E235.Cl	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-15	E235.Cl	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-20	E235.Cl	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-30	E235.Cl	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-40	E235.Cl	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-20	E235.Cl	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-10	E378-U	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-15	E378-U	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-20	E378-U	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-30	E378-U	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-40	E378-U	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-20	E378-U	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-10	E235.F	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-15	E235.F	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-20	E235.F	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-30	E235.F	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-40	E235.F	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-20	E235.F	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-10	E235.NO3-L	12-Oct-2022	15-Oct-2022	3 days	3 days	✓	15-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-15	E235.NO3-L	12-Oct-2022	15-Oct-2022	3 days	3 days	✓	15-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-20	E235.NO3-L	12-Oct-2022	15-Oct-2022	3 days	3 days	✓	15-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-30	E235.NO3-L	12-Oct-2022	15-Oct-2022	3 days	3 days	✓	15-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-40	E235.NO3-L	12-Oct-2022	15-Oct-2022	3 days	3 days	✓	15-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-20	E235.NO3-L	12-Oct-2022	15-Oct-2022	3 days	3 days	✓	15-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-10	E235.NO2-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-15	E235.NO2-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-20	E235.NO2-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-30	E235.NO2-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-40	E235.NO2-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-20	E235.NO2-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-10	E235.SO4	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-15	E235.SO4	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-20	E235.SO4	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-30	E235.SO4	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-40	E235.SO4	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-20	E235.SO4	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-15	E318	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-20	E318	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-30	E318	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-40	E318	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-10	E318	12-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DC-20	E318	12-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-10	E372-U	12-Oct-2022	16-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-15	E372-U	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-20	E372-U	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-30	E372-U	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-40	E372-U	12-Oct-2022	15-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
DC-20	E372-U	12-Oct-2022	16-Oct-2022	----	----		17-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-10	E344	12-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-15	E344	12-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-20	E344	12-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-30	E344	12-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-40	E344	12-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-20	E344	12-Oct-2022	----	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-10	E333	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-15	E333	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-20	E333	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-30	E333	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-40	E333	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-20	E333	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-10	E336	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-15	E336	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-20	E336	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-30	E336	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-40	E336	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-20	E336	12-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	9 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-10	E509	12-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-15	E509	12-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-20	E509	12-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-30	E509	12-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-40	E509	12-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-20	E509	12-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-10	E421	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-15	E421	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-20	E421	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-30	E421	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-40	E421	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
DC-20	E421	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-15	E358-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-20	E358-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-30	E358-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-40	E358-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-10	E358-L	12-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
DC-20	E358-L	12-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-15	E355-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-20	E355-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-30	E355-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-40	E355-L	12-Oct-2022	15-Oct-2022	----	----		15-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-10	E355-L	12-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-20	E355-L	12-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-10	E283	12-Oct-2022	15-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-15	E283	12-Oct-2022	15-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-20	E283	12-Oct-2022	15-Oct-2022	----	----		16-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-30	E283	12-Oct-2022	15-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-40	E283	12-Oct-2022	15-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-20	E283	12-Oct-2022	15-Oct-2022	----	----		16-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-10	E290	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-15	E290	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-20	E290	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-30	E290	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-40	E290	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-20	E290	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE CC-10	E100	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-15	E100	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-20	E100	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-30	E100	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-40	E100	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-20	E100	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	28 days	7 days	✓
Physical Tests : pH by Meter										
HDPE CC-10	E108	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	0.25 hrs	94.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-15	E108	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	0.25 hrs	94.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-20	E108	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	0.25 hrs	94.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE CC-30	E108	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	0.25 hrs	94.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-40	E108	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	0.25 hrs	94.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-20	E108	12-Oct-2022	15-Oct-2022	----	----		18-Oct-2022	0.25 hrs	94.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE CC-10	E162	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-15	E162	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-20	E162	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-30	E162	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-40	E162	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-20	E162	12-Oct-2022	----	----	----		17-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE CC-10	E160	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-15	E160	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-20	E160	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-30	E160	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-40	E160	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-20	E160	12-Oct-2022	----	----	----		17-Oct-2022	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-10	E121	12-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-15	E121	12-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-20	E121	12-Oct-2022	----	----	----		14-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE CC-30	E121	12-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-40	E121	12-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-20	E121	12-Oct-2022	----	----	----		14-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-10	E508	12-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-15	E508	12-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-20	E508	12-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-30	E508	12-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-40	E508	12-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-20	E508	12-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-10	E420	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-15	E420	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-20	E420	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-30	E420	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-40	E420	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-20	E420	12-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	6 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)							
Acidity by Titration	E283	697415	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	697413	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	698174	2	27	7.4	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	697418	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	697417	1	20	5.0	5.0	✓
Conductivity in Water	E100	697414	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	703071	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698778	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	698175	2	11	18.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	697422	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	697416	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	697419	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	697420	1	20	5.0	5.0	✓
pH by Meter	E108	697412	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	697421	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	699339	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	706506	1	20	5.0	5.0	✓
Total Cyanide	E333	706426	2	37	5.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	698169	2	29	6.9	5.0	✓
Total Mercury in Water by CVAAS	E508	701145	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698643	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	698173	2	11	18.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	698171	2	21	9.5	5.0	✓
TSS by Gravimetry	E160	699322	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	696582	1	20	5.0	5.0	✓
WAD Cyanide	E336	706425	2	28	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	697415	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	697413	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	698174	2	27	7.4	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	697418	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	697417	1	20	5.0	5.0	✓
Conductivity in Water	E100	697414	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	703071	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698778	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	698175	2	11	18.1	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	697422	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	697416	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	697419	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	697420	1	20	5.0	5.0	✓
pH by Meter	E108	697412	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	697421	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	699339	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	706506	1	20	5.0	5.0	✓
Total Cyanide	E333	706426	2	37	5.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	698169	2	29	6.9	5.0	✓
Total Mercury in Water by CVAAS	E508	701145	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698643	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	698173	2	11	18.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	698171	2	21	9.5	5.0	✓
TSS by Gravimetry	E160	699322	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	696582	1	20	5.0	5.0	✓
WAD Cyanide	E336	706425	2	28	7.1	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	697415	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	697413	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	698174	2	27	7.4	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	697418	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	697417	1	20	5.0	5.0	✓
Conductivity in Water	E100	697414	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	703071	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698778	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	698175	2	11	18.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	697422	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	697416	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	697419	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	697420	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	697421	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	699339	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	706506	1	20	5.0	5.0	✓
Total Cyanide	E333	706426	2	37	5.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	698169	2	29	6.9	5.0	✓
Total Mercury in Water by CVAAS	E508	701145	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698643	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	698173	2	11	18.1	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	698171	2	21	9.5	5.0	✓
TSS by Gravimetry	E160	699322	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	696582	1	20	5.0	5.0	✓
WAD Cyanide	E336	706425	2	28	7.1	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	698174	2	27	7.4	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	697418	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	697417	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	703071	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698778	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	698175	2	11	18.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	697422	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	697416	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	697419	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	697420	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	697421	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	706506	1	20	5.0	5.0	✓
Total Cyanide	E333	706426	2	37	5.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	698169	2	29	6.9	5.0	✓
Total Mercury in Water by CVAAS	E508	701145	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698643	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	698173	2	11	18.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	698171	2	21	9.5	5.0	✓
WAD Cyanide	E336	706425	2	28	7.1	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C4801**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 14-Oct-2022 09:00
PO	: 10857	Date Analysis Commenced	: 14-Oct-2022
C-O-C number	: ----	Issue Date	: 25-Oct-2022 16:19
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kyle Chang	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 696582)											
FJ2202907-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 697412)											
VA22C4801-001	CC-30	pH	----	E108	0.10	pH units	8.07	8.09	0.248%	4%	----
Physical Tests (QC Lot: 697413)											
VA22C4801-001	CC-30	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	77.3	79.4	2.68%	20%	----
Physical Tests (QC Lot: 697414)											
VA22C4801-001	CC-30	conductivity	----	E100	2.0	µS/cm	161	158	1.32%	10%	----
Physical Tests (QC Lot: 697415)											
VA22C4801-002	CC-40	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 699322)											
VA22C4721-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	6.1	5.9	0.2	Diff <2x LOR	----
Physical Tests (QC Lot: 699339)											
VA22C4721-001	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	26	26	0.2	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 697416)											
VA22C4801-001	CC-30	fluoride	16984-48-8	E235.F	0.020	mg/L	0.069	0.069	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 697417)											
VA22C4801-001	CC-30	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 697418)											
VA22C4801-001	CC-30	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 697419)											
VA22C4801-001	CC-30	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: 697420)											
VA22C4801-001	CC-30	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 697421)											
VA22C4801-001	CC-30	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.29	3.28	0.115%	20%	----
Anions and Nutrients (QC Lot: 697422)											
VA22C4801-001	CC-30	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0052	0.0052	0.00002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698169)											
VA22C4728-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	5.00	mg/L	174	175	0.482%	20%	----
Anions and Nutrients (QC Lot: 698171)											

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*
Anions and Nutrients (QC Lot: 698171) - continued											
VA22C4651-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698174)											
VA22C4651-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698606)											
CG2214208-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.146	0.215	0.068	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698608)											
FJ2202931-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0135	0.0139	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698614)											
VA22C4801-005	DC-20	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0091	0.0092	0.0002	Diff <2x LOR	----
Cyanides (QC Lot: 706425)											
VA22C4801-001	CC-30	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 706426)											
VA22C4801-001	CC-30	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 706428)											
VA22C4801-004	CC-15	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 706429)											
VA22C4801-004	CC-15	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 706506)											
VA22C4666-002	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 698173)											
VA22C4651-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.99	0.49	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 698175)											
VA22C4801-001	CC-30	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	6.61	6.97	5.26%	20%	----
Organic / Inorganic Carbon (QC Lot: 698609)											
VA22C4792-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.79	3.04	0.25	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 698610)											
VA22C4792-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.88	3.00	0.12	Diff <2x LOR	----
Total Metals (QC Lot: 698643)											
VA22C4801-001	CC-30	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0155	0.0155	0.00001	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00067	0.00069	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00789	0.00788	0.0734%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	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: 698643) - continued											
VA22C4801-001	CC-30	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	22.2	22.1	0.579%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.266	0.268	0.825%	20%	----
		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	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	5.50	5.46	0.763%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0286	0.0283	1.20%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000898	0.000898	0.0566%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.952	0.945	0.007	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000085	0.000066	0.000019	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.07	5.02	1.03%	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	4.51	4.54	0.616%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.114	0.113	1.32%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	1.11	1.06	0.05	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00081	0.00065	0.00017	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000150	0.000150	0.0707%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00073	0.00074	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 701145)											
VA22C4801-001	CC-30	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 698778)											
VA22C4785-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0130	0.0132	1.15%	20%	----
		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	0.00606	0.00629	3.79%	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*
Dissolved Metals (QC Lot: 698778) - continued											
VA22C4785-001	Anonymous	barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.313	0.318	1.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	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	0.098	0.097	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000124	0.0000128	0.0000004	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.7	39.8	2.91%	20%	----
		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	0.00011	0.000009	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00079	0.00083	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.163	0.171	5.05%	20%	----
		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	0.0012	0.0013	0.00002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	39.4	41.0	4.09%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.160	0.167	4.67%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00292	0.00289	0.783%	20%	----
		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	2.13	2.28	6.78%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.52	3.57	1.64%	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	29.5	30.5	3.20%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.18	1.21	2.26%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.73	3.33	0.40	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00023	0.00024	0.000008	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000488	0.000504	3.22%	20%	----
		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	0.0021	0.0021	0.000005	Diff <2x LOR	----
Dissolved Metals (QC Lot: 703071)											
FJ2202936-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 696582)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 697413)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 697414)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 697415)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 699322)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 699339)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 697416)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 697417)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 697418)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 697419)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 697420)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 697421)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 697422)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 698169)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 698171)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 698174)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 698606)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 698608)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 698614)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706425)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706426)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706428)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706429)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706506)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 698173)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 698175)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 698609)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 698610)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 698643)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 698643) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 701145)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 698778)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 698778) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 703071)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 696582)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 697412)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 697413)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	105	85.0	115	----
Physical Tests (QCLot: 697414)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 697415)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
Physical Tests (QCLot: 699322)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	89.5	85.0	115	----
Physical Tests (QCLot: 699339)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 697416)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 697417)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 697418)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 697419)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 697420)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 697421)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 697422)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	100.0	80.0	120	----
Anions and Nutrients (QCLot: 698169)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 698171)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 698174)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.6	85.0	115	----
Anions and Nutrients (QCLot: 698606)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.5	75.0	125	----
Anions and Nutrients (QCLot: 698608)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.9	85.0	115	----
Anions and Nutrients (QCLot: 698614)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	87.9	80.0	120	----
Cyanides (QCLot: 706425)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	94.3	80.0	120	----
Cyanides (QCLot: 706426)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	89.1	80.0	120	----
Cyanides (QCLot: 706428)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	86.1	80.0	120	----
Cyanides (QCLot: 706429)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	90.2	80.0	120	----
Cyanides (QCLot: 706506)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.3	85.0	115	----
Organic / Inorganic Carbon (QCLot: 698173)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	106	80.0	120	----
Organic / Inorganic Carbon (QCLot: 698175)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 698609)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 698610)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Total Metals (QCLot: 698643)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 698643) - continued									
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.2	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.4	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	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	96.5	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	95.4	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	103	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.7	80.0	120	----
Total Metals (QCLot: 701145)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.0	80.0	120	----
Dissolved Metals (QCLot: 698778)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	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	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 698778) - continued									
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	97.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	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	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.3	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	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
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	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	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: 697416)										
VA22C4801-002	CC-40	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 697417)										
VA22C4801-002	CC-40	chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 697418)										
VA22C4801-002	CC-40	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 697419)										
VA22C4801-002	CC-40	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 697420)										
VA22C4801-002	CC-40	nitrite (as N)	14797-65-0	E235.NO2-L	0.505 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 697421)										
VA22C4801-002	CC-40	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 697422)										
VA22C4801-002	CC-40	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0299 mg/L	0.03 mg/L	99.8	70.0	130	----
Anions and Nutrients (QCLot: 698169)										
VA22C4755-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.49 mg/L	2.5 mg/L	99.6	70.0	130	----
Anions and Nutrients (QCLot: 698171)										
VA22C4657-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0475 mg/L	0.05 mg/L	95.0	70.0	130	----
Anions and Nutrients (QCLot: 698174)										
VA22C4657-001	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: 698606)										
CG2214208-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 698608)										
FJ2202932-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0968 mg/L	0.1 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 698614)										
VA22C4801-006	CC-10	phosphorus, total	7723-14-0	E372-U	0.0475 mg/L	0.05 mg/L	95.0	70.0	130	----
Cyanides (QCLot: 706425)										
VA22C4801-002	CC-40	cyanide, weak acid dissociable	----	E336	0.118 mg/L	0.125 mg/L	94.5	75.0	125	----

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
Cyanides (QCLot: 706426)										
VA22C4801-002	CC-40	cyanide, strong acid dissociable (total)	----	E333	0.217 mg/L	0.25 mg/L	86.7	75.0	125	----
Cyanides (QCLot: 706428)										
VA22C4801-005	DC-20	cyanide, strong acid dissociable (total)	----	E333	0.217 mg/L	0.25 mg/L	87.0	75.0	125	----
Cyanides (QCLot: 706429)										
VA22C4801-005	DC-20	cyanide, weak acid dissociable	----	E336	0.118 mg/L	0.125 mg/L	94.8	75.0	125	----
Cyanides (QCLot: 706506)										
VA22C4666-003	Anonymous	thiocyanate	302-04-5	E344	9.75 mg/L	10 mg/L	97.5	75.0	125	----
Organic / Inorganic Carbon (QCLot: 698173)										
VA22C4728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 698175)										
VA22C4801-002	CC-40	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 698609)										
VA22C4792-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.29 mg/L	5 mg/L	106	70.0	130	----
Organic / Inorganic Carbon (QCLot: 698610)										
VA22C4792-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.82 mg/L	5 mg/L	116	70.0	130	----
Total Metals (QCLot: 698643)										
VA22C4801-002	CC-40	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	97.1	70.0	130	----
		antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		barium, total	7440-39-3	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0387 mg/L	0.04 mg/L	96.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00928 mg/L	0.01 mg/L	92.8	70.0	130	----
		boron, total	7440-42-8	E420	0.088 mg/L	0.1 mg/L	88.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00381 mg/L	0.004 mg/L	95.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		iron, total	7439-89-6	E420	1.89 mg/L	2 mg/L	94.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0972 mg/L	0.1 mg/L	97.2	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	----

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: 698643) - continued										
VA22C4801-002	CC-40	molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		nickel, total	7440-02-0	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, total	7440-09-7	E420	4.20 mg/L	4 mg/L	105	70.0	130	----
		selenium, total	7782-49-2	E420	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		silicon, total	7440-21-3	E420	9.02 mg/L	10 mg/L	90.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00401 mg/L	0.004 mg/L	100	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	19.9 mg/L	20 mg/L	99.6	70.0	130	----
		thallium, total	7440-28-0	E420	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0976 mg/L	0.1 mg/L	97.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.385 mg/L	0.4 mg/L	96.2	70.0	130	----
Total Metals (QCLot: 701145)										
VA22C4801-002	CC-40	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 698778)										
VA22C4785-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00813 mg/L	0.01 mg/L	81.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	94.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	89.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0928 mg/L	0.1 mg/L	92.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	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: 698778) - continued										
VA22C4785-002	Anonymous	manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.90 mg/L	4 mg/L	97.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.71 mg/L	10 mg/L	87.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00252 mg/L	0.004 mg/L	63.1	70.0	130	MES
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00360 mg/L	0.004 mg/L	90.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0989 mg/L	0.1 mg/L	98.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.366 mg/L	0.4 mg/L	91.4	70.0	130	----
Dissolved Metals (QCLot: 703071)										
FJ2202936-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000980 mg/L	0.0001 mg/L	98.0	70.0	130	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*
MS-B	*Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.*

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here
(lab use only)

COC Number: 15

Page

Environmental Division
Vancouver
Work Order Reference
VA22C4801

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information	
ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

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

ALS Lab Work Order # (lab use only)

ALS Contact: A. Springer **Sampler:** Avison

Select Service Level Below - Please confirm all E&P TATs with your AM - su

Regular [R] ☑ Standard TAT if received by 3 pm - b

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Busines | Same Day | Statuton

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected,

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	P	F/P	P		F		F	P					
	CC-30	12-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-40	12-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-20	12-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-15	12-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-15	12-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-10	12-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

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

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

Are samples for human drinking water use?
☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			4	5	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 13, 2022	Time:	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 14/10/22	Time: 9:00 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C4926**	Page	: 1 of 7
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 15-Oct-2022 10:10
PO	: 10857	Date Analysis Commenced	: 16-Oct-2022
C-O-C number	: ----	Issue Date	: 25-Oct-2022 15:42
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Qammar Almas	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 Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
SP	*Sample was preserved at the laboratory.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FC-01	661-01	705-10	Duplicate 2	661-04
					Client sampling date / time	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022
						VA22C4926-001	VA22C4926-002	VA22C4926-003	VA22C4926-004	VA22C4926-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.4	2.2	2.3	2.2	2.3
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		40.3	22.1	44.0	44.2	39.3
conductivity	----	E100	2.0	µS/cm		82.3	42.5	89.4	88.4	76.2
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		35.6	16.4	39.4	41.8	31.7
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		35.4	16.6	40.0	39.8	31.6
pH	----	E108	0.10	pH units		7.88	7.60	7.94	7.92	7.87
solids, total dissolved [TDS]	----	E162	10	mg/L		53	34	65	60	63
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		<0.10	0.26	0.17	0.17	0.27
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	0.0128	0.0113
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		<0.020	0.028	0.027	0.028	0.044
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		<0.050	0.100	0.101	0.110	0.084
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	0.0152	0.0428	0.0425	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0033	<0.0010	<0.0010	<0.0010	0.0114
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0036	0.0045	0.0024	0.0022	0.0152
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.19	0.33	1.55	1.52	1.00
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.56	3.58	5.10	4.88	3.21
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.54	3.77	5.02	4.98	3.30
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0104	0.0337	0.0209	0.0202	0.0300
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FC-01	661-01	705-10	Duplicate 2	661-04
					Client sampling date / time	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022
						VA22C4926-001	VA22C4926-002	VA22C4926-003	VA22C4926-004	VA22C4926-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00069	0.00046	0.00017	0.00017	0.00118
barium, total	7440-39-3	E420	0.00010	mg/L		0.00437	0.00327	0.0112	0.0114	0.00436
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000054	<0.0000050	<0.0000050	<0.0000050	0.0000117
calcium, total	7440-70-2	E420	0.050	mg/L		12.1	4.60	12.2	12.1	8.91
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	0.078	0.022	0.024	0.056
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		1.26	1.24	2.32	2.33	2.28
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00017	0.0332	0.00168	0.00182	0.00594
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000759	0.000306	0.000544	0.000501	0.000711
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.432	0.430	0.383	0.382	0.592
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		5.17	5.22	4.44	4.56	7.62
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		2.42	2.30	2.78	2.78	3.56
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0545	0.0371	0.0772	0.0780	0.0623
sulfur, total	7704-34-9	E420	0.50	mg/L		0.52	<0.50	<0.50	<0.50	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00035	<0.00030	<0.00030	0.00040
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000056	0.000024	0.000114	0.000110	0.000062
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00051

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FC-01	661-01	705-10	Duplicate 2	661-04
					Client sampling date / time	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022
						VA22C4926-001	VA22C4926-002	VA22C4926-003	VA22C4926-004	VA22C4926-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	0.0043
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0087	0.0281	0.0172	0.0178	0.0221
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00066	0.00047	0.00017	0.00015	0.00113
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00434	0.00317	0.0113	0.0113	0.00432
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000117
calcium, dissolved	7440-70-2	E421	0.050	mg/L		12.2	4.56	12.0	13.0	8.94
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00023	<0.00020	0.00034	0.00035	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	0.060	0.019	0.019	0.042
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		1.25	1.21	2.30	2.28	2.28
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00013	0.0250	0.00143	0.00141	0.00473
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000761	0.000261	0.000518	0.000572	0.000691
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.439	0.381	0.380	0.381	0.587
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.41	5.29	4.55	4.53	7.57
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.40	2.26	2.74	2.78	3.52
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0553	0.0368	0.0756	0.0802	0.0615

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FC-01	661-01	705-10	Duplicate 2	661-04
					Client sampling date / time	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022	13-Oct-2022
Analyte	CAS Number	Method	LOR	Unit		VA22C4926-001	VA22C4926-002	VA22C4926-003	VA22C4926-004	VA22C4926-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.53	<0.50	<0.50	<0.50	<0.50
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000054	0.000024	0.000109	0.000114	0.000056
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	0.0041
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Travel Blank	----	----	----	----
				Client sampling date / time	13-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C4926-006	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----
pH	----	E108	0.10	pH units	5.40	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----
Anions and Nutrients									
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50 SP	----	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C4926**	Page	: 1 of 26
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 15-Oct-2022 10:10
PO	: 10857	Issue Date	: 25-Oct-2022 15:42
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-01	E298	13-Oct-2022	17-Oct-2022	----	----		20-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-04	E298	13-Oct-2022	17-Oct-2022	----	----		20-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-10	E298	13-Oct-2022	17-Oct-2022	----	----		20-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate 2	E298	13-Oct-2022	17-Oct-2022	----	----		20-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) FC-01	E298	13-Oct-2022	17-Oct-2022	----	----		20-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-01	E235.Br-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-04	E235.Br-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
705-10	E235.Br-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Duplicate 2	E235.Br-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
FC-01	E235.Br-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.Br-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
661-01	E235.Cl	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
661-04	E235.Cl	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
705-10	E235.Cl	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Duplicate 2	E235.Cl	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
FC-01	E235.Cl	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE Travel Blank	E235.Cl	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-01	E378-U	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-04	E378-U	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-10	E378-U	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Duplicate 2	E378-U	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE FC-01	E378-U	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Travel Blank	E378-U	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-01	E235.F	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-04	E235.F	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-10	E235.F	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate 2	E235.F	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FC-01	E235.F	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Travel Blank	E235.F	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-01	E235.NO3-L	13-Oct-2022	16-Oct-2022	3 days	3 days	✓	16-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-04	E235.NO3-L	13-Oct-2022	16-Oct-2022	3 days	3 days	✓	16-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-10	E235.NO3-L	13-Oct-2022	16-Oct-2022	3 days	3 days	✓	16-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Duplicate 2	E235.NO3-L	13-Oct-2022	16-Oct-2022	3 days	3 days	✓	16-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE FC-01	E235.NO3-L	13-Oct-2022	16-Oct-2022	3 days	3 days	✓	16-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	13-Oct-2022	16-Oct-2022	3 days	3 days	✓	16-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-01	E235.NO2-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-04	E235.NO2-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-10	E235.NO2-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Duplicate 2	E235.NO2-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FC-01	E235.NO2-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-01	E235.SO4	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-04	E235.SO4	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
705-10	E235.SO4	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Duplicate 2	E235.SO4	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
FC-01	E235.SO4	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Travel Blank	E235.SO4	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-01	E318	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-04	E318	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
705-10	E318	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Duplicate 2	E318	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) FC-01	E318	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-01	E372-U	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-04	E372-U	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-10	E372-U	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Duplicate 2	E372-U	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) FC-01	E372-U	13-Oct-2022	17-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-01	E344	13-Oct-2022	----	----	----		20-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-04	E344	13-Oct-2022	----	----	----		20-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 705-10	E344	13-Oct-2022	----	----	----		20-Oct-2022	14 days	8 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Duplicate 2	E344	13-Oct-2022	----	----	----		20-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
FC-01	E344	13-Oct-2022	----	----	----		20-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Travel Blank	E344	13-Oct-2022	----	----	----		20-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-01	E333	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-04	E333	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-10	E333	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Duplicate 2	E333	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FC-01	E333	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Travel Blank	E333	13-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	8 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-01	E336	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E336	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-10	E336	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Duplicate 2	E336	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) FC-01	E336	13-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Travel Blank	E336	13-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	14 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-01	E509	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-04	E509	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 705-10	E509	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	5 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate 2	E509	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) FC-01	E509	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-01	E421	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-04	E421	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-10	E421	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate 2	E421	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) FC-01	E421	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-01	E358-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-04	E358-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-10	E358-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Duplicate 2	E358-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FC-01	E358-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-01	E355-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-04	E355-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-10	E355-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate 2	E355-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) FC-01	E355-L	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-01	E283	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	14 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE 661-04	E283	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-10	E283	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE Duplicate 2	E283	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE FC-01	E283	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE Travel Blank	E283	13-Oct-2022	16-Oct-2022	----	----		16-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-01	E290	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-04	E290	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-10	E290	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate 2	E290	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	14 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE FC-01	E290	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	14 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-01	E100	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-04	E100	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-10	E100	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate 2	E100	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE FC-01	E100	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE Travel Blank	E100	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Physical Tests : pH by Meter										
HDPE 661-01	E108	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	0.25 hrs	60.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 661-04	E108	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	0.25 hrs	60.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-10	E108	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	0.25 hrs	60.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate 2	E108	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	0.25 hrs	60.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE FC-01	E108	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	0.25 hrs	60.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	13-Oct-2022	16-Oct-2022	----	----		18-Oct-2022	0.25 hrs	60.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-01	E162	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-04	E162	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-10	E162	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Duplicate 2	E162	13-Oct-2022	----	----	----		17-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE FC-01	E162	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-01	E160	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-04	E160	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-10	E160	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Duplicate 2	E160	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE FC-01	E160	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160	13-Oct-2022	----	----	----		17-Oct-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-01	E121	13-Oct-2022	----	----	----		16-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE 661-04	E121	13-Oct-2022	----	----	----		16-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 705-10	E121	13-Oct-2022	----	----	----		16-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Duplicate 2	E121	13-Oct-2022	----	----	----		16-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE FC-01	E121	13-Oct-2022	----	----	----		16-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Travel Blank	E121	13-Oct-2022	----	----	----		16-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-01	E508	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-04	E508	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 705-10	E508	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Duplicate 2	E508	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) FC-01	E508	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	28 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-01	E420	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-04	E420	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-10	E420	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Duplicate 2	E420	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) FC-01	E420	13-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	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)							
Acidity by Titration	E283	698567	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	698565	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	699514	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	698570	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	698569	1	6	16.6	5.0	✓
Conductivity in Water	E100	698566	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	701077	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698762	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	699512	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	698574	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	698568	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	698571	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	698572	1	6	16.6	5.0	✓
pH by Meter	E108	698564	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	698573	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	699159	2	35	5.7	5.0	✓
Thiocyanate by Colourimetry	E344	706506	2	40	5.0	5.0	✓
Total Cyanide	E333	704541	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	699515	1	5	20.0	5.0	✓
Total Mercury in Water by CVAAS	E508	702199	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698642	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	699516	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	699513	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	699156	2	35	5.7	5.0	✓
Turbidity by Nephelometry	E121	698552	2	24	8.3	5.0	✓
WAD Cyanide	E336	704542	2	25	8.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	698567	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	698565	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	699514	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	698570	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	698569	1	6	16.6	5.0	✓
Conductivity in Water	E100	698566	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	701077	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698762	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	699512	1	20	5.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	698574	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	698568	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	698571	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	698572	1	6	16.6	5.0	✓
pH by Meter	E108	698564	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	698573	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	699159	2	35	5.7	5.0	✓
Thiocyanate by Colourimetry	E344	706506	2	40	5.0	5.0	✓
Total Cyanide	E333	704541	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	699515	1	5	20.0	5.0	✓
Total Mercury in Water by CVAAS	E508	702199	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698642	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	699516	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	699513	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	699156	2	35	5.7	5.0	✓
Turbidity by Nephelometry	E121	698552	2	24	8.3	5.0	✓
WAD Cyanide	E336	704542	2	25	8.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	698567	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	698565	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	699514	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	698570	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	698569	1	6	16.6	5.0	✓
Conductivity in Water	E100	698566	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	701077	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698762	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	699512	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	698574	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	698568	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	698571	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	698572	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	698573	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	699159	2	35	5.7	5.0	✓
Thiocyanate by Colourimetry	E344	706506	2	40	5.0	5.0	✓
Total Cyanide	E333	704541	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	699515	1	5	20.0	5.0	✓
Total Mercury in Water by CVAAS	E508	702199	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698642	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	699516	1	8	12.5	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	699513	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	699156	2	35	5.7	5.0	✓
Turbidity by Nephelometry	E121	698552	2	24	8.3	5.0	✓
WAD Cyanide	E336	704542	2	25	8.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	699514	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	698570	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	698569	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	701077	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	698762	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	699512	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	698574	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	698568	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	698571	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	698572	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	698573	1	6	16.6	5.0	✓
Thiocyanate by Colourimetry	E344	706506	2	40	5.0	5.0	✓
Total Cyanide	E333	704541	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	699515	1	5	20.0	5.0	✓
Total Mercury in Water by CVAAS	E508	702199	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	698642	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	699516	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	699513	1	20	5.0	5.0	✓
WAD Cyanide	E336	704542	2	25	8.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C4926**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 15-Oct-2022 10:10
PO	: 10857	Date Analysis Commenced	: 16-Oct-2022
C-O-C number	: ----	Issue Date	: 25-Oct-2022 15:42
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 698552)											
VA22C4908-018	Anonymous	turbidity	----	E121	0.10	NTU	0.29	0.32	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 698553)											
VA22C4926-004	Duplicate 2	turbidity	----	E121	0.10	NTU	0.17	0.19	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 698564)											
VA22C4926-003	705-10	pH	----	E108	0.10	pH units	7.94	7.92	0.252%	4%	----
Physical Tests (QC Lot: 698565)											
VA22C4926-003	705-10	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	44.0	45.2	2.69%	20%	----
Physical Tests (QC Lot: 698566)											
VA22C4926-003	705-10	conductivity	----	E100	2.0	µS/cm	89.4	88.5	1.01%	10%	----
Physical Tests (QC Lot: 698567)											
VA22C4926-002	661-01	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.2	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 699156)											
VA22C4908-021	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 699157)											
VA22C4926-005	661-04	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 699159)											
VA22C4908-021	Anonymous	solids, total dissolved [TDS]	----	E162	13	mg/L	64	60	5	Diff <2x LOR	----
Physical Tests (QC Lot: 699160)											
VA22C4926-005	661-04	solids, total dissolved [TDS]	----	E162	13	mg/L	63	62	1	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698568)											
VA22C4926-001	FC-01	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698569)											
VA22C4926-001	FC-01	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698570)											
VA22C4926-001	FC-01	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698571)											
VA22C4926-001	FC-01	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: 698572)											
VA22C4926-001	FC-01	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698573)											

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*
Anions and Nutrients (QC Lot: 698573) - continued											
VA22C4926-001	FC-01	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.19	2.19	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 698574)											
VA22C4926-001	FC-01	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0033	0.0032	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 699513)											
VA22C4926-001	FC-01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0036	0.0039	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 699514)											
VA22C4926-001	FC-01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 699515)											
VA22C4926-001	FC-01	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 704541)											
VA22C4546-008	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0100	mg/L	0.989	0.979	1.05%	20%	----
Cyanides (QC Lot: 704542)											
VA22C4546-008	Anonymous	cyanide, weak acid dissociable	----	E336	0.0100	mg/L	0.0462	0.0453	0.0008	Diff <2x LOR	----
Cyanides (QC Lot: 706428)											
VA22C4801-004	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 706429)											
VA22C4801-004	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 706506)											
VA22C4666-002	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 706507)											
VA22C4926-003	705-10	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 699512)											
VA22C4926-001	FC-01	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.56	1.49	0.07	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 699516)											
VA22C4926-001	FC-01	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.54	1.54	0.008	Diff <2x LOR	----
Total Metals (QC Lot: 698642)											
FJ2202930-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0109	0.0101	0.0008	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	0.00011	0.000007	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	0.00011	0.000004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.132	0.140	5.65%	20%	----
		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	<0.010	<0.010	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: 698642) - continued											
FJ2202930-001	Anonymous	cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000428	0.0000370	0.0000058	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	77.9	77.6	0.322%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.094	0.095	0.001	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	0.0130	0.0128	1.19%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	26.1	26.6	1.94%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0212	0.0215	1.50%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00235	0.00234	0.169%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00066	0.00067	0.000005	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.765	0.774	1.19%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00265	0.00248	6.65%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.03	1.99	1.85%	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	12.7	13.0	1.97%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.336	0.330	1.65%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	51.3	51.0	0.629%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000912	0.000898	1.57%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 702199)											
VA22C4848-015	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 698762)											
FJ2202912-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0042	0.0033	0.0009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00032	0.00033	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00205	0.00209	2.08%	20%	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.133	0.130	2.10%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000040	mg/L	<0.000040	<0.000040	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: 698762) - continued											
FJ2202912-001	Anonymous	bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.071	0.070	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000100	mg/L	<0.0000100	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	298	290	2.98%	20%	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00020	mg/L	0.00056	0.00058	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00236	0.00239	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.772	0.782	1.30%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0095	0.0094	0.0002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	85.3	85.6	0.406%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.455	0.457	0.285%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00407	0.00407	0.208%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00603	0.00602	0.00001	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.100	mg/L	0.284	0.278	0.005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	7.11	7.19	1.11%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000100	mg/L	0.000863	0.000730	0.000132	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	6.08	6.08	0.0140%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	69.6	67.7	2.78%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.831	0.837	0.708%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	373	378	1.54%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.00462	0.00449	2.83%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 701077)											
VA22C4910-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 698552)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 698553)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 698565)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 698566)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 698567)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 699156)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 699157)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 699159)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 699160)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 698568)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 698569)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 698570)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 698571)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 698572)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 698573)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 698574)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 699513)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 699513) - continued						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 699514)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 699515)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Cyanides (QCLot: 704541)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 704542)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706428)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706429)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 706506)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 706507)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 699512)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 699516)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 698642)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 698642) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 702199)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 698762)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 698762) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 701077)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 698552)									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
Physical Tests (QCLot: 698553)									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
Physical Tests (QCLot: 698564)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 698565)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
Physical Tests (QCLot: 698566)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.2	90.0	110	----
Physical Tests (QCLot: 698567)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	99.2	85.0	115	----
Physical Tests (QCLot: 699156)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	89.7	85.0	115	----
Physical Tests (QCLot: 699157)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	89.3	85.0	115	----
Physical Tests (QCLot: 699159)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
Physical Tests (QCLot: 699160)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.4	85.0	115	----
Anions and Nutrients (QCLot: 698568)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 698569)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 698570)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	93.8	85.0	115	----
Anions and Nutrients (QCLot: 698571)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 698572)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.5	90.0	110	----
Anions and Nutrients (QCLot: 698573)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 698574)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 699513)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.4	80.0	120	----
Anions and Nutrients (QCLot: 699514)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 699515)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.3	75.0	125	----
Cyanides (QCLot: 704541)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	85.6	80.0	120	----
Cyanides (QCLot: 704542)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	94.2	80.0	120	----
Cyanides (QCLot: 706428)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	86.1	80.0	120	----
Cyanides (QCLot: 706429)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	90.2	80.0	120	----
Cyanides (QCLot: 706506)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.3	85.0	115	----
Cyanides (QCLot: 706507)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.4	85.0	115	----
Organic / Inorganic Carbon (QCLot: 699512)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	109	80.0	120	----
Organic / Inorganic Carbon (QCLot: 699516)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 698642)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	95.8	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	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	98.5	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	88.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Total Metals (QCLot: 698642) - continued									
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.8	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	94.1	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.0	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	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.1	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	94.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	92.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	93.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.0	80.0	120	----
Total Metals (QCLot: 702199)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	96.5	80.0	120	----
Dissolved Metals (QCLot: 698762)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 698762) - continued									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	95.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.5	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	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: 698568)										
VA22C4926-002	661-01	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 698569)										
VA22C4926-002	661-01	chloride	16887-00-6	E235.Cl	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 698570)										
VA22C4926-002	661-01	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 698571)										
VA22C4926-002	661-01	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: 698572)										
VA22C4926-002	661-01	nitrite (as N)	14797-65-0	E235.NO2-L	0.501 mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 698573)										
VA22C4926-002	661-01	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 698574)										
VA22C4926-002	661-01	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0304 mg/L	0.03 mg/L	101	70.0	130	----
Anions and Nutrients (QCLot: 699513)										
VA22C4926-002	661-01	phosphorus, total	7723-14-0	E372-U	0.0471 mg/L	0.05 mg/L	94.3	70.0	130	----
Anions and Nutrients (QCLot: 699514)										
VA22C4926-002	661-01	ammonia, total (as N)	7664-41-7	E298	0.0999 mg/L	0.1 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 699515)										
VA22C4926-002	661-01	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.2	70.0	130	----
Cyanides (QCLot: 704541)										
VA22C4546-009	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.215 mg/L	0.25 mg/L	86.1	75.0	125	----
Cyanides (QCLot: 704542)										
VA22C4546-009	Anonymous	cyanide, weak acid dissociable	----	E336	0.117 mg/L	0.125 mg/L	93.9	75.0	125	----
Cyanides (QCLot: 706428)										
VA22C4801-005	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.217 mg/L	0.25 mg/L	87.0	75.0	125	----
Cyanides (QCLot: 706429)										
VA22C4801-005	Anonymous	cyanide, weak acid dissociable	----	E336	0.118 mg/L	0.125 mg/L	94.8	75.0	125	----

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
Cyanides (QCLot: 706506)										
VA22C4666-003	Anonymous	thiocyanate	302-04-5	E344	9.75 mg/L	10 mg/L	97.5	75.0	125	----
Cyanides (QCLot: 706507)										
VA22C4926-004	Duplicate 2	thiocyanate	302-04-5	E344	9.80 mg/L	10 mg/L	98.0	75.0	125	----
Organic / Inorganic Carbon (QCLot: 699512)										
VA22C4926-002	661-01	carbon, dissolved organic [DOC]	----	E358-L	5.20 mg/L	5 mg/L	104	70.0	130	----
Organic / Inorganic Carbon (QCLot: 699516)										
VA22C4926-002	661-01	carbon, total organic [TOC]	----	E355-L	4.92 mg/L	5 mg/L	98.4	70.0	130	----
Total Metals (QCLot: 698642)										
VA22C4799-001	Anonymous	aluminum, total	7429-90-5	E420	0.188 mg/L	0.2 mg/L	94.1	70.0	130	----
		antimony, total	7440-36-0	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.7	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	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00886 mg/L	0.01 mg/L	88.6	70.0	130	----
		boron, total	7440-42-8	E420	0.084 mg/L	0.1 mg/L	84.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0179 mg/L	0.02 mg/L	89.5	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	94.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0175 mg/L	0.02 mg/L	87.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0889 mg/L	0.1 mg/L	88.9	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	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.60 mg/L	10 mg/L	96.0	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	9.20 mg/L	10 mg/L	92.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00378 mg/L	0.004 mg/L	94.4	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	----

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: 698642) - continued										
VA22C4799-001	Anonymous	sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00348 mg/L	0.004 mg/L	86.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.357 mg/L	0.4 mg/L	89.2	70.0	130	----
Total Metals (QCLot: 702199)										
VA22C4910-001	Anonymous	mercury, total	7439-97-6	E508	0.0000947 mg/L	0.0001 mg/L	94.7	70.0	130	----
Dissolved Metals (QCLot: 698762)										
FJ2202914-011	Anonymous	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00846 mg/L	0.01 mg/L	84.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0924 mg/L	0.1 mg/L	92.4	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	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.94 mg/L	10 mg/L	99.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.05 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.10 mg/L	10 mg/L	91.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	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: 698762) - continued										
FJ2202914-011	Anonymous	strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00361 mg/L	0.004 mg/L	90.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00373 mg/L	0.004 mg/L	93.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.374 mg/L	0.4 mg/L	93.6	70.0	130	----
Dissolved Metals (QCLot: 701077)										
VA22C4923-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number: 15 -

Page of

Affix ALS barcode label here
(lab use only)

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: A. Springer	Sampler: Avison

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					
					P	P	F/P	P		F		F	P					
	TC-01	13-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-01	13-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	705-10	13-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Duplicate 2	13-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-04	13-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Travel Blank	13-Oct-22		Water	R			R					R					3
	**Special Note - incomplete Travel Blank was supplied by the lab.			Water														
	** Only General, cyanide and SCN were shipped			Water														
	** Metals, TOC, and mercury missing from shipment			Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C4926

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6	3	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 14, 2022	Time:	Received by:	Date:	Time:	Received by: <Original signed b	Date: OCT 15 2022	Time: 10:10am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C5232**	Page	: 1 of 10
Amendment	: **1**		
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 19-Oct-2022 08:50
PO	: 10857	Date Analysis Commenced	: 19-Oct-2022
C-O-C number	: ----	Issue Date	: 11-Jan-2023 10:21
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Workorder Comments

Amended COA(1): Sample Collection Dates have been corrected.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-10	661-20	661-03
					Client sampling date / time	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022
						VA22C5232-001	VA22C5232-002	VA22C5232-003	VA22C5232-004	VA22C5232-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		117	90.5	43.2	71.5	69.1
conductivity	----	E100	2.0	µS/cm		220	181	85.9	138	133
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		111	86.4	37.6	64.9	62.4
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		119	91.7	39.4	70.0	67.1
pH	----	E108	0.10	pH units		8.26	8.18	7.88	8.10	8.08
solids, total dissolved [TDS]	----	E162	10	mg/L		154	115	73	96	93
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		0.75	1.01	0.61	0.47	0.66
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0100	<0.0050	<0.0050	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.066	0.059	0.050	0.058	0.059
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.188	0.148	0.100	0.101	0.073
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0520 HTD	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0011 HTD	0.0011 HTD	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0130	0.0141	0.0159	0.0172	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0223	0.0225	0.0252	0.0239	0.0052
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		6.22	3.84	0.85	1.61	1.08
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		5.52	4.00	3.03	3.24	2.74
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		4.69	4.30	3.14	3.37	2.37
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0111	0.0151	0.0230	0.0163	0.0651
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-10	661-20	661-03
					Client sampling date / time	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022
						VA22C5232-001	VA22C5232-002	VA22C5232-003	VA22C5232-004	VA22C5232-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00084	0.00086	0.00109	0.00104	0.00034
barium, total	7440-39-3	E420	0.00010	mg/L		0.00785	0.00665	0.00487	0.00674	0.00926
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		33.8	25.3	11.2	18.9	18.1
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.189	0.161	0.176	0.149	0.333
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		8.43	6.92	2.78	5.54	5.33
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0253	0.0135	0.00777	0.00708	0.0584
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00107	0.00103	0.000670	0.000950	0.000362
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.055	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		1.12	0.936	0.522	0.776	0.698
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000056	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		7.19	7.46	8.01	7.94	9.65
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		4.89	5.09	3.89	5.11	4.63
strontium, total	7440-24-6	E420	0.00020	mg/L		0.139	0.118	0.0758	0.103	0.101
sulfur, total	7704-34-9	E420	0.50	mg/L		2.25	1.38	<0.50	0.62	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00060 DLM	0.00049	0.00049	0.00044	0.00110
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000226	0.000228	0.000119	0.000271	0.000101
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00053	0.00052	0.00099	0.00070	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-10	661-20	661-03
					Client sampling date / time	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022
						VA22C5232-001	VA22C5232-002	VA22C5232-003	VA22C5232-004	VA22C5232-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0033	0.0062	0.0147	0.0099	0.0079
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00072	0.00088	0.00105	0.00105	0.00024
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00692	0.00645	0.00472	0.00666	0.00823
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000061	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		31.1	23.9	10.8	17.5	16.8
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.120	0.107	0.124	0.109	0.064
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		8.05	6.49	2.58	5.16	4.98
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0161	0.00657	0.00500	0.00431	0.0254
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00109	0.000958	0.000684	0.000962	0.000367
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.09	0.882	0.506	0.773	0.684
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.98	7.18	7.71	7.38	9.01
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.63	4.49	3.45	4.51	4.15
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.122	0.108	0.0716	0.0960	0.0945

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-10	661-20	661-03
					Client sampling date / time	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022	17-Oct-2022
						VA22C5232-001	VA22C5232-002	VA22C5232-003	VA22C5232-004	VA22C5232-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		2.17	1.38	<0.50	<0.50	<0.50
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000196	0.000222	0.000103	0.000258	0.000081
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	0.00050	0.00095	0.00065	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	0.0013	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	----	----	----	----
					Client sampling date / time	17-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5232-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		92.2	----	----	----	----
conductivity	----	E100	2.0	µS/cm		177	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		87.0	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		92.9	----	----	----	----
pH	----	E108	0.10	pH units		8.19	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		120	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU		0.69	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.062	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.142	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0171 HTD	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010 HTD	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0141	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0225	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.66	----	----	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		4.07	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		4.17	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0144	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	----	----	----	----
					Client sampling date / time	17-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5232-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00087	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00688	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		25.8	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.161	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		6.91	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0138	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000978	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.941	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000073	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		7.38	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		5.03	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.120	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.37	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00045	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000238	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00059	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	----	----	----	----
					Client sampling date / time	17-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5232-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0075	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00084	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00636	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		24.1	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00021	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.111	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		6.52	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00655	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000934	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.921	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		7.08	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.54	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.109	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Duplicate 1	----	----	----	----
					Client sampling date / time	17-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5232-006	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.28	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000231	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00051	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

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

ALS Canada Ltd.

right solutions. right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C5232**	Page	: 1 of 27
Amendment	: **1**		
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 19-Oct-2022 08:50
PO	: 10857	Issue Date	: 11-Jan-2023 10:21
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-03	E298	17-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-10	E298	17-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-20	E298	17-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-03	E298	17-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-05	E298	17-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate 1	E298	17-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-03	E235.Br-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-10	E235.Br-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-20	E235.Br-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-03	E235.Br-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-05	E235.Br-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Duplicate 1	E235.Br-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-03	E235.Cl	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-10	E235.Cl	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-20	E235.Cl	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-03	E235.Cl	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-05	E235.Cl	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Duplicate 1	E235.Cl	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-03	E378-U	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-10	E378-U	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-20	E378-U	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-03	E378-U	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-05	E378-U	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Duplicate 1	E378-U	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-03	E235.F	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-10	E235.F	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-20	E235.F	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-03	E235.F	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-05	E235.F	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate 1	E235.F	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-03	E235.NO3-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-10	E235.NO3-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-20	E235.NO3-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-03	E235.NO3-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-05	E235.NO3-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Duplicate 1	E235.NO3-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-03	E235.NO2-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-10	E235.NO2-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-20	E235.NO2-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-03	E235.NO2-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-05	E235.NO2-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Duplicate 1	E235.NO2-L	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-03	E235.SO4	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-10	E235.SO4	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-20	E235.SO4	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-03	E235.SO4	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-05	E235.SO4	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate 1	E235.SO4	17-Oct-2022	20-Oct-2022	----	----		20-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-03	E318	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-10	E318	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-20	E318	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-03	E318	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-05	E318	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Duplicate 1	E318	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-03	E372-U	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-10	E372-U	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-20	E372-U	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-03	E372-U	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-05	E372-U	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Duplicate 1	E372-U	17-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-03	E344	17-Oct-2022	----	----	----		20-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-10	E344	17-Oct-2022	----	----	----		20-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-20	E344	17-Oct-2022	----	----	----		20-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-03	E344	17-Oct-2022	----	----	----		20-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-05	E344	17-Oct-2022	----	----	----		20-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) Duplicate 1	E344	17-Oct-2022	----	----	----		20-Oct-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-03	E333	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E333	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-20	E333	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E333	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-05	E333	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Duplicate 1	E333	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-03	E336	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E336	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-20	E336	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E336	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-05	E336	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	11 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Duplicate 1	E336	17-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-03	E509	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-10	E509	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-20	E509	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-03	E509	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-05	E509	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate 1	E509	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-03	E421	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-10	E421	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-20	E421	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-03	E421	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-05	E421	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate 1	E421	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-03	E358-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-10	E358-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-20	E358-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-03	E358-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-05	E358-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Duplicate 1	E358-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-03	E355-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-10	E355-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-20	E355-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-03	E355-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-05	E355-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate 1	E355-L	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-03	E283	17-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-10	E283	17-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-20	E283	17-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-03	E283	17-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-05	E283	17-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE Duplicate 1	E283	17-Oct-2022	20-Oct-2022	----	----		21-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-03	E290	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-10	E290	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-20	E290	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-03	E290	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-05	E290	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate 1	E290	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	14 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 661-03	E100	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-10	E100	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-20	E100	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-03	E100	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-05	E100	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate 1	E100	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	28 days	6 days	✓
Physical Tests : pH by Meter										
HDPE 661-03	E108	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	0.25 hrs	110 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-10	E108	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	0.25 hrs	110 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-20	E108	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	0.25 hrs	110 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE CC-03	E108	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	0.25 hrs	110 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-05	E108	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	0.25 hrs	110 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate 1	E108	17-Oct-2022	20-Oct-2022	----	----		22-Oct-2022	0.25 hrs	110 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-03	E162	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-10	E162	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-20	E162	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-03	E162	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-05	E162	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Duplicate 1	E162	17-Oct-2022	----	----	----		19-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE 661-03	E160	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-10	E160	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-20	E160	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-03	E160	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-05	E160	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Duplicate 1	E160	17-Oct-2022	----	----	----		19-Oct-2022	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-03	E121	17-Oct-2022	----	----	----		21-Oct-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-10	E121	17-Oct-2022	----	----	----		21-Oct-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-20	E121	17-Oct-2022	----	----	----		21-Oct-2022	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE CC-03	E121	17-Oct-2022	----	----	----		21-Oct-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-05	E121	17-Oct-2022	----	----	----		21-Oct-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Duplicate 1	E121	17-Oct-2022	----	----	----		21-Oct-2022	3 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-03	E508	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-10	E508	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-20	E508	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-03	E508	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-05	E508	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Duplicate 1	E508	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-03	E420	17-Oct-2022	23-Oct-2022	----	----		26-Oct-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-03	E420	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-10	E420	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-20	E420	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-05	E420	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Duplicate 1	E420	17-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	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)							
Acidity by Titration	E283	704847	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	704838	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	704844	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	704840	1	7	14.2	5.0	✓
Conductivity in Water	E100	704837	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	708615	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	705723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704848	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	704843	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704841	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704842	1	16	6.2	5.0	✓
pH by Meter	E108	704836	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	704839	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	704777	1	17	5.8	5.0	✓
Thiocyanate by Colourimetry	E344	706507	1	20	5.0	5.0	✓
Total Cyanide	E333	718270	2	36	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708738	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	706247	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	704776	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	708096	1	20	5.0	5.0	✓
WAD Cyanide	E336	718271	2	12	16.6	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	704847	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	704838	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	704844	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	704840	1	7	14.2	5.0	✓
Conductivity in Water	E100	704837	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	708615	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	705723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704848	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	704843	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704841	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704842	1	16	6.2	5.0	✓
pH by Meter	E108	704836	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	704839	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	704777	1	17	5.8	5.0	✓
Thiocyanate by Colourimetry	E344	706507	1	20	5.0	5.0	✓
Total Cyanide	E333	718270	2	36	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708738	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	706247	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	704776	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	708096	1	20	5.0	5.0	✓
WAD Cyanide	E336	718271	2	12	16.6	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	704847	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	704838	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	704844	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	704840	1	7	14.2	5.0	✓
Conductivity in Water	E100	704837	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	708615	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	705723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704848	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	704843	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704841	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704842	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	704839	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	704777	1	17	5.8	5.0	✓
Thiocyanate by Colourimetry	E344	706507	1	20	5.0	5.0	✓
Total Cyanide	E333	718270	2	36	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708738	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	706247	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	704776	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	708096	1	20	5.0	5.0	✓
WAD Cyanide	E336	718271	2	12	16.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	704844	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	704840	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	708615	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	705723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704848	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	704843	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704841	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704842	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	704839	1	11	9.0	5.0	✓
Thiocyanate by Colourimetry	E344	706507	1	20	5.0	5.0	✓
Total Cyanide	E333	718270	2	36	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708738	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	706247	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
WAD Cyanide	E336	718271	2	12	16.6	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C5232**	Page	: 1 of 22
Amendment	: **1**		
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 19-Oct-2022 08:50
PO	: 10857	Date Analysis Commenced	: 19-Oct-2022
C-O-C number	: ----	Issue Date	: 11-Jan-2023 10:22
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Greg Pokocky	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 704776)											
VA22C5140-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	171	177	3.44%	20%	----
Physical Tests (QC Lot: 704777)											
VA22C5140-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	684	712	4.01%	20%	----
Physical Tests (QC Lot: 704836)											
VA22C5232-002	CC-05	pH	----	E108	0.10	pH units	8.18	8.19	0.122%	4%	----
Physical Tests (QC Lot: 704837)											
VA22C5232-002	CC-05	conductivity	----	E100	2.0	µS/cm	181	180	0.498%	10%	----
Physical Tests (QC Lot: 704838)											
VA22C5232-002	CC-05	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	90.5	91.7	1.32%	20%	----
Physical Tests (QC Lot: 704847)											
VA22C5232-002	CC-05	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 708096)											
VA22C5232-001	CC-03	turbidity	----	E121	0.10	NTU	0.75	0.77	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 704839)											
VA22C5232-001	CC-03	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.22	6.22	0.0653%	20%	----
Anions and Nutrients (QC Lot: 704840)											
VA22C5232-001	CC-03	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 704841)											
VA22C5232-001	CC-03	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0520	0.0524	0.733%	20%	----
Anions and Nutrients (QC Lot: 704842)											
VA22C5232-001	CC-03	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0011	0.0011	0.000009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 704843)											
VA22C5232-001	CC-03	fluoride	16984-48-8	E235.F	0.020	mg/L	0.066	0.065	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 704844)											
VA22C5232-001	CC-03	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 704848)											
VA22C5232-001	CC-03	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0130	0.0128	2.08%	20%	----
Anions and Nutrients (QC Lot: 707722)											
VA22C5232-001	CC-03	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.188	0.182	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707725)											

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*
Anions and Nutrients (QC Lot: 707725) - continued											
VA22C5232-001	CC-03	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0223	0.0223	0.269%	20%	----
Anions and Nutrients (QC Lot: 707726)											
VA22C5232-001	CC-03	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0100	0.0098	0.0002	Diff <2x LOR	----
Cyanides (QC Lot: 706507)											
VA22C4926-003	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 718270)											
VA22C5232-001	CC-03	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718271)											
VA22C5232-001	CC-03	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718302)											
VA22C5232-005	661-03	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718303)											
VA22C5232-005	661-03	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 707723)											
VA22C5232-001	CC-03	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.52	4.72	15.5%	20%	----
Organic / Inorganic Carbon (QC Lot: 707724)											
VA22C5232-001	CC-03	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.69	4.64	0.05	Diff <2x LOR	----
Total Metals (QC Lot: 706247)											
KS2203990-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0202	0.0192	0.0010	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	0.00013	0.000003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00057	0.00057	0.000002	Diff <2x LOR	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	11.7	11.9	1.35%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.00257	0.00235	0.00023	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.025	0.026	0.0002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000075	0.000075	0.0000004	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	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: 706247) - continued											
KS2203990-001	Anonymous	magnesium, total	7439-95-4	E420	0.0050	mg/L	1.98	1.97	0.737%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00145	0.00146	0.680%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000563	0.000552	2.04%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.884	0.880	0.409%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000099	0.000072	0.000027	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.28	2.26	0.841%	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	6.50	6.39	1.80%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0605	0.0588	2.86%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	2.42	2.50	0.08	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00087	0.00092	0.00005	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000245	0.000255	4.01%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0069	0.0068	0.00004	Diff <2x LOR	----
Total Metals (QC Lot: 706252)											
FJ2202958-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0639	0.0686	7.18%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00024	0.00023	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0322	0.0326	1.35%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000140	0.0000186	0.0000045	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	26.5	27.8	4.60%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.00074	0.00074	0.000001	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.084	0.095	0.010	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	0.0010	0.0011	0.00002	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: 706252) - continued											
FJ2202958-001	Anonymous	magnesium, total	7439-95-4	E420	0.100	mg/L	6.01	6.07	1.08%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00307	0.00307	0.0225%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000804	0.000755	6.30%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00084	0.00078	0.00006	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.443	0.437	0.006	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000338	0.000246	0.000092	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.12	2.15	1.86%	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	1.13	1.12	1.14%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.109	0.107	1.62%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	4.65	4.16	0.49	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00130	0.00165	0.00035	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000409	0.000418	2.22%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00050	0.00051	0.000004	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 708738)											
FJ2202958-008	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 705723)											
KS2203990-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0092	0.0090	0.0002	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	0.00012	0.00011	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00052	0.00052	0.000002	Diff <2x LOR	----
		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	12.2	12.4	1.75%	20%	----
		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	0.00212	0.00207	2.28%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.011	0.011	0.0002	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: 705723) - continued											
KS2203990-001	Anonymous	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	2.01	1.96	2.26%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00098	0.00102	4.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000544	0.000583	6.75%	20%	----
		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	0.857	0.834	2.79%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000065	0.000079	0.000014	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.32	2.29	1.25%	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	4.43	4.40	0.721%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0618	0.0612	0.879%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.60	2.68	0.08	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000264	0.000258	2.28%	20%	----
		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	0.0044	0.0042	0.0002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 708615)											
FJ2202958-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 708616)											
VA22C5232-006	Duplicate 1	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 704776)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 704777)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 704837)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 704838)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 704847)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 708096)						
turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 704839)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 704840)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 704841)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 704842)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 704843)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 704844)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 704848)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 707722)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 707725)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 707726)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 706507)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 706507) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 718270)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718271)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718302)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718303)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 707723)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 707724)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 706247)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 706247) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 706252)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 706252) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 708738)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 705723)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 705723) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 708615)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 708616)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 704776)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.3	85.0	115	----
Physical Tests (QCLot: 704777)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	103	85.0	115	----
Physical Tests (QCLot: 704836)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 704837)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	95.2	90.0	110	----
Physical Tests (QCLot: 704838)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Physical Tests (QCLot: 704847)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	109	85.0	115	----
Physical Tests (QCLot: 708096)									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
Anions and Nutrients (QCLot: 704839)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 704840)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 704841)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 704842)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 704843)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.6	90.0	110	----
Anions and Nutrients (QCLot: 704844)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.7	85.0	115	----
Anions and Nutrients (QCLot: 704848)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.0	80.0	120	----
Anions and Nutrients (QCLot: 707722)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 707725)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	91.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Anions and Nutrients (QCLot: 707726)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
Cyanides (QCLot: 706507)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.4	85.0	115	----
Cyanides (QCLot: 718270)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.3	80.0	120	----
Cyanides (QCLot: 718271)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	104	80.0	120	----
Cyanides (QCLot: 718302)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.0	80.0	120	----
Cyanides (QCLot: 718303)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 707723)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 707724)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Total Metals (QCLot: 706247)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	114	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	119	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	114	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	87.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	114	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 706247) - continued									
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.7	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	113	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Total Metals (QCLot: 706252)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	114	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	90.9	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	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	99.5	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 706252) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.2	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	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	96.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
Total Metals (QCLot: 708738)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
Dissolved Metals (QCLot: 705723)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	96.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 705723) - continued									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	92.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.1	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.1	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	86.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	105	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: 704839)										
VA22C5232-002	CC-05	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 704840)										
VA22C5232-002	CC-05	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 704841)										
VA22C5232-002	CC-05	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 704842)										
VA22C5232-002	CC-05	nitrite (as N)	14797-65-0	E235.NO2-L	0.506 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 704843)										
VA22C5232-002	CC-05	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 704844)										
VA22C5232-002	CC-05	bromide	24959-67-9	E235.Br-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 704848)										
VA22C5232-002	CC-05	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0249 mg/L	0.03 mg/L	82.9	70.0	130	----
Anions and Nutrients (QCLot: 707722)										
VA22C5232-002	CC-05	Kjeldahl nitrogen, total [TKN]	----	E318	2.71 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 707725)										
VA22C5232-002	CC-05	phosphorus, total	7723-14-0	E372-U	0.0473 mg/L	0.05 mg/L	94.5	70.0	130	----
Anions and Nutrients (QCLot: 707726)										
VA22C5232-002	CC-05	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
Cyanides (QCLot: 706507)										
VA22C4926-004	Anonymous	thiocyanate	302-04-5	E344	9.80 mg/L	10 mg/L	98.0	75.0	125	----
Cyanides (QCLot: 718270)										
VA22C5232-001	CC-03	cyanide, strong acid dissociable (total)	----	E333	0.234 mg/L	0.25 mg/L	93.4	75.0	125	----
Cyanides (QCLot: 718271)										
VA22C5232-001	CC-03	cyanide, weak acid dissociable	----	E336	0.136 mg/L	0.125 mg/L	109	75.0	125	----
Cyanides (QCLot: 718302)										
VA22C5232-005	661-03	cyanide, strong acid dissociable (total)	----	E333	0.226 mg/L	0.25 mg/L	90.6	75.0	125	----

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
Cyanides (QCLot: 718303)										
VA22C5232-005	661-03	cyanide, weak acid dissociable	----	E336	0.136 mg/L	0.125 mg/L	109	75.0	125	----
Organic / Inorganic Carbon (QCLot: 707723)										
VA22C5232-002	CC-05	carbon, dissolved organic [DOC]	----	E358-L	4.61 mg/L	5 mg/L	92.2	70.0	130	----
Organic / Inorganic Carbon (QCLot: 707724)										
VA22C5232-002	CC-05	carbon, total organic [TOC]	----	E355-L	4.87 mg/L	5 mg/L	97.4	70.0	130	----
Total Metals (QCLot: 706247)										
KS2203992-001	Anonymous	aluminum, total	7429-90-5	E420	0.404 mg/L	0.4 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		barium, total	7440-39-3	E420	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0794 mg/L	0.08 mg/L	99.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0175 mg/L	0.02 mg/L	87.3	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00778 mg/L	0.008 mg/L	97.3	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0785 mg/L	0.08 mg/L	98.1	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		iron, total	7439-89-6	E420	3.89 mg/L	4 mg/L	97.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.190 mg/L	0.2 mg/L	95.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0745 mg/L	0.08 mg/L	93.2	70.0	130	----
		phosphorus, total	7723-14-0	E420	21.6 mg/L	20 mg/L	108	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0784 mg/L	0.08 mg/L	98.0	70.0	130	----
		silicon, total	7440-21-3	E420	19.7 mg/L	20 mg/L	98.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00792 mg/L	0.008 mg/L	99.0	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00680 mg/L	0.008 mg/L	84.9	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: 706247) - continued										
KS2203992-001	Anonymous	tin, total	7440-31-5	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0822 mg/L	0.08 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	0.00748 mg/L	0.008 mg/L	93.4	70.0	130	----
		vanadium, total	7440-62-2	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.765 mg/L	0.8 mg/L	95.6	70.0	130	----
Total Metals (QCLot: 706252)										
FJ2202958-002	Anonymous	aluminum, total	7429-90-5	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.4	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	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00886 mg/L	0.01 mg/L	88.6	70.0	130	----
		boron, total	7440-42-8	E420	0.090 mg/L	0.1 mg/L	90.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		iron, total	7439-89-6	E420	2.11 mg/L	2 mg/L	105	70.0	130	----
		lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0920 mg/L	0.1 mg/L	92.0	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	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		nickel, total	7440-02-0	E420	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	3.89 mg/L	4 mg/L	97.3	70.0	130	----
		selenium, total	7782-49-2	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, total	7440-21-3	E420	9.67 mg/L	10 mg/L	96.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	7440-23-5	E420	2.13 mg/L	2 mg/L	107	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	21.0 mg/L	20 mg/L	105	70.0	130	----
		thallium, total	7440-28-0	E420	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.7	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: 706252) - continued										
FJ2202958-002	Anonymous	titanium, total	7440-32-6	E420	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.400 mg/L	0.4 mg/L	100	70.0	130	----
Total Metals (QCLot: 708738)										
VA22C5174-001	Anonymous	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 705723)										
KS2203992-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.383 mg/L	0.4 mg/L	95.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0775 mg/L	0.08 mg/L	96.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00766 mg/L	0.008 mg/L	95.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0366 mg/L	0.04 mg/L	91.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.72 mg/L	4 mg/L	93.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.182 mg/L	0.2 mg/L	91.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0751 mg/L	0.08 mg/L	93.9	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	19.5 mg/L	20 mg/L	97.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0767 mg/L	0.08 mg/L	95.9	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.0 mg/L	20 mg/L	95.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00772 mg/L	0.008 mg/L	96.5	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00757 mg/L	0.008 mg/L	94.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 705723) - continued										
KS2203992-001	Anonymous	tin, dissolved	7440-31-5	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0770 mg/L	0.08 mg/L	96.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00797 mg/L	0.008 mg/L	99.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.728 mg/L	0.8 mg/L	91.0	70.0	130	----
Dissolved Metals (QCLot: 708615)										
FJ2202958-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 708616)										
VA22C5240-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

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

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

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

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

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

Project Information

ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only)

ALS Contact: A. Springer Sampler: Avison

Analysis Request

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

ALS Sample # (lab use only)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	P	F/P	P		F		F	P					
	CC-03	17-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-05	17-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-10	17-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-20	17-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-03	17-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Duplicate 1	17-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C5232

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					3C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 18, 2022	Time:	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 10/19/22	Time: 8:50

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT C...

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C5353**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 20-Oct-2022 09:00
PO	: 10857	Date Analysis Commenced	: 21-Oct-2022
C-O-C number	: ----	Issue Date	: 31-Oct-2022 08:58
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anshim Anshim	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Qammar Almas	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 Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	CC-30	CC-40
					Client sampling date / time	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022
						VA22C5353-001	VA22C5353-002	VA22C5353-003	VA22C5353-004	VA22C5353-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		69.2	69.3	70.8	80.6	86.3
conductivity	----	E100	2.0	µS/cm		137	139	142	156	168
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		66.9	67.9	66.9	78.3	83.1
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		67.8	67.0	69.2	79.0	84.5
pH	----	E108	0.10	pH units		8.09	8.10	8.08	8.16	8.23
solids, total dissolved [TDS]	----	E162	10	mg/L		95	88	94	134	115
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	3.9	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		1.38	1.84	1.14	1.94	1.44
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0068	0.0093	0.0146	0.0093	0.0099
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.054	0.050	0.053	0.056	0.062
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.797	0.312	0.326	0.280	0.244
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0066	0.0082	<0.0050	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	0.0014	0.0013	0.0034	0.0056
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0353	0.0170	0.0157	0.0195	0.0158
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.95	2.83	2.71	2.69	3.16
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.97	7.97	7.68	7.32	7.03
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.4	8.37	8.02	7.53	6.96
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0100	0.0375	0.0215	0.0164	0.0150
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	CC-30	CC-40
					Client sampling date / time	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022
						VA22C5353-001	VA22C5353-002	VA22C5353-003	VA22C5353-004	VA22C5353-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00054	0.00063	0.00065	0.00069	0.00082
barium, total	7440-39-3	E420	0.00010	mg/L		0.00631	0.00760	0.00739	0.00842	0.00842
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		19.4	19.2	19.8	22.5	23.8
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.024	0.162	0.153	0.284	0.306
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		4.69	4.63	4.79	5.54	6.08
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00734	0.0191	0.0246	0.0270	0.0300
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000589	0.000693	0.000682	0.000993	0.00106
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.826	0.811	0.804	0.967	1.02
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000074	0.000074	<0.000050	0.000050	0.000072
silicon, total	7440-21-3	E420	0.10	mg/L		3.25	4.40	4.54	4.78	5.08
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		3.50	3.66	3.76	4.87	5.20
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0996	0.105	0.107	0.119	0.125
sulfur, total	7704-34-9	E420	0.50	mg/L		0.97	1.00	0.96	0.85	1.17
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00144	0.00095	0.00078	<0.00090 DLM
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000093	0.000120	0.000121	0.000162	0.000201
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	0.00058	0.00057	0.00058	0.00058

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-10	CC-15	CC-20	CC-30	CC-40
					Client sampling date / time	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022
Analyte	CAS Number	Method	LOR	Unit		VA22C5353-001	VA22C5353-002	VA22C5353-003	VA22C5353-004	VA22C5353-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0015	0.0056	0.0041	0.0028	0.0023
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00053	0.00060	0.00056	0.00066	0.00079
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00597	0.00732	0.00725	0.00837	0.00846
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		19.2	19.6	19.0	22.3	23.5
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00033	0.00037	0.00037	0.00034	0.00033
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.014	0.119	0.114	0.209	0.225
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.60	4.60	4.73	5.50	5.93
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00446	0.0158	0.0199	0.0199	0.0205
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000557	0.000711	0.000719	0.000997	0.00101
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.759	0.803	0.782	0.937	0.965
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000051	0.000060	0.000072	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.13	4.20	4.32	4.64	4.78
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.41	3.61	3.53	4.51	4.69
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0967	0.102	0.102	0.112	0.120

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	CC-30	CC-40
					Client sampling date / time	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022	18-Oct-2022
						VA22C5353-001	VA22C5353-002	VA22C5353-003	VA22C5353-004	VA22C5353-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.18	1.22	1.33	1.18	1.43
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000088	0.000114	0.000112	0.000160	0.000187
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	DC-20	----	----	----	----
				Client sampling date / time	18-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C5353-006	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	65.0	----	----	----	----
conductivity	----	E100	2.0	µS/cm	126	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	57.9	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	60.7	----	----	----	----
pH	----	E108	0.10	pH units	8.10	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	86	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU	0.80	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.046	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.068	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0053	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0097	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.93	----	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	----	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.88	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.16	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0238	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-20	----	----	----	----
					Client sampling date / time	18-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5353-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00064	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00984	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		17.1	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.264	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.37	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0209	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000901	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.677	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.86	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		4.23	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.113	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00085	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000248	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00062	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-20	----	----	----	----
					Client sampling date / time	18-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5353-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0210	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00062	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0101	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		16.6	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.254	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		3.99	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0194	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000841	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.647	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.58	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.96	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.106	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-20	----	----	----	----
					Client sampling date / time	18-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5353-006	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.85	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000239	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00053	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C5353**	Page	: 1 of 27
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 20-Oct-2022 09:00
PO	: 10857	Issue Date	: 31-Oct-2022 08:58
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-10	E298	18-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-15	E298	18-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-20	E298	18-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-30	E298	18-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-40	E298	18-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-20	E298	18-Oct-2022	21-Oct-2022	----	----		26-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-10	E235.Br-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-15	E235.Br-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-20	E235.Br-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-30	E235.Br-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-40	E235.Br-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-20	E235.Br-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-10	E235.Cl	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-15	E235.Cl	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-20	E235.Cl	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-30	E235.Cl	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-40	E235.Cl	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-20	E235.Cl	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-10	E378-U	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-15	E378-U	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-20	E378-U	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-30	E378-U	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-40	E378-U	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-20	E378-U	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	4 days	× EHT

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-10	E235.F	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-15	E235.F	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-20	E235.F	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-30	E235.F	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-40	E235.F	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-20	E235.F	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-10	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-15	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-20	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-30	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-40	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-20	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-10	E235.NO2-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-15	E235.NO2-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-20	E235.NO2-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-30	E235.NO2-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-40	E235.NO2-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-20	E235.NO2-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-10	E235.SO4	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-15	E235.SO4	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-20	E235.SO4	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-30	E235.SO4	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-40	E235.SO4	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-20	E235.SO4	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-10	E318	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-15	E318	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-20	E318	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-30	E318	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-40	E318	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-20	E318	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-10	E372-U	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-15	E372-U	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-20	E372-U	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-30	E372-U	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-40	E372-U	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-20	E372-U	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-10	E344	18-Oct-2022	----	----	----		23-Oct-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-15	E344	18-Oct-2022	----	----	----		23-Oct-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-20	E344	18-Oct-2022	----	----	----		23-Oct-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-30	E344	18-Oct-2022	----	----	----		23-Oct-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-40	E344	18-Oct-2022	----	----	----		23-Oct-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-20	E344	18-Oct-2022	----	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-10	E333	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-15	E333	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-20	E333	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E333	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E333	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-20	E333	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-10	E336	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-15	E336	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-20	E336	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E336	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E336	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-20	E336	18-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-10	E509	18-Oct-2022	22-Oct-2022	----	----		22-Oct-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-15	E509	18-Oct-2022	22-Oct-2022	----	----		22-Oct-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-20	E509	18-Oct-2022	22-Oct-2022	----	----		22-Oct-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-30	E509	18-Oct-2022	22-Oct-2022	----	----		22-Oct-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-40	E509	18-Oct-2022	22-Oct-2022	----	----		22-Oct-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
DC-20	E509	18-Oct-2022	22-Oct-2022	----	----		22-Oct-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-10	E421	18-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-15	E421	18-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-20	E421	18-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	180 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-30	E421	18-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-40	E421	18-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-20	E421	18-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	180 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-10	E358-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-15	E358-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-20	E358-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-30	E358-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-40	E358-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-20	E358-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-10	E355-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-15	E355-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-20	E355-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-30	E355-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-40	E355-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-20	E355-L	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-10	E283	18-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-15	E283	18-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-20	E283	18-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-30	E283	18-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-40	E283	18-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-20	E283	18-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-10	E290	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-15	E290	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-20	E290	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-30	E290	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-40	E290	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-20	E290	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE CC-10	E100	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-15	E100	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-20	E100	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-30	E100	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-40	E100	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-20	E100	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE CC-10	E108	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	0.25 hrs	57.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-15	E108	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	0.25 hrs	57.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-20	E108	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	0.25 hrs	57.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE CC-30	E108	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	0.25 hrs	57.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-40	E108	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	0.25 hrs	57.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-20	E108	18-Oct-2022	21-Oct-2022	----	----		23-Oct-2022	0.25 hrs	57.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE CC-10	E162	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-15	E162	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-20	E162	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-30	E162	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-40	E162	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-20	E162	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE CC-10	E160	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-15	E160	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-20	E160	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-30	E160	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-40	E160	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-20	E160	18-Oct-2022	----	----	----		24-Oct-2022	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-10	E121	18-Oct-2022	----	----	----		21-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-15	E121	18-Oct-2022	----	----	----		21-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-20	E121	18-Oct-2022	----	----	----		21-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE CC-30	E121	18-Oct-2022	----	----	----		21-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-40	E121	18-Oct-2022	----	----	----		21-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-20	E121	18-Oct-2022	----	----	----		21-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-10	E508	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-15	E508	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-20	E508	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-30	E508	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-40	E508	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-20	E508	18-Oct-2022	21-Oct-2022	----	----		21-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-10	E420	18-Oct-2022	25-Oct-2022	----	----		27-Oct-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-15	E420	18-Oct-2022	25-Oct-2022	----	----		27-Oct-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-20	E420	18-Oct-2022	25-Oct-2022	----	----		27-Oct-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-30	E420	18-Oct-2022	25-Oct-2022	----	----		27-Oct-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-40	E420	18-Oct-2022	25-Oct-2022	----	----		27-Oct-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-20	E420	18-Oct-2022	25-Oct-2022	----	----		27-Oct-2022	180 days	9 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	707224	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	707222	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	707227	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	707226	1	6	16.6	5.0	✓
Conductivity in Water	E100	707223	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	709165	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	709986	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	707231	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	707225	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	707228	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	707229	1	6	16.6	5.0	✓
pH by Meter	E108	707221	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	707230	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	711252	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	710246	2	40	5.0	5.0	✓
Total Cyanide	E333	718484	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708703	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	711775	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	711246	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	707728	1	20	5.0	5.0	✓
WAD Cyanide	E336	718485	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	707224	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	707222	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	707227	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	707226	1	6	16.6	5.0	✓
Conductivity in Water	E100	707223	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	709165	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	709986	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	707231	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	707225	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	707228	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	707229	1	6	16.6	5.0	✓
pH by Meter	E108	707221	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	707230	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	711252	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	710246	2	40	5.0	5.0	✓
Total Cyanide	E333	718484	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708703	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	711775	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	711246	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	707728	1	20	5.0	5.0	✓
WAD Cyanide	E336	718485	1	18	5.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	707224	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	707222	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	707227	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	707226	1	6	16.6	5.0	✓
Conductivity in Water	E100	707223	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	709165	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	709986	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	707231	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	707225	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	707228	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	707229	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	707230	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	711252	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	710246	2	40	5.0	5.0	✓
Total Cyanide	E333	718484	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708703	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	711775	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	711246	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	707728	1	20	5.0	5.0	✓
WAD Cyanide	E336	718485	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	707726	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	707227	1	6	16.6	5.0	✓
Chloride in Water by IC	E235.Cl	707226	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	709165	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	709986	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	707723	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	707231	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	707225	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	707228	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	707229	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	707230	1	6	16.6	5.0	✓
Thiocyanate by Colourimetry	E344	710246	2	40	5.0	5.0	✓
Total Cyanide	E333	718484	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	707722	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	708703	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	711775	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	707724	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	707725	1	19	5.2	5.0	✓
WAD Cyanide	E336	718485	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C5353**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 20-Oct-2022 09:00
PO	: 10857	Date Analysis Commenced	: 21-Oct-2022
C-O-C number	: ----	Issue Date	: 31-Oct-2022 08:58
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Anshim Anshim	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 707221)											
VA22C5353-003	CC-20	pH	----	E108	0.10	pH units	8.08	8.09	0.148%	4%	----
Physical Tests (QC Lot: 707222)											
VA22C5353-003	CC-20	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	70.8	70.7	0.141%	20%	----
Physical Tests (QC Lot: 707223)											
VA22C5353-003	CC-20	conductivity	----	E100	2.0	µS/cm	142	140	1.13%	10%	----
Physical Tests (QC Lot: 707224)											
VA22C5353-002	CC-15	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 707728)											
VA22C5353-001	CC-10	turbidity	----	E121	0.10	NTU	1.38	1.50	7.64%	15%	----
Physical Tests (QC Lot: 711246)											
FJ2203004-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 711252)											
FJ2203004-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	820	798	2.78%	20%	----
Anions and Nutrients (QC Lot: 707225)											
VA22C5353-001	CC-10	fluoride	16984-48-8	E235.F	0.020	mg/L	0.054	0.051	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707226)											
VA22C5353-001	CC-10	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707227)											
VA22C5353-001	CC-10	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707228)											
VA22C5353-001	CC-10	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0066	<0.0050	0.0016	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707229)											
VA22C5353-001	CC-10	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707230)											
VA22C5353-001	CC-10	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.95	2.92	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707231)											
VA22C5353-001	CC-10	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707722)											
VA22C5232-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.188	0.182	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 707725)											

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*
Anions and Nutrients (QC Lot: 707725) - continued											
VA22C5232-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0223	0.0223	0.269%	20%	----
Anions and Nutrients (QC Lot: 707726)											
VA22C5232-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0100	0.0098	0.0002	Diff <2x LOR	----
Cyanides (QC Lot: 710246)											
VA22C5353-001	CC-10	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 718484)											
VA22C5337-008	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718485)											
VA22C5337-008	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718698)											
VA22C5353-006	DC-20	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 707723)											
VA22C5232-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.52	4.72	15.5%	20%	----
Organic / Inorganic Carbon (QC Lot: 707724)											
VA22C5232-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.69	4.64	0.05	Diff <2x LOR	----
Total Metals (QC Lot: 708703)											
FJ2202936-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 711775)											
VA22C5353-001	CC-10	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0100	0.0085	0.0015	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00054	0.00056	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00631	0.00627	0.528%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	19.4	19.4	0.0562%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.024	0.024	0.0003	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	<0.0010	<0.0010	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: 711775) - continued											
VA22C5353-001	CC-10	magnesium, total	7439-95-4	E420	0.100	mg/L	4.69	4.75	1.38%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00734	0.00727	0.847%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000589	0.000596	1.23%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.826	0.824	0.002	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000074	<0.000050	0.000024	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.25	3.25	0.0300%	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	3.50	3.53	0.994%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0996	0.101	1.15%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.97	0.92	0.06	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	0.00033	0.00003	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000093	0.000096	0.000003	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 709165)											
VA22C5353-001	CC-10	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 709986)											
VA22C5290-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0020	0.0022	0.0002	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	0.00226	0.00225	0.227%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0599	0.0614	2.55%	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	0.033	0.034	0.001	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	41.6	42.3	1.64%	20%	----
		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	0.00012	0.00011	0.000004	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	0.202	0.203	0.385%	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*
Dissolved Metals (QC Lot: 709986) - continued											
VA22C5290-001	Anonymous	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	0.0015	0.0015	0.00002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	16.2	16.3	0.968%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.182	0.181	0.216%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0202	0.0202	0.311%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00051	0.000006	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	0.100	mg/L	1.62	1.64	1.45%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.55	4.58	0.777%	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	23.2	23.1	0.319%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.481	0.485	0.893%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.9	12.6	2.84%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00173	0.00171	1.63%	20%	----
		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	0.0011	0.0010	0.00008	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: 707222)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.0	----
Physical Tests (QCLot: 707223)						
conductivity	----	E100	1	µS/cm	1.4	----
Physical Tests (QCLot: 707224)						
acidity (as CaCO3)	----	E283	2	mg/L	2.2	----
Physical Tests (QCLot: 707728)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 711246)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 711252)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 707225)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 707226)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 707227)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 707228)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 707229)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 707230)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 707231)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 707722)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 707725)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 707726)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 710246)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 710246) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 718484)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718485)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718698)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 707723)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 707724)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 708703)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 711775)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 711775) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 709165)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 709986)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	MBRR
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	MBRR
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 709986) - continued						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Qualifiers

Qualifier	Description
MBRR	*Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible*

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 707221)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 707222)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
Physical Tests (QCLot: 707223)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 707224)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	95.7	85.0	115	----
Physical Tests (QCLot: 707728)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 711246)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	99.8	85.0	115	----
Physical Tests (QCLot: 711252)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.9	85.0	115	----
Anions and Nutrients (QCLot: 707225)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.5	90.0	110	----
Anions and Nutrients (QCLot: 707226)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.9	90.0	110	----
Anions and Nutrients (QCLot: 707227)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.6	85.0	115	----
Anions and Nutrients (QCLot: 707228)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 707229)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	94.2	90.0	110	----
Anions and Nutrients (QCLot: 707230)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 707231)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 707722)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 707725)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	91.8	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 707726)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
Cyanides (QCLot: 710246)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.0	85.0	115	----
Cyanides (QCLot: 718484)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	95.8	80.0	120	----
Cyanides (QCLot: 718485)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.7	80.0	120	----
Cyanides (QCLot: 718698)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.4	85.0	115	----
Organic / Inorganic Carbon (QCLot: 707723)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 707724)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Total Metals (QCLot: 708703)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	106	80.0	120	----
Total Metals (QCLot: 711775)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
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	92.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.4	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 711775) - continued									
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	82.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	105	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
Dissolved Metals (QCLot: 709986)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	86.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.8	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	113	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	91.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 709986) - continued									
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	100.0	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	93.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.5	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	92.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	100	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.6	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: 707225)										
VA22C5353-002	CC-15	fluoride	16984-48-8	E235.F	0.922 mg/L	1 mg/L	92.2	75.0	125	----
Anions and Nutrients (QCLot: 707226)										
VA22C5353-002	CC-15	chloride	16887-00-6	E235.Cl	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 707227)										
VA22C5353-002	CC-15	bromide	24959-67-9	E235.Br-L	0.476 mg/L	0.5 mg/L	95.2	75.0	125	----
Anions and Nutrients (QCLot: 707228)										
VA22C5353-002	CC-15	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 707229)										
VA22C5353-002	CC-15	nitrite (as N)	14797-65-0	E235.NO2-L	0.410 mg/L	0.5 mg/L	81.9	75.0	125	----
Anions and Nutrients (QCLot: 707230)										
VA22C5353-002	CC-15	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 707231)										
VA22C5353-002	CC-15	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0311 mg/L	0.03 mg/L	104	70.0	130	----
Anions and Nutrients (QCLot: 707722)										
VA22C5232-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.71 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 707725)										
VA22C5232-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0473 mg/L	0.05 mg/L	94.5	70.0	130	----
Anions and Nutrients (QCLot: 707726)										
VA22C5232-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
Cyanides (QCLot: 710246)										
VA22C5353-002	CC-15	thiocyanate	302-04-5	E344	11.0 mg/L	10 mg/L	110	75.0	125	----
Cyanides (QCLot: 718484)										
VA22C5337-009	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.209 mg/L	0.25 mg/L	83.5	75.0	125	----
Cyanides (QCLot: 718485)										
VA22C5337-009	Anonymous	cyanide, weak acid dissociable	----	E336	0.120 mg/L	0.125 mg/L	96.1	75.0	125	----
Cyanides (QCLot: 718698)										
VA22C5381-004	Anonymous	thiocyanate	302-04-5	E344	8.94 mg/L	10 mg/L	89.4	75.0	125	----

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
Organic / Inorganic Carbon (QCLot: 707723)										
VA22C5232-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.61 mg/L	5 mg/L	92.2	70.0	130	----
Organic / Inorganic Carbon (QCLot: 707724)										
VA22C5232-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.87 mg/L	5 mg/L	97.4	70.0	130	----
Total Metals (QCLot: 708703)										
FJ2202936-002	Anonymous	mercury, total	7439-97-6	E508	0.0000985 mg/L	0.0001 mg/L	98.5	70.0	130	----
Total Metals (QCLot: 711775)										
VA22C5353-002	CC-15	aluminum, total	7429-90-5	E420	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00989 mg/L	0.01 mg/L	98.9	70.0	130	----
		boron, total	7440-42-8	E420	0.091 mg/L	0.1 mg/L	90.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 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	----
		chromium, total	7440-47-3	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		copper, total	7440-50-8	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.0993 mg/L	0.1 mg/L	99.3	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	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.6 mg/L	10 mg/L	116	70.0	130	----
		potassium, total	7440-09-7	E420	4.10 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.57 mg/L	10 mg/L	95.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00423 mg/L	0.004 mg/L	106	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	20.7 mg/L	20 mg/L	103	70.0	130	----
		thallium, total	7440-28-0	E420	0.00396 mg/L	0.004 mg/L	99.0	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: 711775) - continued										
VA22C5353-002	CC-15	tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.419 mg/L	0.4 mg/L	105	70.0	130	----
Dissolved Metals (QCLot: 709165)										
VA22C5353-002	CC-15	mercury, dissolved	7439-97-6	E509	0.0000972 mg/L	0.0001 mg/L	97.2	70.0	130	----
Dissolved Metals (QCLot: 709986)										
VA22C5290-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00956 mg/L	0.01 mg/L	95.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	95.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.99 mg/L	2 mg/L	99.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.00 mg/L	4 mg/L	99.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.19 mg/L	10 mg/L	91.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.9 mg/L	20 mg/L	105	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: 709986) - continued										
VA22C5290-002	Anonymous	thallium, dissolved	7440-28-0	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

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COC Number: 15 -

Affix ALS barcode label here
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Environmental Division Vancouver
Work Order Reference
VA22C5353

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

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Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM

Regular [R] ☑ Standard TAT if received by 3 p

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Busi
	3 day [P3] ☐		Same
	2 day [P2] ☐		Statu

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level sele

Analysis Reque

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

Project Information	
ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	
Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Lab Work Order # (lab use only)	
ALS Contact: A. Springer	**Sampler:** Avison

					P	P	F/P	P		F		F	P					
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
	CC-10	18-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-15	18-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-20	18-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-30	18-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-40	18-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-20	18-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					8C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	<Original signed by>	Date: 10/20/22	Time: 9 AM

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

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C5623**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 22-Oct-2022 11:15
PO	: 10857	Date Analysis Commenced	: 24-Oct-2022
C-O-C number	: ----	Issue Date	: 04-Nov-2022 07:04
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Ann Joby	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLB	*Detection Limit Raised. Analyte detected at comparable level in Method Blank.*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-05	705-10	Field Blank
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5623-001	VA22C5623-002	VA22C5623-003	VA22C5623-004	VA22C5623-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.3	2.1	2.2	2.4	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		18.9	35.5	26.1	40.2	<1.0
conductivity	----	E100	2.0	µS/cm		42.7	78.0	58.9	89.5	<2.0
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		17.5	33.4	24.7	39.5	<0.60
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		18.5	34.7	26.9	42.9	<0.60
pH	----	E108	0.10	pH units		7.51	7.83	7.63	7.81	5.50
solids, total dissolved [TDS]	----	E162	10	mg/L		41	66	51	68	<10
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		0.24	0.30	0.80	0.17	<0.10
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.030	0.047	0.025	0.030	<0.020
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.097	0.077	0.127	0.121	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0208	<0.0050	<0.0050	0.0644	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	0.0117	0.0020	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0050	0.0156	0.0072	0.0028	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.36	0.99	0.48	1.61	<0.30
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		3.24	2.90	6.96 RRV	4.71	<0.50
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		3.51	3.05	5.13 RRV	4.65	<0.50
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.157	0.0310	0.0434	0.0213	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-05	705-10	Field Blank
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5623-001	VA22C5623-002	VA22C5623-003	VA22C5623-004	VA22C5623-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00099	0.00133	0.00039	0.00020	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L		0.00581	0.00454	0.00739	0.0113	<0.00010
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000127	0.0000148	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		5.16	9.79	8.38	13.0	<0.050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00028	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.469	0.060	0.430	0.023	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		1.36	2.50	1.46	2.53	<0.100
manganese, total	7439-96-5	E420	0.00010	mg/L		0.247	0.00686	0.0188	0.00187	<0.00010
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000298	0.000733	0.000764	0.000531	<0.000050
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.398	0.602	0.392	0.399	<0.100
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		5.86	8.42	4.29	4.88	<0.10
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		2.29	3.64	2.53	2.85	<0.050
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0393	0.0641	0.0624	0.0790	<0.00020
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	0.71	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00229	0.00048	0.00107	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000050	0.000065	0.000105	0.000120	<0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00063	0.00067	0.00054	<0.00050	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-05	705-10	Field Blank
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5623-001	VA22C5623-002	VA22C5623-003	VA22C5623-004	VA22C5623-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0045	0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	0.00058	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0290	0.0228	0.0193	0.0160	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00040	0.00113	0.00026	0.00015	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00307	0.00412	0.00650	0.0120	<0.00010
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000151	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.80	9.28	7.64	11.8	<0.050
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	0.00022	0.00037	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.049	0.040	0.287	0.018	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		1.33	2.48	1.37	2.44	<0.100
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0268	0.00522	0.0102	0.00135	<0.00010
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000258	0.000696	0.000699	0.000514	<0.000050
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.366	0.589	0.286	0.360	<0.100
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.53	8.19	3.89	4.78	<0.050
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	0.000015	0.000015	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.35	3.75	2.36	2.58	<0.050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0404	0.0686	0.0591	0.0802	<0.00020

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-05	705-10	Field Blank
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5623-001	VA22C5623-002	VA22C5623-003	VA22C5623-004	VA22C5623-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00040 DTC, RRV
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	0.00041	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000027	0.000062	0.000096	0.000114	<0.000010
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0041	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	TC-01	TC-05	TC-10	----	----
				Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C5623-006	VA22C5623-007	VA22C5623-008	--------	--------
					Result	Result	Result	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	93.3	92.1	102	----	----
conductivity	----	E100	2.0	µS/cm	191	190	196	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	94.4	92.7	94.7	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	102	99.6	93.2	----	----
pH	----	E108	0.10	pH units	8.14	8.18	8.14	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	117	123	126	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU	0.75	1.06	1.26	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0072	0.0097	<0.0050	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	<0.50	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.044	0.053	0.059	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.096	0.131	0.135	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0350	<0.0050	<0.0050	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0019	0.0042	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0051	0.0090	0.0120	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.73	2.70	1.98	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.55	3.54	4.45	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.24	3.46	4.51	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0039	0.0172	0.0099	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	----	----
						VA22C5623-006	VA22C5623-007	VA22C5623-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00054	0.00055	0.00053	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00974	0.0124	0.0132	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		33.7	30.5	27.9	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.032	0.274	0.330	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.46	5.69	5.71	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00462	0.0185	0.0425	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000599	0.000712	0.000571	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.692	0.927	0.984	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000088	0.000055	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.53	7.19	6.98	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		2.97	4.21	4.37	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.125	0.141	0.140	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.76	1.13	0.91	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00040	<0.00030	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000303	0.000285	0.000174	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00076	0.00050	<0.00050	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	----	----
						VA22C5623-006	VA22C5623-007	VA22C5623-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0011	0.0060	0.0186 DTC	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00045	0.00039	0.00041	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00939	0.0117	0.0132	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		31.2	28.6	28.6	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	0.00077 DTC	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.018	0.191	0.181	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.00	5.18	5.66	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00316	0.0145	0.0311	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000591	0.000652	0.000553	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.635	0.812	1.09	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000079	0.000082	<0.000200 DLB	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.15	6.74	6.87	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000011	0.000016	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.86	3.91	4.37	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.121	0.140	0.143	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5623-006	VA22C5623-007	VA22C5623-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.68	0.93	0.88	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	0.00050	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000301	0.000296	0.000174	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00055	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	0.0033	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C5623**	Page	: 1 of 33
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 22-Oct-2022 11:15
PO	: 10857	Issue Date	: 04-Nov-2022 07:04
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-01	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-04	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-05	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-10	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-01	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-05	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-10	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-01	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-04	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 705-05	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 705-10	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-01	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-05	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-10	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-01	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-04	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-05	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-10	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-01	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-05	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-10	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-01	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-04	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-05	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-10	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Field Blank	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-01	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-05	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-10	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-01	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-04	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-05	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-10	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-01	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-05	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-10	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-01	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-04	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-05	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	✖ EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-10	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	✖ EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	✖ EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-01	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	✖ EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-05	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	✖ EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-10	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	✖ EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-01	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-04	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-05	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-10	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-01	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-05	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-10	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-01	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-04	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 705-05	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 705-10	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Field Blank	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
TC-01	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
TC-05	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
TC-10	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-01	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-04	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
705-05	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
705-10	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Field Blank	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC-01	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC-05	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC-10	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-01	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-04	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-05	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-10	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Field Blank	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) TC-01	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-05	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-10	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-01	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-04	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
705-05	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
705-10	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Field Blank	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
TC-01	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
TC-05	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-10	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-01	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-05	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-10	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Field Blank	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-01	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-05	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-10	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-01	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-05	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-10	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Field Blank	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-01	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-05	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-10	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-01	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-04	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 705-05	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 705-10	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Field Blank	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-01	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-05	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-10	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-01	E421	20-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-04	E421	20-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	180 days	12 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-05	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-10	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-01	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-05	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-10	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-01	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-04	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-05	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-10	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-01	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-05	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-10	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-01	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-04	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-05	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-10	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-01	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-05	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-10	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-01	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-04	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-05	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-10	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE Field Blank	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE TC-01	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-05	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-10	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-01	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-04	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-05	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-10	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-01	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE TC-05	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-10	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-01	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-04	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-05	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-10	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-01	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-05	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE TC-10	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : pH by Meter										
HDPE 661-01	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-04	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-05	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-10	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-01	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-05	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-10	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE 661-01	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-04	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-05	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-10	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-01	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-05	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-10	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-01	E160	20-Oct-2022	----	----	----		26-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE 661-04	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-05	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-10	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-01	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-05	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-10	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-01	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE 661-04	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE 705-05	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE 705-10	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE TC-01	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE TC-05	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE TC-10	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-01	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-04	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 705-05	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 705-10	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Field Blank	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-01	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-05	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-10	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-01	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-04	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-05	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-10	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Field Blank	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
TC-01	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
TC-05	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
TC-10	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	13 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	716917	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	716908	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716911	1	17	5.8	5.0	✓
Conductivity in Water	E100	716909	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722388	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	716910	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	1	20	5.0	5.0	✓
pH by Meter	E108	716907	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	716872	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	718698	2	40	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714504	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	716876	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	711510	1	20	5.0	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	716917	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	716908	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716911	1	17	5.8	5.0	✓
Conductivity in Water	E100	716909	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722388	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	716910	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	1	20	5.0	5.0	✓
pH by Meter	E108	716907	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	716872	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	718698	2	40	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714504	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	716876	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	711510	1	20	5.0	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	716917	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	716908	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716911	1	17	5.8	5.0	✓
Conductivity in Water	E100	716909	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722388	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	716910	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	716872	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	718698	2	40	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714504	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	716876	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	711510	1	20	5.0	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716911	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722388	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	716910	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	718698	2	40	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714504	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C5623**	Page	: 1 of 22
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 22-Oct-2022 11:15
PO	: 10857	Date Analysis Commenced	: 24-Oct-2022
C-O-C number	: ----	Issue Date	: 04-Nov-2022 07:04
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Ann Joby	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
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Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 711510)											
VA22C5623-001	661-01	turbidity	----	E121	0.10	NTU	0.24	0.23	0.007	Diff <2x LOR	----
Physical Tests (QC Lot: 716872)											
VA22C5623-004	705-10	solids, total dissolved [TDS]	----	E162	13	mg/L	68	66	3	Diff <2x LOR	----
Physical Tests (QC Lot: 716876)											
VA22C5623-004	705-10	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 716907)											
VA22C5623-001	661-01	pH	----	E108	0.10	pH units	7.51	7.51	0.00%	4%	----
Physical Tests (QC Lot: 716908)											
VA22C5623-001	661-01	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	18.9	19.2	1.54%	20%	----
Physical Tests (QC Lot: 716909)											
VA22C5623-001	661-01	conductivity	----	E100	2.0	µS/cm	42.7	42.9	0.467%	10%	----
Physical Tests (QC Lot: 716917)											
VA22C5623-002	661-04	acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	<2.0	0.06	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 711636)											
VA22C5623-001	661-01	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.097	0.098	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 711639)											
VA22C5623-001	661-01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0050	0.0050	0.00007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 711641)											
VA22C5623-001	661-01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716910)											
VA22C5623-001	661-01	fluoride	16984-48-8	E235.F	0.020	mg/L	0.030	0.029	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716911)											
VA22C5623-001	661-01	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716912)											
VA22C5623-001	661-01	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716913)											
VA22C5623-001	661-01	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0208	0.0201	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716914)											
VA22C5623-001	661-01	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716915)											

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*
Anions and Nutrients (QC Lot: 716915) - continued											
VA22C5623-001	661-01	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.36	0.36	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716916)											
VA22C5623-001	661-01	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 718490)											
VA22C5497-024	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0100	mg/L	0.0212	0.0192	0.0020	Diff <2x LOR	----
Cyanides (QC Lot: 718491)											
VA22C5497-024	Anonymous	cyanide, weak acid dissociable	----	E336	0.0100	mg/L	0.0142	0.0146	0.0004	Diff <2x LOR	----
Cyanides (QC Lot: 718698)											
VA22C5353-006	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 718699)											
VA22C5623-007	TC-05	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 711637)											
VA22C5623-001	661-01	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.24	3.17	0.08	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 711638)											
VA22C5623-001	661-01	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.51	3.39	0.13	Diff <2x LOR	----
Total Metals (QC Lot: 714013)											
VA22C5623-001	661-01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.157	0.155	1.27%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00099	0.00099	0.000002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00581	0.00568	2.35%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	0.000021	0.0000010	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000127	0.0000132	0.0000005	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	5.16	5.12	0.720%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00028	0.00030	0.00003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.469	0.455	3.01%	20%	----
		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	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	1.36	1.35	0.860%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.247	0.241	2.60%	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: 714013) - continued											
VA22C5623-001	661-01	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000298	0.000308	0.000010	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.398	0.391	0.007	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.86	5.78	1.39%	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	2.29	2.27	0.858%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0393	0.0388	1.28%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00229	0.00214	0.00015	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000050	0.000049	0.0000006	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00063	0.00061	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 714504)											
KS2204040-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 714505)											
VA22C5623-007	TC-05	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 717572)											
VA22C5623-001	661-01	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722388)											
FJ2203016-021	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		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	<0.050	<0.050	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	----

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: 722388) - continued											
FJ2203016-021	Anonymous	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	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	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	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		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	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722389)											
VA22C5623-003	705-05	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0193	0.0199	3.14%	20%	----
		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	0.00026	0.00029	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00650	0.00722	10.4%	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	7.64	7.94	3.84%	20%	----
		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	----

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: 722389) - continued											
VA22C5623-003	705-05	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	0.00022	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.287	0.290	1.09%	20%	----
		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	0.100	mg/L	1.37	1.38	0.852%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0102	0.0106	3.54%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000699	0.000682	2.39%	20%	----
		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	0.100	mg/L	0.286	0.285	0.0008	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.89	3.96	1.69%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000015	0.000018	0.000003	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.36	2.26	4.50%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0591	0.0597	0.922%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	0.00041	0.00041	0.0000003	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000096	0.000097	0.000001	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	----

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: 711510)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 716872)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 716876)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 716908)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 716909)						
conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 716917)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Anions and Nutrients (QCLot: 711636)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 711639)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 711641)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 716910)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 716911)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 716912)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 716913)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 716914)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 716915)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 716916)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 718490)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 718490) - continued						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718491)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718698)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 718699)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 711637)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 711638)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 714013)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 714013) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 714504)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 714505)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 717572)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 722388)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 722388) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 722389)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 722389) - continued						
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 711510)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 716872)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	106	85.0	115	----
Physical Tests (QCLot: 716876)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	90.5	85.0	115	----
Physical Tests (QCLot: 716907)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 716908)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	97.8	85.0	115	----
Physical Tests (QCLot: 716909)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.9	90.0	110	----
Physical Tests (QCLot: 716917)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	99.5	85.0	115	----
Anions and Nutrients (QCLot: 711636)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	95.1	75.0	125	----
Anions and Nutrients (QCLot: 711639)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.3	80.0	120	----
Anions and Nutrients (QCLot: 711641)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.7	85.0	115	----
Anions and Nutrients (QCLot: 716910)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.4	90.0	110	----
Anions and Nutrients (QCLot: 716911)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 716912)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.7	85.0	115	----
Anions and Nutrients (QCLot: 716913)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 716914)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 716915)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 716916)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	105	80.0	120	----
Cyanides (QCLot: 718490)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	88.8	80.0	120	----
Cyanides (QCLot: 718491)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.4	80.0	120	----
Cyanides (QCLot: 718698)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.4	85.0	115	----
Cyanides (QCLot: 718699)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.2	85.0	115	----
Organic / Inorganic Carbon (QCLot: 711637)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	99.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 711638)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	108	80.0	120	----
Total Metals (QCLot: 714013)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	117	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	114	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	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	107	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	107	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	111	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 714013) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	113	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	112	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	107	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	108	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	111	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	114	80.0	120	----
Total Metals (QCLot: 714504)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
Total Metals (QCLot: 714505)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.6	80.0	120	----
Dissolved Metals (QCLot: 722388)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	113	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.2	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 722388) - continued									
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	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	98.6	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	80.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
Dissolved Metals (QCLot: 722389)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	92.1	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	99.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	111	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 722389) - continued									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.0	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.5	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	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: 711636)										
VA22C5623-002	661-04	Kjeldahl nitrogen, total [TKN]	----	E318	2.67 mg/L	2.5 mg/L	107	70.0	130	----
Anions and Nutrients (QCLot: 711639)										
VA22C5623-002	661-04	phosphorus, total	7723-14-0	E372-U	0.0465 mg/L	0.05 mg/L	93.0	70.0	130	----
Anions and Nutrients (QCLot: 711641)										
VA22C5623-002	661-04	ammonia, total (as N)	7664-41-7	E298	0.0968 mg/L	0.1 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 716910)										
VA22C5623-002	661-04	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 716911)										
VA22C5623-002	661-04	chloride	16887-00-6	E235.Cl	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 716912)										
VA22C5623-002	661-04	bromide	24959-67-9	E235.Br-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 716913)										
VA22C5623-002	661-04	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 716914)										
VA22C5623-002	661-04	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 716915)										
VA22C5623-002	661-04	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 716916)										
VA22C5623-002	661-04	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0316 mg/L	0.03 mg/L	105	70.0	130	----
Cyanides (QCLot: 718490)										
VA22C5497-025	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.03 mg/L	1.25 mg/L	82.4	75.0	125	----
Cyanides (QCLot: 718491)										
VA22C5497-025	Anonymous	cyanide, weak acid dissociable	----	E336	0.601 mg/L	0.625 mg/L	96.1	75.0	125	----
Cyanides (QCLot: 718698)										
VA22C5381-004	Anonymous	thiocyanate	302-04-5	E344	8.94 mg/L	10 mg/L	89.4	75.0	125	----
Cyanides (QCLot: 718699)										
VA22C5623-008	TC-10	thiocyanate	302-04-5	E344	10.2 mg/L	10 mg/L	102	75.0	125	----

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
Organic / Inorganic Carbon (QCLot: 711637)										
VA22C5623-002	661-04	carbon, dissolved organic [DOC]	----	E358-L	5.07 mg/L	5 mg/L	101	70.0	130	----
Organic / Inorganic Carbon (QCLot: 711638)										
VA22C5623-002	661-04	carbon, total organic [TOC]	----	E355-L	5.09 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 714013)										
VA22C5623-002	661-04	aluminum, total	7429-90-5	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0399 mg/L	0.04 mg/L	99.8	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	0.094 mg/L	0.1 mg/L	94.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		iron, total	7439-89-6	E420	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0982 mg/L	0.1 mg/L	98.2	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	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.1 mg/L	10 mg/L	111	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.1	70.0	130	----
		selenium, total	7782-49-2	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	9.67 mg/L	10 mg/L	96.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00430 mg/L	0.004 mg/L	108	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	20.5 mg/L	20 mg/L	102	70.0	130	----
		thallium, total	7440-28-0	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00413 mg/L	0.004 mg/L	103	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: 714013) - continued										
VA22C5623-002	661-04	vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.418 mg/L	0.4 mg/L	105	70.0	130	----
Total Metals (QCLot: 714504)										
KS2204040-002	Anonymous	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Total Metals (QCLot: 714505)										
VA22C5623-008	TC-10	mercury, total	7439-97-6	E508	0.0000960 mg/L	0.0001 mg/L	96.0	70.0	130	----
Dissolved Metals (QCLot: 717572)										
VA22C5623-002	661-04	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 722388)										
FJ2203044-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00924 mg/L	0.01 mg/L	92.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	88.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.103 mg/L	0.1 mg/L	103	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	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.0 mg/L	10 mg/L	110	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.09 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.37 mg/L	10 mg/L	93.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, dissolved	7440-23-5	E421	2.24 mg/L	2 mg/L	112	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: 722388) - continued										
FJ2203044-001	Anonymous	strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00400 mg/L	0.004 mg/L	100.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
Dissolved Metals (QCLot: 722389)										
VA22C5623-004	705-10	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00899 mg/L	0.01 mg/L	89.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0952 mg/L	0.1 mg/L	95.2	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	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.0 mg/L	10 mg/L	110	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.81 mg/L	4 mg/L	95.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.10 mg/L	10 mg/L	91.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----

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: 722389) - continued										
VA22C5623-004	705-10	sulfur, dissolved	7704-34-9	E421	20.4 mg/L	20 mg/L	102	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.8	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here
(lab use only)

COC Numbe

Environmental Division
Vancouver
Work Order Reference
VA22C5623

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
Company address below will appear on the final report	
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your

Regular [R] ☑ Standard TAT if received by 3

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Bu | Sam | Sta

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level se

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	5623	ALS Contact: A. Springer	Sampler: Avison

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	661-01 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-04 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	705-05 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	705-10 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Field Blank ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-01 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-05 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-10 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														

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

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

Are samples for human drinking water use?
☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C	
			3°C (avg 6)	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 21 22	Time: 0930	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 22/10/22	Time: 11:15am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C5624**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 22-Oct-2022 11:15
PO	: 10857	Date Analysis Commenced	: 24-Oct-2022
C-O-C number	: ----	Issue Date	: 03-Nov-2022 16:17
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Qammar Almas	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 Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Sample Comments

Sample	Client Id	*Comment*
VA22C5624-006	661-05	Sample 6: Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ 10	DC-05	DC-10	DC-15	Duplicate 2
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5624-001	VA22C5624-002	VA22C5624-003	VA22C5624-004	VA22C5624-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		49.5	50.4	49.9	56.1	50.1
conductivity	----	E100	2.0	µS/cm		110	111	112	124	113
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		49.4	51.4	47.9	55.5	48.3
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		51.9	52.5	52.7	59.1	52.9
pH	----	E108	0.10	pH units		7.97	7.99	7.97	8.06	7.97
solids, total dissolved [TDS]	----	E162	10	mg/L		75	78	76	77	70
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		0.19	0.16	0.37	0.17	0.15
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0092	<0.0050	0.0056	<0.0050	0.0093
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.042	0.041	0.041	0.045	0.041
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.120	0.065	0.054	0.061	0.062
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0044	0.0043	0.0036	0.0038	0.0038
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0096	0.0069	0.0058	0.0059	0.0061
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.69	2.69	2.75	2.44	2.75
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.92	1.88	1.75	2.10	2.37
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		2.24	1.78	2.11	2.10	1.97
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0404	0.0135	0.0139	0.0122	0.0126
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ 10	DC-05	DC-10	DC-15	Duplicate 2
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5624-001	VA22C5624-002	VA22C5624-003	VA22C5624-004	VA22C5624-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00072	0.00067	0.00062	0.00062	0.00057
barium, total	7440-39-3	E420	0.00010	mg/L		0.00902	0.00860	0.00906	0.00930	0.00887
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000051	0.0000055	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		15.6	15.9	15.9	17.5	15.9
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.086	0.046	0.032	0.035	0.032
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		3.14	3.10	3.16	3.75	3.20
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0108	0.00473	0.00408	0.00581	0.00402
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00101	0.000950	0.000988	0.000946	0.000994
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.545	0.519	0.522	0.620	0.533
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000063	0.000056	<0.000050	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		6.60	6.70	6.55	6.75	6.60
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		3.78	3.73	3.73	4.00	3.79
strontium, total	7440-24-6	E420	0.00020	mg/L		0.103	0.106	0.107	0.110	0.107
sulfur, total	7704-34-9	E420	0.50	mg/L		1.14	1.10	1.22	1.09	1.02
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00105	<0.00030	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000317	0.000308	0.000288	0.000245	0.000301
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00062	0.00054	<0.00050	0.00053	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ 10	DC-05	DC-10	DC-15	Duplicate 2
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5624-001	VA22C5624-002	VA22C5624-003	VA22C5624-004	VA22C5624-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0101	0.0094	0.0144	0.0074	0.0090
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00059	0.00056	0.00052	0.00056	0.00051
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00884	0.00875	0.00869	0.00895	0.00863
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		15.0	15.8	14.2	16.1	14.4
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.037	0.035	0.040	0.026	0.025
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.91	2.91	3.03	3.71	2.99
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00351	0.00315	0.00328	0.00398	0.00326
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000944	0.000967	0.000965	0.000899	0.000943
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.489	0.480	0.484	0.562	0.489
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000068	0.000067	<0.000050	<0.000050	0.000076
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.33	6.30	6.15	6.54	6.33
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000012	0.000011	0.000016	<0.000010	0.000011
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.38	3.35	3.48	3.68	3.43
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0999	0.100	0.104	0.109	0.104

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ 10	DC-05	DC-10	DC-15	Duplicate 2
					Client sampling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
						VA22C5624-001	VA22C5624-002	VA22C5624-003	VA22C5624-004	VA22C5624-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.76	0.91	0.90	0.68	0.84
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	0.00100 DTMF	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000315	0.000314	0.000287	0.000258	0.000301
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	661-05	Travel Blank	----	----	----
				Client sampling date / time	20-Oct-2022	20-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C5624-006	VA22C5624-007	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	46.7	<1.0	----	----	----
conductivity	----	E100	2.0	µS/cm	100	<2.0	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	43.6	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	46.2	<0.60	----	----	----
pH	----	E108	0.10	pH units	7.94	5.53	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	72	<10	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	----	----	----
turbidity	----	E121	0.10	NTU	0.68	<0.10	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0058	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.054	<0.020	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.073	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0134	<0.0050	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0436	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0506	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.96	<0.30	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.14	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.00	<0.50	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0306	<0.0030	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-05	Travel Blank	----	----	----
					Client sampling date / time	20-Oct-2022	20-Oct-2022	----	----	----
						VA22C5624-006	VA22C5624-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00145	<0.00010	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00481	<0.00010	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		13.3	<0.050	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.160	<0.010	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		3.15	<0.100	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0107	<0.00010	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000862	<0.000050	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.596	<0.100	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000071	<0.000050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		9.06	<0.10	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		4.05	<0.050	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0882	<0.00020	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00076	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000201	<0.000010	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00187	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-05	Travel Blank	----	----	----
					Client sampling date / time	20-Oct-2022	20-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5624-006	VA22C5624-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00073	<0.00050	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0108	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00128	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00445	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		12.7	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		0.00059	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.091	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.90	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00580	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000839	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.551	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000054	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		8.44	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000014	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.52	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0856	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-05	Travel Blank	----	----	----
					Client sampling date / time	20-Oct-2022	20-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C5624-006	VA22C5624-007	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000196	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00151	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C5624**	Page	: 1 of 30
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 22-Oct-2022 11:15
PO	: 10857	Issue Date	: 03-Nov-2022 16:17
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-05	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-05	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-10	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-15	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate 2	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Travel Blank	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WQ 10	E298	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-05	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-05	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-10	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-15	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Duplicate 2	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WQ 10	E235.Br-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Travel Blank	E235.Br-L	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-05	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-05	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-10	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-15	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Duplicate 2	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WQ 10	E235.Cl	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Travel Blank	E235.Cl	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-05	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-05	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-10	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	× EHT

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-15	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Duplicate 2	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE WQ 10	E378-U	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Travel Blank	E378-U	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	3 days	8 days	✖ EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-05	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-05	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-10	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-15	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Duplicate 2	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
WQ 10	E235.F	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
661-05	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
DC-05	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
DC-10	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
DC-15	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Duplicate 2	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
WQ 10	E235.NO3-L	20-Oct-2022	27-Oct-2022	3 days	7 days	× EHT	27-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO3-L	20-Oct-2022	28-Oct-2022	3 days	8 days	✖ EHT	28-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
661-05	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
DC-05	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
DC-10	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
DC-15	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Duplicate 2	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WQ 10	E235.NO2-L	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	3 days	8 days	✖ EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-05	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-05	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-10	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-15	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate 2	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE WQ 10	E235.SO4	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Travel Blank	E235.SO4	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-05	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-05	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-10	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-15	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Duplicate 2	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Travel Blank	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) WQ 10	E318	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-05	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-05	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-10	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-15	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Duplicate 2	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Travel Blank	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WQ 10	E372-U	20-Oct-2022	24-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-05	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-05	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-10	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-15	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Duplicate 2	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Travel Blank	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
WQ 10	E344	20-Oct-2022	----	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-05	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-10	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-15	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Duplicate 2	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Travel Blank	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) WQ 10	E333	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-05	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-10	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-15	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Duplicate 2	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Travel Blank	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) WQ 10	E336	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-05	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-05	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-10	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-15	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate 2	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) WQ 10	E509	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-05	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-05	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-10	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-15	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate 2	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) WQ 10	E421	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-05	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-05	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-10	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-15	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Duplicate 2	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) WQ 10	E358-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-05	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-05	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-10	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-15	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate 2	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Travel Blank	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) WQ 10	E355-L	20-Oct-2022	24-Oct-2022	----	----		24-Oct-2022	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-05	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-05	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-10	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-15	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE Duplicate 2	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE WQ 10	E283	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE Travel Blank	E283	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-05	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-05	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-10	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-15	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate 2	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE WQ 10	E290	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-05	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE DC-05	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-10	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-15	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate 2	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE WQ 10	E100	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE Travel Blank	E100	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	28 days	8 days	✓
Physical Tests : pH by Meter										
HDPE 661-05	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-05	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-10	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE DC-15	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate 2	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	20-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	0.25 hrs	4.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE WQ 10	E108	20-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	4.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-05	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-05	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-10	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-15	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Duplicate 2	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE WQ 10	E162	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-05	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-05	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-10	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-15	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Duplicate 2	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE WQ 10	E160	20-Oct-2022	----	----	----		26-Oct-2022	7 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE 661-05	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE DC-05	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE DC-10	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE DC-15	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE Duplicate 2	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE Travel Blank	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE WQ 10	E121	20-Oct-2022	----	----	----		24-Oct-2022	3 days	4 days	× EHT
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) 661-05	E508	20-Oct-2022	01-Nov-2022	0.01 hrs	3 hrs	× EHTR-FM	01-Nov-2022	-272.55 hrs	0.01 hrs	× EHTR-FM
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-05	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-10	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-15	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Duplicate 2	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Travel Blank	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) WQ 10	E508	20-Oct-2022	25-Oct-2022	----	----		25-Oct-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-05	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-05	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-10	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-15	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Duplicate 2	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Travel Blank	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
WQ 10	E420	20-Oct-2022	31-Oct-2022	----	----		01-Nov-2022	180 days	12 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	716917	2	19	10.5	5.0	✓
Alkalinity Species by Titration	E290	716908	2	30	6.6	5.0	✓
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	2	28	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	716911	2	31	6.4	5.0	✓
Conductivity in Water	E100	716909	2	29	6.9	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722389	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	2	27	7.4	5.0	✓
Fluoride in Water by IC	E235.F	716910	2	34	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	2	37	5.4	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	2	38	5.2	5.0	✓
pH by Meter	E108	716907	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	2	34	5.8	5.0	✓
TDS by Gravimetry	E162	716872	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714505	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	716876	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	711510	1	20	5.0	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	716917	2	19	10.5	5.0	✓
Alkalinity Species by Titration	E290	716908	2	30	6.6	5.0	✓
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	2	28	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	716911	2	31	6.4	5.0	✓
Conductivity in Water	E100	716909	2	29	6.9	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722389	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	2	27	7.4	5.0	✓
Fluoride in Water by IC	E235.F	716910	2	34	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	2	37	5.4	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	2	38	5.2	5.0	✓
pH by Meter	E108	716907	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	2	34	5.8	5.0	✓
TDS by Gravimetry	E162	716872	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714505	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	716876	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	711510	1	20	5.0	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	716917	2	19	10.5	5.0	✓
Alkalinity Species by Titration	E290	716908	2	30	6.6	5.0	✓
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	2	28	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	716911	2	31	6.4	5.0	✓
Conductivity in Water	E100	716909	2	29	6.9	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722389	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	2	27	7.4	5.0	✓
Fluoride in Water by IC	E235.F	716910	2	34	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	2	37	5.4	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	2	38	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	2	34	5.8	5.0	✓
TDS by Gravimetry	E162	716872	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714505	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	716876	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	711510	1	20	5.0	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	711641	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716912	2	28	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	716911	2	31	6.4	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	717572	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722389	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	711637	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716916	2	27	7.4	5.0	✓
Fluoride in Water by IC	E235.F	716910	2	34	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716913	2	37	5.4	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716914	2	38	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	716915	2	34	5.8	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718490	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	711636	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	714505	2	34	5.8	5.0	✓
Total metals in Water by CRC ICPMS	E420	714013	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	711638	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	711639	1	18	5.5	5.0	✓
WAD Cyanide	E336	718491	1	20	5.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C5624**	Page	: 1 of 21
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 22-Oct-2022 11:15
PO	: 10857	Date Analysis Commenced	: 24-Oct-2022
C-O-C number	: ----	Issue Date	: 03-Nov-2022 16:19
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 711510)											
VA22C5623-001	Anonymous	turbidity	----	E121	0.10	NTU	0.24	0.23	0.007	Diff <2x LOR	----
Physical Tests (QC Lot: 716872)											
VA22C5623-004	Anonymous	solids, total dissolved [TDS]	----	E162	13	mg/L	68	66	3	Diff <2x LOR	----
Physical Tests (QC Lot: 716876)											
VA22C5623-004	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 716907)											
VA22C5623-001	Anonymous	pH	----	E108	0.10	pH units	7.51	7.51	0.00%	4%	----
Physical Tests (QC Lot: 716908)											
VA22C5623-001	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	18.9	19.2	1.54%	20%	----
Physical Tests (QC Lot: 716909)											
VA22C5623-001	Anonymous	conductivity	----	E100	2.0	µS/cm	42.7	42.9	0.467%	10%	----
Physical Tests (QC Lot: 716917)											
VA22C5623-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	<2.0	0.06	Diff <2x LOR	----
Physical Tests (QC Lot: 719189)											
VA22C5538-003	Anonymous	pH	----	E108	0.10	pH units	8.86	8.81	0.566%	4%	----
Physical Tests (QC Lot: 719190)											
VA22C5538-003	Anonymous	conductivity	----	E100	2.0	µS/cm	412	411	0.243%	10%	----
Physical Tests (QC Lot: 719191)											
VA22C5538-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	33.0	33.2	0.590%	20%	----
Physical Tests (QC Lot: 719194)											
VA22C5538-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.8	4.6	0.2	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 711636)											
VA22C5623-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.097	0.098	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 711639)											
VA22C5623-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0050	0.0050	0.00007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 711641)											
VA22C5623-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716910)											
VA22C5623-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.030	0.029	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716911)											

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*
Anions and Nutrients (QC Lot: 716911) - continued											
VA22C5623-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716912)											
VA22C5623-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716913)											
VA22C5623-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0208	0.0201	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716914)											
VA22C5623-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716915)											
VA22C5623-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.36	0.36	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716916)											
VA22C5623-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 719182)											
VA22C5538-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 719183)											
VA22C5538-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 719184)											
VA22C5538-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 719185)											
VA22C5538-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0702	0.0694	1.03%	20%	----
Anions and Nutrients (QC Lot: 719186)											
VA22C5538-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 719187)											
VA22C5538-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	8.60	8.58	0.220%	20%	----
Anions and Nutrients (QC Lot: 719193)											
VA22C5538-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 718490)											
VA22C5497-024	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0100	mg/L	0.0212	0.0192	0.0020	Diff <2x LOR	----
Cyanides (QC Lot: 718491)											
VA22C5497-024	Anonymous	cyanide, weak acid dissociable	----	E336	0.0100	mg/L	0.0142	0.0146	0.0004	Diff <2x LOR	----
Cyanides (QC Lot: 718699)											
VA22C5623-007	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 711637)											
VA22C5623-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.24	3.17	0.08	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*
Organic / Inorganic Carbon (QC Lot: 711638)											
VA22C5623-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.51	3.39	0.13	Diff <2x LOR	----
Total Metals (QC Lot: 714013)											
VA22C5623-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.157	0.155	1.27%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00099	0.00099	0.000002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00581	0.00568	2.35%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	0.000021	0.0000010	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000127	0.0000132	0.0000005	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	5.16	5.12	0.720%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00028	0.00030	0.00003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.469	0.455	3.01%	20%	----
		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	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	1.36	1.35	0.860%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.247	0.241	2.60%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000298	0.000308	0.000010	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.398	0.391	0.007	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.86	5.78	1.39%	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	2.29	2.27	0.858%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0393	0.0388	1.28%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00229	0.00214	0.00015	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000050	0.000049	0.0000006	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00063	0.00061	0.00001	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: 714013) - continued											
VA22C5623-001	Anonymous	zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 714505)											
VA22C5623-007	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 723869)											
FJ2203033-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 717572)											
VA22C5623-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722389)											
VA22C5623-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0193	0.0199	3.14%	20%	----
		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	0.00026	0.00029	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00650	0.00722	10.4%	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	7.64	7.94	3.84%	20%	----
		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	0.00022	0.00022	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.287	0.290	1.09%	20%	----
		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	0.100	mg/L	1.37	1.38	0.852%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0102	0.0106	3.54%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000699	0.000682	2.39%	20%	----
		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	0.100	mg/L	0.286	0.285	0.0008	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.89	3.96	1.69%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000015	0.000018	0.000003	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.36	2.26	4.50%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0591	0.0597	0.922%	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*
Dissolved Metals (QC Lot: 722389) - continued											
VA22C5623-003	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	0.00041	0.00041	0.0000003	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000096	0.000097	0.000001	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	----

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: 711510)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 716872)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 716876)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 716908)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 716909)						
conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 716917)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Physical Tests (QCLot: 719190)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 719191)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 719194)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 711636)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 711639)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 711641)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 716910)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 716911)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 716912)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 716913)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 716914)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 716914) - continued						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 716915)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 716916)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 719182)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 719183)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 719184)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 719185)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 719186)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 719187)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 719193)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 718490)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718491)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718699)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 711637)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 711638)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 714013)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 714013) - continued						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 714505)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 723869)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 717572)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 722389)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 722389) - continued						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 711510)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 716872)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	106	85.0	115	----
Physical Tests (QCLot: 716876)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	90.5	85.0	115	----
Physical Tests (QCLot: 716907)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 716908)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	97.8	85.0	115	----
Physical Tests (QCLot: 716909)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.9	90.0	110	----
Physical Tests (QCLot: 716917)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	99.5	85.0	115	----
Physical Tests (QCLot: 719189)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 719190)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 719191)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 719194)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 711636)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	95.1	75.0	125	----
Anions and Nutrients (QCLot: 711639)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.3	80.0	120	----
Anions and Nutrients (QCLot: 711641)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.7	85.0	115	----
Anions and Nutrients (QCLot: 716910)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.4	90.0	110	----
Anions and Nutrients (QCLot: 716911)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 716912)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.7	85.0	115	----
Anions and Nutrients (QCLot: 716913)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 716914)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 716915)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 716916)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	105	80.0	120	----
Anions and Nutrients (QCLot: 719182)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 719183)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 719184)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 719185)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 719186)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 719187)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 719193)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	100	80.0	120	----
Cyanides (QCLot: 718490)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	88.8	80.0	120	----
Cyanides (QCLot: 718491)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.4	80.0	120	----
Cyanides (QCLot: 718699)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.2	85.0	115	----
Organic / Inorganic Carbon (QCLot: 711637)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	99.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 711638)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 714013)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	117	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	114	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	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	107	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	107	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	111	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	113	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	112	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	107	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	108	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	111	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	114	80.0	120	----
Total Metals (QCLot: 714505)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 723869)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.6	80.0	120	----
Dissolved Metals (QCLot: 722389)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	92.1	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	99.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	111	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.0	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.5	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 722389) - continued									
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	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: 711636)										
VA22C5623-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.67 mg/L	2.5 mg/L	107	70.0	130	----
Anions and Nutrients (QCLot: 711639)										
VA22C5623-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0465 mg/L	0.05 mg/L	93.0	70.0	130	----
Anions and Nutrients (QCLot: 711641)										
VA22C5623-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0968 mg/L	0.1 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 716910)										
VA22C5623-002	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 716911)										
VA22C5623-002	Anonymous	chloride	16887-00-6	E235.Cl	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 716912)										
VA22C5623-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 716913)										
VA22C5623-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 716914)										
VA22C5623-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 716915)										
VA22C5623-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 716916)										
VA22C5623-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0316 mg/L	0.03 mg/L	105	70.0	130	----
Anions and Nutrients (QCLot: 719182)										
VA22C5538-002	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 719183)										
VA22C5538-002	Anonymous	chloride	16887-00-6	E235.Cl	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 719184)										
VA22C5538-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 719185)										
VA22C5538-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----

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: 719186)										
VA22C5538-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.518 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 719187)										
VA22C5538-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 719193)										
VA22C5538-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0358 mg/L	0.03 mg/L	119	70.0	130	----
Cyanides (QCLot: 718490)										
VA22C5497-025	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.03 mg/L	1.25 mg/L	82.4	75.0	125	----
Cyanides (QCLot: 718491)										
VA22C5497-025	Anonymous	cyanide, weak acid dissociable	----	E336	0.601 mg/L	0.625 mg/L	96.1	75.0	125	----
Cyanides (QCLot: 718699)										
VA22C5623-008	Anonymous	thiocyanate	302-04-5	E344	10.2 mg/L	10 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 711637)										
VA22C5623-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.07 mg/L	5 mg/L	101	70.0	130	----
Organic / Inorganic Carbon (QCLot: 711638)										
VA22C5623-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.09 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 714013)										
VA22C5623-002	Anonymous	aluminum, total	7429-90-5	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0399 mg/L	0.04 mg/L	99.8	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	0.094 mg/L	0.1 mg/L	94.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		iron, total	7439-89-6	E420	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0982 mg/L	0.1 mg/L	98.2	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	0.0206 mg/L	0.02 mg/L	103	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: 714013) - continued										
VA22C5623-002	Anonymous	molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.1 mg/L	10 mg/L	111	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.1	70.0	130	----
		selenium, total	7782-49-2	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	9.67 mg/L	10 mg/L	96.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00430 mg/L	0.004 mg/L	108	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	20.5 mg/L	20 mg/L	102	70.0	130	----
		thallium, total	7440-28-0	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.418 mg/L	0.4 mg/L	105	70.0	130	----
Total Metals (QCLot: 714505)										
VA22C5623-008	Anonymous	mercury, total	7439-97-6	E508	0.0000960 mg/L	0.0001 mg/L	96.0	70.0	130	----
Total Metals (QCLot: 723869)										
FJ2203066-001	Anonymous	mercury, total	7439-97-6	E508	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----
Dissolved Metals (QCLot: 717572)										
VA22C5623-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 722389)										
VA22C5623-004	Anonymous	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00899 mg/L	0.01 mg/L	89.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	97.1	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: 722389) - continued										
VA22C5623-004	Anonymous	copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0952 mg/L	0.1 mg/L	95.2	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	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.0 mg/L	10 mg/L	110	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.81 mg/L	4 mg/L	95.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.10 mg/L	10 mg/L	91.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.4 mg/L	20 mg/L	102	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.8	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Numb

Environmental Division
Vancouver
Work Order Reference
VA22C5624

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with yo

Regular [R] ☑ Standard TAT if received b

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1	
3 day [P3]	☐	S	
2 day [P2]	☐		

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service lev

Analysis Requ

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: A. Springer	Sampler: Avison

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	WQ 10 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-05 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-10 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-15 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Duplicate 2 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-05 ✓	20-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Travel Blank ✓	20-Oct-22		Water	R	R		R	R		R		R					6
				Water														
				Water														
				Water														
				Water														
				Water														

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

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

Are samples for human drinking water use?
☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C
			3°C (avg 6)

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: <Original signed by>	Date: Oct 21 2022	Time: 930	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 22/10/22	Time: 11 15a

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

OCTOBER 2015 FRONT

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C5821**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 26-Oct-2022 09:00
PO	: 10857	Date Analysis Commenced	: 26-Oct-2022
C-O-C number	: ----	Issue Date	: 03-Nov-2022 07:36
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		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 Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	66-10	661-03	CC-05	CC-03	DC-05
					Client sampling date / time	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022
						VA22C5821-001	VA22C5821-002	VA22C5821-003	VA22C5821-004	VA22C5821-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.4	3.5	<2.0	<2.0	2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		43.6	68.4	89.7	110	52.6
conductivity	----	E100	2.0	µS/cm		86.9	135	179	223	109
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		37.4	61.9	85.4	109	48.8
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		37.5	59.9	87.0	107	47.6
pH	----	E108	0.10	pH units		7.86	7.91	8.19	8.24	7.96
solids, total dissolved [TDS]	----	E162	10	mg/L		71	96	117	141	72
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		0.53	0.50	0.84	0.72	0.27
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	0.0068	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.048	0.054	0.057	0.062	0.041
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.080	0.072	0.114	0.154	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	<0.0050	0.0386	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0011	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0184	<0.0010	0.0146	0.0128	0.0045
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0318	0.0051	0.0201	0.0193	0.0064
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.16	1.42	4.36	7.07	3.08
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		2.70	2.22	3.47	3.73	2.08
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		2.82	2.31	3.50	4.12	1.78
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.117	0.0426	0.0162	0.0121	0.0124
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	66-10	661-03	CC-05	CC-03	DC-05
					Client sampling date / time	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022
						VA22C5821-001	VA22C5821-002	VA22C5821-003	VA22C5821-004	VA22C5821-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00130	0.00031	0.00081	0.00067	0.00057
barium, total	7440-39-3	E420	0.00010	mg/L		0.00569	0.00805	0.00648	0.00672	0.00785
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000186	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		10.6	15.6	23.8	29.9	14.3
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00011	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.306	0.256	0.148	0.155	0.041
lead, total	7439-92-1	E420	0.000050	mg/L		0.000096	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		2.68	5.08	6.70	7.90	2.88
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0437	0.0501	0.0150	0.0255	0.00422
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000774	0.000370	0.000966	0.000994	0.000944
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.557	0.714	0.965	1.13	0.490
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	0.000058	0.000055	0.000072
silicon, total	7440-21-3	E420	0.10	mg/L		8.19	9.16	7.52	7.38	6.23
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		3.51	4.20	4.66	4.66	3.41
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0713	0.0947	0.108	0.122	0.0992
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	1.41	2.40	0.78
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00418	0.00079	0.00051	0.00045	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000160	0.000113	0.000254	0.000220	0.000299
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00120	<0.00050	0.00052	<0.00050	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	66-10	661-03	CC-05	CC-03	DC-05
					Client sampling date / time	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022
						VA22C5821-001	VA22C5821-002	VA22C5821-003	VA22C5821-004	VA22C5821-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0040	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00055	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0125	0.0065	0.0054	0.0027	0.0088
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00090	0.00024	0.00071	0.00065	0.00054
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00420	0.00755	0.00606	0.00638	0.00779
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000058	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		10.7	16.8	23.0	30.1	14.8
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.104	0.063	0.101	0.104	0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.59	4.85	6.79	8.22	2.88
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00729	0.0258	0.00729	0.0159	0.00345
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000710	0.000372	0.000951	0.00102	0.000989
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.483	0.651	0.858	1.05	0.453
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000062	0.000077
silicon, dissolved	7440-21-3	E421	0.050	mg/L		7.75	8.58	7.16	6.94	6.13
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.54	4.00	4.72	4.61	3.34
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0697	0.0934	0.107	0.120	0.101

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	66-10	661-03	CC-05	CC-03	DC-05
					Client sampling date / time	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022	24-Oct-2022
						VA22C5821-001	VA22C5821-002	VA22C5821-003	VA22C5821-004	VA22C5821-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	1.35	2.21	0.58
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000135	0.000105	0.000265	0.000218	0.000314
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00075	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0014	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C5821**	Page	: 1 of 25
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 26-Oct-2022 09:00
PO	: 10857	Issue Date	: 03-Nov-2022 07:32
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Dissolved Metals	QC-MRG3-722394002	----	sulfur, dissolved	7704-34-9	E421	77.4 % MES	80.0-120%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Matrix Spike (MS) Recoveries								
Dissolved Metals	Anonymous	Anonymous	silver, dissolved	7440-22-4	E421	61.0 % MES	70.0-130%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 66-10	E298	24-Oct-2022	27-Oct-2022	----	----		31-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-03	E298	24-Oct-2022	27-Oct-2022	----	----		31-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-03	E298	24-Oct-2022	27-Oct-2022	----	----		31-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-05	E298	24-Oct-2022	27-Oct-2022	----	----		31-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-05	E298	24-Oct-2022	27-Oct-2022	----	----		31-Oct-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 66-10	E235.Br-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-03	E235.Br-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-03	E235.Br-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-05	E235.Br-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-05	E235.Br-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 66-10	E235.Cl	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-03	E235.Cl	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-03	E235.Cl	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-05	E235.Cl	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-05	E235.Cl	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 66-10	E378-U	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-03	E378-U	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-03	E378-U	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-05	E378-U	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-05	E378-U	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 66-10	E235.F	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-03	E235.F	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-03	E235.F	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-05	E235.F	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-05	E235.F	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 66-10	E235.NO3-L	24-Oct-2022	26-Oct-2022	3 days	3 days	✓	26-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-03	E235.NO3-L	24-Oct-2022	26-Oct-2022	3 days	3 days	✓	26-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-03	E235.NO3-L	24-Oct-2022	26-Oct-2022	3 days	3 days	✓	26-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-05	E235.NO3-L	24-Oct-2022	26-Oct-2022	3 days	3 days	✓	26-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-05	E235.NO3-L	24-Oct-2022	26-Oct-2022	3 days	3 days	✓	26-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 66-10	E235.NO2-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-03	E235.NO2-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-03	E235.NO2-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
CC-05	E235.NO2-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
DC-05	E235.NO2-L	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
66-10	E235.SO4	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-03	E235.SO4	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-03	E235.SO4	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-05	E235.SO4	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
DC-05	E235.SO4	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
66-10	E318	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-03	E318	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-03	E318	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-05	E318	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-05	E318	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 66-10	E372-U	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-03	E372-U	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-03	E372-U	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-05	E372-U	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-05	E372-U	24-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 66-10	E344	24-Oct-2022	----	----	----		27-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-03	E344	24-Oct-2022	----	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-03	E344	24-Oct-2022	----	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-05	E344	24-Oct-2022	----	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-05	E344	24-Oct-2022	----	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 66-10	E333	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-03	E333	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E333	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-05	E333	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E333	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
66-10	E336	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-03	E336	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-03	E336	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-05	E336	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-05	E336	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
66-10	E509	24-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-03	E509	24-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-03	E509	24-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-05	E509	24-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-05	E509	24-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 66-10	E421	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-03	E421	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-03	E421	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-05	E421	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-05	E421	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 66-10	E358-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-03	E358-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-03	E358-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-05	E358-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-05	E358-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 66-10	E355-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-03	E355-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-03	E355-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-05	E355-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-05	E355-L	24-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 66-10	E283	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-03	E283	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-03	E283	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-05	E283	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-05	E283	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 66-10	E290	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-03	E290	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-03	E290	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-05	E290	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-05	E290	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 66-10	E100	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 661-03	E100	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-03	E100	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-05	E100	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-05	E100	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 66-10	E108	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	0.25 hrs	0.74 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-03	E108	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	0.25 hrs	0.74 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-03	E108	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	0.25 hrs	0.74 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-05	E108	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	0.25 hrs	0.74 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-05	E108	24-Oct-2022	26-Oct-2022	----	----		26-Oct-2022	0.25 hrs	0.74 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE 66-10	E162	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-03	E162	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-03	E162	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-05	E162	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-05	E162	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 66-10	E160	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-03	E160	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-03	E160	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-05	E160	24-Oct-2022	----	----	----		27-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE DC-05	E160	24-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 66-10	E121	24-Oct-2022	----	----	----		26-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-03	E121	24-Oct-2022	----	----	----		26-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-03	E121	24-Oct-2022	----	----	----		26-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-05	E121	24-Oct-2022	----	----	----		26-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-05	E121	24-Oct-2022	----	----	----		26-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 66-10	E508	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-03	E508	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-03	E508	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-05	E508	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-05	E508	24-Oct-2022	01-Nov-2022	----	----		01-Nov-2022	28 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 66-10	E420	24-Oct-2022	30-Oct-2022	----	----		31-Oct-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-03	E420	24-Oct-2022	30-Oct-2022	----	----		31-Oct-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-03	E420	24-Oct-2022	30-Oct-2022	----	----		31-Oct-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-05	E420	24-Oct-2022	30-Oct-2022	----	----		31-Oct-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-05	E420	24-Oct-2022	30-Oct-2022	----	----		31-Oct-2022	180 days	8 days	✓

Legend & Qualifier Definitions

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

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	716189	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	716178	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	717544	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716182	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716181	1	18	5.5	5.0	✓
Conductivity in Water	E100	716176	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722104	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722394	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	717540	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716186	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	716180	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716183	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716184	1	19	5.2	5.0	✓
pH by Meter	E108	716177	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	716179	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	717560	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	717537	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	723869	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	719337	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	717541	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	717542	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	717553	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	715941	1	20	5.0	5.0	✓
WAD Cyanide	E336	718496	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	716189	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	716178	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	717544	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716182	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716181	1	18	5.5	5.0	✓
Conductivity in Water	E100	716176	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722104	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722394	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	717540	1	20	5.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716186	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	716180	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716183	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716184	1	19	5.2	5.0	✓
pH by Meter	E108	716177	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	716179	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	717560	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	717537	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	723869	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	719337	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	717541	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	717542	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	717553	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	715941	1	20	5.0	5.0	✓
WAD Cyanide	E336	718496	1	19	5.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	716189	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	716178	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	717544	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716182	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716181	1	18	5.5	5.0	✓
Conductivity in Water	E100	716176	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722104	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722394	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	717540	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716186	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	716180	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716183	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716184	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	716179	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	717560	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	717537	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	723869	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	719337	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	717541	1	20	5.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	717542	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	717553	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	715941	1	20	5.0	5.0	✓
WAD Cyanide	E336	718496	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	717544	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	716182	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	716181	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722104	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	722394	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	717540	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	716186	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	716180	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	716183	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	716184	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	716179	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	718699	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	717537	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	723869	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	719337	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	717541	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	717542	1	20	5.0	5.0	✓
WAD Cyanide	E336	718496	1	19	5.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C5821**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 26-Oct-2022 09:00
PO	: 10857	Date Analysis Commenced	: 26-Oct-2022
C-O-C number	: ----	Issue Date	: 03-Nov-2022 07:32
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 715941)											
FJ2203038-001	Anonymous	turbidity	----	E121	0.10	NTU	0.22	0.24	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 716176)											
FJ2203036-003	Anonymous	conductivity	----	E100	2.0	µS/cm	435	429	1.39%	10%	----
Physical Tests (QC Lot: 716177)											
FJ2203036-003	Anonymous	pH	----	E108	0.10	pH units	8.28	8.31	0.362%	4%	----
Physical Tests (QC Lot: 716178)											
FJ2203036-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	196	204	3.86%	20%	----
Physical Tests (QC Lot: 716189)											
VA22C5821-002	661-03	acidity (as CaCO3)	----	E283	2.0	mg/L	3.5	3.6	0.06	Diff <2x LOR	----
Physical Tests (QC Lot: 717553)											
VA22C5792-006	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 717560)											
VA22C5792-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	186	167	18	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716179)											
FJ2203036-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	40.3	39.8	1.21%	20%	----
Anions and Nutrients (QC Lot: 716180)											
FJ2203036-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.076	0.074	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716181)											
FJ2203036-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	0.63	0.59	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716182)											
FJ2203036-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716183)											
FJ2203036-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.116	0.112	3.70%	20%	----
Anions and Nutrients (QC Lot: 716184)											
FJ2203036-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0020	0.0012	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 716186)											
FJ2203036-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	0.0011	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 717537)											
FJ2203032-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.136	0.114	0.022	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 717542)											

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*
Anions and Nutrients (QC Lot: 717542) - continued											
FJ2203032-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0120	0.0124	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 717544)											
FJ2203032-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718496)											
VA22C5745-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718497)											
VA22C5745-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718699)											
VA22C5623-007	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 717540)											
FJ2203032-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.40	3.50	0.10	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 717541)											
FJ2203032-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.52	3.63	0.11	Diff <2x LOR	----
Total Metals (QC Lot: 719337)											
KS2204056-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0144	0.0135	0.0009	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00011	0.0000008	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00329	0.00328	0.0509%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000769	0.0000772	0.327%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	0.366	0.364	0.002	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	0.00102	0.00110	0.00008	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	0.0120	0.0120	0.163%	20%	----
		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	0.00544	0.00539	0.974%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0496	0.0502	0.0006	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00783	0.00803	2.46%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	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: 719337) - continued											
KS2204056-001	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.154	0.155	0.0008	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	0.080	0.076	0.004	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.00196	0.00201	0.00005	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00080	0.00081	0.000007	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.857	0.867	1.13%	20%	----
Total Metals (QC Lot: 723869)											
FJ2203033-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722104)											
FJ2203032-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722394)											
VA22C5808-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0192	0.0198	2.65%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0134	0.0133	0.270%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00086	0.00092	0.00006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0653	0.0628	3.94%	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	0.270	0.264	2.44%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000458	0.0000476	0.0000018	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	77.0	76.1	1.14%	20%	----
		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	0.00081	0.00082	0.000010	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00157	0.00159	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.016	0.016	0.0003	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	0.218	0.210	3.53%	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*
Dissolved Metals (QC Lot: 722394) - continued											
VA22C5808-002	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.93	6.13	3.31%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.142	0.146	2.27%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0157	0.0159	1.06%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00125	0.00129	0.00004	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	25.5	25.5	0.137%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00258	0.00238	8.19%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.45	1.51	3.48%	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	93.8	93.4	0.429%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.00	1.02	1.85%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	112	113	0.952%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000094	0.000093	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00013	0.00015	0.00001	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000462	0.000481	4.16%	20%	----
		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	0.0046	0.0046	0.00005	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: 715941)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 716176)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 716178)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 716189)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 717553)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 717560)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 716179)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 716180)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 716181)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 716182)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 716183)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 716184)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 716186)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 717537)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 717542)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 717544)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 718496)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 718496) - continued						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718497)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718699)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 717540)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 717541)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 719337)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 719337) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 723869)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 722104)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 722394)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 722394) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 715941)									
turbidity	----	E121	0.1	NTU	200 NTU	98.6	85.0	115	----
Physical Tests (QCLot: 716176)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.0	90.0	110	----
Physical Tests (QCLot: 716177)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 716178)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	97.5	85.0	115	----
Physical Tests (QCLot: 716189)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	99.8	85.0	115	----
Physical Tests (QCLot: 717553)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	89.3	85.0	115	----
Physical Tests (QCLot: 717560)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.6	85.0	115	----
Anions and Nutrients (QCLot: 716179)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 716180)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 716181)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 716182)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 716183)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 716184)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 716186)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 717537)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 717542)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	91.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 717544)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	90.5	85.0	115	----
Cyanides (QCLot: 718496)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.0	80.0	120	----
Cyanides (QCLot: 718497)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	94.6	80.0	120	----
Cyanides (QCLot: 718699)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.2	85.0	115	----
Organic / Inorganic Carbon (QCLot: 717540)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	96.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 717541)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	99.1	80.0	120	----
Total Metals (QCLot: 719337)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	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	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.9	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 719337) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100.0	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	94.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
Total Metals (QCLot: 723869)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----
Dissolved Metals (QCLot: 722394)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.8	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.3	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	94.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 722394) - continued									
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	95.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.0	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	96.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.1	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	# 77.4	80.0	120	MES
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	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: 716179)										
FJ2203036-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 716180)										
FJ2203036-002	Anonymous	fluoride	16984-48-8	E235.F	19.8 mg/L	20 mg/L	99.3	75.0	125	----
Anions and Nutrients (QCLot: 716181)										
FJ2203036-002	Anonymous	chloride	16887-00-6	E235.Cl	2100 mg/L	2000 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 716182)										
FJ2203036-002	Anonymous	bromide	24959-67-9	E235.Br-L	10.0 mg/L	10 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 716183)										
FJ2203036-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 716184)										
FJ2203036-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	10.1 mg/L	10 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 716186)										
FJ2203036-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0315 mg/L	0.03 mg/L	105	70.0	130	----
Anions and Nutrients (QCLot: 717537)										
FJ2203032-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 717542)										
FJ2203032-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0484 mg/L	0.05 mg/L	96.9	70.0	130	----
Anions and Nutrients (QCLot: 717544)										
FJ2203032-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0911 mg/L	0.1 mg/L	91.1	75.0	125	----
Cyanides (QCLot: 718496)										
VA22C5783-018	Anonymous	cyanide, weak acid dissociable	----	E336	0.658 mg/L	0.625 mg/L	105	75.0	125	----
Cyanides (QCLot: 718497)										
VA22C5783-018	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.24 mg/L	1.25 mg/L	99.4	75.0	125	----
Cyanides (QCLot: 718699)										
VA22C5623-008	Anonymous	thiocyanate	302-04-5	E344	10.2 mg/L	10 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 717540)										
FJ2203032-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.62 mg/L	5 mg/L	92.4	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
Organic / Inorganic Carbon (QCLot: 717541)										
FJ2203032-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.24 mg/L	5 mg/L	105	70.0	130	----
Total Metals (QCLot: 719337)										
TY2203256-001	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	96.0	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	101	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	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00879 mg/L	0.01 mg/L	87.9	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00384 mg/L	0.004 mg/L	96.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	98.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0177 mg/L	0.02 mg/L	88.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0859 mg/L	0.1 mg/L	85.9	70.0	130	----
		magnesium, total	7439-95-4	E420	0.947 mg/L	1 mg/L	94.7	70.0	130	----
		manganese, total	7439-96-5	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, total	7440-02-0	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.6 mg/L	10 mg/L	106	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		silicon, total	7440-21-3	E420	8.98 mg/L	10 mg/L	89.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00385 mg/L	0.004 mg/L	96.2	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	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00350 mg/L	0.004 mg/L	87.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.387 mg/L	0.4 mg/L	96.8	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: 723869)										
FJ2203066-001	Anonymous	mercury, total	7439-97-6	E508	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----
Dissolved Metals (QCLot: 722104)										
FJ2203036-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000985 mg/L	0.0001 mg/L	98.5	70.0	130	----
Dissolved Metals (QCLot: 722394)										
VA22C5808-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0379 mg/L	0.04 mg/L	94.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00798 mg/L	0.01 mg/L	79.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00377 mg/L	0.004 mg/L	94.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.83 mg/L	2 mg/L	91.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0364 mg/L	0.04 mg/L	90.9	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0437 mg/L	0.04 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.09 mg/L	10 mg/L	90.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00244 mg/L	0.004 mg/L	61.0	70.0	130	MES
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00386 mg/L	0.004 mg/L	96.5	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
Dissolved Metals (QCLot: 722394) - continued										
VA22C5808-003	Anonymous	vanadium, dissolved	7440-62-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.6	70.0	130	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

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

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	5821	ALS Contact: A. Springer	Sampler: Avison

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	66-10	24-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-03	24-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-05	24-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-03	24-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-05	24-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C5821

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com
Are samples for human drinking water use? ☐ YES ☑ NO	Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					4.4 AVG (2)

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 25, 2022	Time:	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 10/26/22	Time: 900

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

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C6002**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 27-Oct-2022 09:10
PO	: 10857	Date Analysis Commenced	: 27-Oct-2022
C-O-C number	: ----	Issue Date	: 07-Nov-2022 14:57
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Delson Resende	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-10	TC15	Duplicate
					Client sampling date / time	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022
						VA22C6002-001	VA22C6002-002	VA22C6002-003	VA22C6002-004	VA22C6002-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.4	2.2	2.5	2.6	2.6
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		18.9	35.7	40.9	90.6	40.7
conductivity	----	E100	2.0	µS/cm		41.0	72.5	84.7	182	84.7
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		16.8	31.5	40.6	90.2	39.6
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		16.7	30.8	38.9	88.8	38.7
pH	----	E108	0.10	pH units		7.39	7.68	7.63	7.98	7.62
solids, total dissolved [TDS]	----	E162	10	mg/L		36	53	60	105	57
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	9.7	<3.0
turbidity	----	E121	0.10	NTU		0.38	0.26	0.31	2.67	0.12
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0090	<0.0050	<0.0050	0.0130	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.031	0.046	0.028	0.058	0.029
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.096	0.066	0.115	0.149	0.100
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0440	<0.0050	0.0647	<0.0050	0.0643
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	0.0105	0.0012	0.0082	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0047	0.0140	0.0028	0.0165	0.0032
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.41	1.16	1.56	1.62	1.55
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		3.12	2.72	4.25	4.84	4.25
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		2.90	2.82	4.29	4.73	4.29
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0312	0.0282	0.0231	0.382	0.0175
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-10	TC15	Duplicate
					Client sampling date / time	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022
						VA22C6002-001	VA22C6002-002	VA22C6002-003	VA22C6002-004	VA22C6002-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00044	0.00116	0.00016	0.00055	0.00016
barium, total	7440-39-3	E420	0.00010	mg/L		0.00280	0.00384	0.0105	0.0151	0.0106
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	0.0000114	<0.0000050	0.0000116	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		4.59	8.66	11.8	25.7	11.7
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00017	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00070	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.072	0.059	0.027	0.910	0.022
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000110	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		1.27	2.24	2.29	5.98	2.30
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0299	0.00623	0.00201	0.0342	0.00144
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000269	0.000636	0.000549	0.000448	0.000528
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.343	0.579	0.354	0.994	0.352
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000057	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		5.77	8.34	4.81	7.78	4.81
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		2.26	3.44	2.76	4.67	2.77
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0364	0.0581	0.0753	0.129	0.0747
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00040	0.00045	0.00033	0.00910	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000028	0.000057	0.000114	0.000158	0.000111
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	0.00057	<0.00050	0.00125	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-10	TC15	Duplicate
					Client sampling date / time	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022
						VA22C6002-001	VA22C6002-002	VA22C6002-003	VA22C6002-004	VA22C6002-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0041	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	0.00072	<0.00050	0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0261	0.0198	0.0162	0.0043	0.0151
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00040	0.00104	0.00014	0.00027	0.00015
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00276	0.00368	0.0103	0.00990	0.0302 DTMF
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000134	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.70	8.98	12.6	26.8	12.2
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	0.00028	<0.00020	0.00028
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.062	0.042	0.019	0.201	0.018
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		1.24	2.21	2.22	5.66	2.21
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0264	0.00481	0.00103	0.00659	0.00108
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000266	0.000594	0.000512	0.000416	0.000507
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.330	0.512	0.328	0.857	0.328
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.38	7.50	4.45	6.39	4.41
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.12	3.22	2.63	4.36	2.60
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0358	0.0569	0.0720	0.123	0.0705

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	661-04	705-10	TC15	Duplicate
					Client sampling date / time	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022	25-Oct-2022
						VA22C6002-001	VA22C6002-002	VA22C6002-003	VA22C6002-004	VA22C6002-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000024	0.000053	0.000111	0.000120	0.000110
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0036	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Field Blank	----	----	----	----
				Client sampling date / time	25-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C6002-006	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	<0.60	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	<0.60	----	----	----	----
pH	----	E108	0.10	pH units	5.31	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	----	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	25-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6002-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		<0.00010	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		<0.00010	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		<0.050	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		<0.100	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		<0.000050	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		<0.100	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		<0.10	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		<0.050	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		<0.00020	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	25-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6002-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		<0.00010	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		<0.00010	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		<0.050	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		<0.100	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		<0.000050	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		<0.100	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		<0.050	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		<0.050	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		<0.00020	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	25-Oct-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6002-006	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		<0.000010	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C6002**	Page	: 1 of 28
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 27-Oct-2022 09:10
PO	: 10857	Issue Date	: 07-Nov-2022 14:55
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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 Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Physical Tests	QC-718483-001	----	acidity (as CaCO3)	----	E283	3.7 mg/L B	3 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Recoveries								
Physical Tests	QC-718483-002	----	acidity (as CaCO3)	----	E283	139 % LCS-H	85.0-115%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
LCS-H	*Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-01	E298	25-Oct-2022	27-Oct-2022	----	----		01-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-04	E298	25-Oct-2022	27-Oct-2022	----	----		01-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-10	E298	25-Oct-2022	27-Oct-2022	----	----		01-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate	E298	25-Oct-2022	27-Oct-2022	----	----		01-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	25-Oct-2022	27-Oct-2022	----	----		01-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC15	E298	25-Oct-2022	27-Oct-2022	----	----		01-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-01	E235.Br-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-04	E235.Br-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 705-10	E235.Br-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Duplicate	E235.Br-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC15	E235.Br-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-01	E235.Cl	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-04	E235.Cl	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-10	E235.Cl	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Duplicate	E235.Cl	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC15	E235.Cl	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-01	E378-U	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-04	E378-U	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-10	E378-U	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Duplicate	E378-U	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Field Blank	E378-U	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC15	E378-U	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-01	E235.F	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-04	E235.F	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-10	E235.F	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate	E235.F	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC15	E235.F	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-01	E235.NO3-L	25-Oct-2022	27-Oct-2022	3 days	3 days	✓	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-04	E235.NO3-L	25-Oct-2022	27-Oct-2022	3 days	3 days	✓	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-10	E235.NO3-L	25-Oct-2022	27-Oct-2022	3 days	3 days	✓	27-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Duplicate	E235.NO3-L	25-Oct-2022	27-Oct-2022	3 days	3 days	✓	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	25-Oct-2022	27-Oct-2022	3 days	3 days	✓	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
TC15	E235.NO3-L	25-Oct-2022	27-Oct-2022	3 days	3 days	✓	27-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
661-01	E235.NO2-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
661-04	E235.NO2-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
705-10	E235.NO2-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Duplicate	E235.NO2-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO2-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
TC15	E235.NO2-L	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-01	E235.SO4	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-04	E235.SO4	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 705-10	E235.SO4	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate	E235.SO4	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Field Blank	E235.SO4	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC15	E235.SO4	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-01	E318	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-04	E318	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 705-10	E318	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Duplicate	E318	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E318	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC15	E318	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-01	E372-U	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-04	E372-U	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-10	E372-U	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Duplicate	E372-U	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Field Blank	E372-U	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) TC15	E372-U	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-01	E344	25-Oct-2022	----	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-04	E344	25-Oct-2022	----	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 705-10	E344	25-Oct-2022	----	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) Duplicate	E344	25-Oct-2022	----	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) Field Blank	E344	25-Oct-2022	----	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC15	E344	25-Oct-2022	----	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-01	E333	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E333	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-10	E333	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Duplicate	E333	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Field Blank	E333	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC15	E333	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-01	E336	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-04	E336	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-10	E336	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Duplicate	E336	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Field Blank	E336	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC15	E336	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-01	E509	25-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-04	E509	25-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 705-10	E509	25-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate	E509	25-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Field Blank	E509	25-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC15	E509	25-Oct-2022	30-Oct-2022	----	----		30-Oct-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-01	E421	25-Oct-2022	03-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-04	E421	25-Oct-2022	03-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-10	E421	25-Oct-2022	03-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate	E421	25-Oct-2022	03-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	25-Oct-2022	03-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC15	E421	25-Oct-2022	03-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-01	E358-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-04	E358-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-10	E358-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Duplicate	E358-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC15	E358-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-01	E355-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-04	E355-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-10	E355-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate	E355-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC15	E355-L	25-Oct-2022	27-Oct-2022	----	----		28-Oct-2022	28 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-01	E283	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-04	E283	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-10	E283	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE Duplicate	E283	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE Field Blank	E283	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE TC15	E283	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-01	E290	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-04	E290	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-10	E290	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate	E290	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC15	E290	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 661-01	E100	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-04	E100	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-10	E100	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate	E100	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE TC15	E100	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 661-01	E108	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	0.64 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-04	E108	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	0.64 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-10	E108	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	0.64 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE Duplicate	E108	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	0.64 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	0.64 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC15	E108	25-Oct-2022	27-Oct-2022	----	----		27-Oct-2022	0.25 hrs	0.64 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-01	E162	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-04	E162	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-10	E162	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Duplicate	E162	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC15	E162	25-Oct-2022	----	----	----		27-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE 661-01	E160	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-04	E160	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-10	E160	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Duplicate	E160	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC15	E160	25-Oct-2022	----	----	----		27-Oct-2022	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-01	E121	25-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-04	E121	25-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 705-10	E121	25-Oct-2022	----	----	----		28-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE Duplicate	E121	25-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	25-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC15	E121	25-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-01	E508	25-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-04	E508	25-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 705-10	E508	25-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Duplicate	E508	25-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Field Blank	E508	25-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC15	E508	25-Oct-2022	31-Oct-2022	----	----		31-Oct-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-01	E420	25-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	11 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-04	E420	25-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	11 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-10	E420	25-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	11 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Duplicate	E420	25-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	11 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC15	E420	25-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	11 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	25-Oct-2022	04-Nov-2022	----	----		06-Nov-2022	180 days	13 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)							
Acidity by Titration	E283	718483	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	718474	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	718292	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	718478	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	718477	1	20	5.0	5.0	✓
Conductivity in Water	E100	718475	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722106	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727171	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718293	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	718482	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	718476	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	718479	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	718480	1	20	5.0	5.0	✓
pH by Meter	E108	718473	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	718481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	718192	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	718700	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	2	25	8.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	718290	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	722781	2	39	5.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	729036	2	37	5.4	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718294	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718291	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	718182	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	719516	2	40	5.0	5.0	✓
WAD Cyanide	E336	718496	2	24	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	718483	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	718474	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	718292	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	718478	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	718477	1	20	5.0	5.0	✓
Conductivity in Water	E100	718475	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722106	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727171	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718293	1	13	7.6	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	718482	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	718476	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	718479	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	718480	1	20	5.0	5.0	✓
pH by Meter	E108	718473	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	718481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	718192	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	718700	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	2	25	8.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	718290	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	722781	2	39	5.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	729036	2	37	5.4	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718294	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718291	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	718182	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	719516	2	40	5.0	5.0	✓
WAD Cyanide	E336	718496	2	24	8.3	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	718483	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	718474	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	718292	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	718478	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	718477	1	20	5.0	5.0	✓
Conductivity in Water	E100	718475	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722106	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727171	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718293	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	718482	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	718476	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	718479	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	718480	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	718481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	718192	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	718700	1	20	5.0	5.0	✓
Total Cyanide	E333	718497	2	25	8.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	718290	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	722781	2	39	5.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	729036	2	37	5.4	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718294	1	13	7.6	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718291	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	718182	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	719516	2	40	5.0	5.0	✓
WAD Cyanide	E336	718496	2	24	8.3	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	718292	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	718478	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	718477	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	722106	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727171	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718293	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	718482	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	718476	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	718479	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	718480	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	718481	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	718700	1	20	5.0	5.0	✓
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Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718291	1	13	7.6	5.0	✓
WAD Cyanide	E336	718496	2	24	8.3	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca /Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C6002**	Page	: 1 of 22
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 27-Oct-2022 09:10
PO	: 10857	Date Analysis Commenced	: 27-Oct-2022
C-O-C number	: ----	Issue Date	: 07-Nov-2022 14:55
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Delson Resende	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 718182)											
VA22C5967-003	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 718192)											
VA22C5967-003	Anonymous	solids, total dissolved [TDS]	----	E162	13	mg/L	42	39	3	Diff <2x LOR	----
Physical Tests (QC Lot: 718473)											
VA22C5949-003	Anonymous	pH	----	E108	0.10	pH units	8.19	8.19	0.0244%	4%	----
Physical Tests (QC Lot: 718474)											
VA22C5949-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	146	146	0.134%	20%	----
Physical Tests (QC Lot: 718475)											
VA22C5949-003	Anonymous	conductivity	----	E100	2.0	µS/cm	304	305	0.328%	10%	----
Physical Tests (QC Lot: 718483)											
VA22C5983-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.0	4.9	0.1	Diff <2x LOR	----
Physical Tests (QC Lot: 719516)											
KS2204095-003	Anonymous	turbidity	----	E121	0.10	NTU	0.64	0.64	0.006	Diff <2x LOR	----
Physical Tests (QC Lot: 719517)											
VA22C6002-006	Field Blank	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 718290)											
VA22C5918-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	1.07	1.08	1.30%	20%	----
Anions and Nutrients (QC Lot: 718291)											
VA22C5918-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0998	0.0896	10.7%	20%	----
Anions and Nutrients (QC Lot: 718292)											
VA22C5918-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.154	0.156	1.27%	20%	----
Anions and Nutrients (QC Lot: 718476)											
VA22C5949-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.058	0.055	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 718477)											
VA22C5949-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	1.93	1.90	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 718478)											
VA22C5949-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 718479)											
VA22C5949-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0304	0.0292	0.0012	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 718480)											

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*
Anions and Nutrients (QC Lot: 718480) - continued											
VA22C5949-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 718481)											
VA22C5949-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	23.1	23.1	0.0174%	20%	----
Anions and Nutrients (QC Lot: 718482)											
VA22C5949-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 718496)											
VA22C5745-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718497)											
VA22C5745-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718499)											
VA22C6002-002	661-04	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718500)											
VA22C6002-002	661-04	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 718700)											
VA22C5940-007	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	0.65	0.65	0.005	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 718293)											
VA22C5918-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	12.5	13.1	4.61%	20%	----
Organic / Inorganic Carbon (QC Lot: 718294)											
VA22C5918-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	12.4	12.9	4.44%	20%	----
Total Metals (QC Lot: 722781)											
KS2204095-004	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 722782)											
VA22C6002-004	TC15	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 729036)											
VA22C5988-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0107	0.0108	0.0001	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00083	0.00086	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0279	0.0286	2.75%	20%	----
		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	0.016	0.016	0.0005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	37.5	39.3	4.85%	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: 729036) - continued											
VA22C5988-001	Anonymous	chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00026	0.00028	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.306	0.311	1.56%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.014	0.014	0.0003	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00119	0.00118	0.533%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0071	0.0072	0.00009	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	18.3	18.7	2.10%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00261	0.00265	1.51%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00496	0.00500	0.718%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00111	0.00112	0.000010	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	5.14	5.25	2.04%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000838	0.000930	10.4%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.52	2.57	2.04%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000010	<0.000010	0.0000006	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	22.3	22.6	1.21%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.462	0.464	0.269%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	18.3	18.6	1.46%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00314	0.00310	0.976%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00073	0.00069	0.00004	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0289	0.0285	0.0004	Diff <2x LOR	----
Total Metals (QC Lot: 730535)											
KS2204108-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0169	0.0176	0.0007	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00037	0.00038	0.000009	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00765	0.00784	2.47%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0182	0.0189	3.83%	20%	----
		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	0.026	0.026	0.00009	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000063	0.0000087	0.0000024	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	35.0	35.7	2.12%	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: 730535) - continued											
KS2204108-001	Anonymous	chromium, total	7440-47-3	E420	0.00050	mg/L	0.00086	0.00090	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	0.0159	0.0163	2.67%	20%	----
		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	0.00139	0.00136	1.95%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0085	0.0083	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	15.0	15.4	2.28%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00020	0.00021	0.000008	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00352	0.00357	1.54%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.055	0.005	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	6.88	6.88	0.116%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	18.5	18.4	0.778%	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	45.9	46.6	1.62%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.564	0.570	1.24%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	73.0	72.8	0.281%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000014	0.000014	0.0000006	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0289	0.0284	0.0005	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722106)											
VA22C5928-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 722107)											
VA22C6002-002	661-04	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 727171)											
VA22C6002-001	661-01	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0261	0.0246	5.77%	20%	----
		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	0.00040	0.00036	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00276	0.00266	3.68%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	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: 727171) - continued											
VA22C6002-001	661-01	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	4.70	4.86	3.35%	20%	----
		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	0.062	0.060	0.002	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	0.100	mg/L	1.24	1.22	1.36%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0264	0.0260	1.48%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000266	0.000265	0.000001	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	0.100	mg/L	0.330	0.324	0.006	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.38	5.21	3.21%	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	2.12	2.13	0.490%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0358	0.0332	7.71%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000024	0.000026	0.000002	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	----

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: 718182)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 718192)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 718474)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 718475)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 718483)						
acidity (as CaCO3)	----	E283	2	mg/L	# 3.7	B
Physical Tests (QCLot: 719516)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 719517)						
turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 718290)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 718291)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 718292)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 718476)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 718477)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 718478)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 718479)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 718480)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 718481)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 718482)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 718482) - continued						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 718496)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718497)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718499)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718500)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 718700)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 718293)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 718294)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 722781)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 722782)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 729036)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 729036) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 730535)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 730535) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 722106)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 722107)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 727171)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 727171) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 718182)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	106	85.0	115	----
Physical Tests (QCLot: 718192)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.9	85.0	115	----
Physical Tests (QCLot: 718473)									
pH	----	E108	----	pH units	7 pH units	99.7	98.0	102	----
Physical Tests (QCLot: 718474)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	100	85.0	115	----
Physical Tests (QCLot: 718475)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.7	90.0	110	----
Physical Tests (QCLot: 718483)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	# 139	85.0	115	LCS-H
Physical Tests (QCLot: 719516)									
turbidity	----	E121	0.1	NTU	200 NTU	99.5	85.0	115	----
Physical Tests (QCLot: 719517)									
turbidity	----	E121	0.1	NTU	200 NTU	99.5	85.0	115	----
Anions and Nutrients (QCLot: 718290)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.4	75.0	125	----
Anions and Nutrients (QCLot: 718291)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.1	80.0	120	----
Anions and Nutrients (QCLot: 718292)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	90.4	85.0	115	----
Anions and Nutrients (QCLot: 718476)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.6	90.0	110	----
Anions and Nutrients (QCLot: 718477)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 718478)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 718479)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 718480)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 718481)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 718482)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	101	80.0	120	----
Cyanides (QCLot: 718496)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.0	80.0	120	----
Cyanides (QCLot: 718497)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	94.6	80.0	120	----
Cyanides (QCLot: 718499)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	94.0	80.0	120	----
Cyanides (QCLot: 718500)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	99.0	80.0	120	----
Cyanides (QCLot: 718700)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	99.0	85.0	115	----
Organic / Inorganic Carbon (QCLot: 718293)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	99.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 718294)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	98.4	80.0	120	----
Total Metals (QCLot: 722781)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----
Total Metals (QCLot: 722782)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	106	80.0	120	----
Total Metals (QCLot: 729036)									
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	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.5	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 729036) - continued									
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.5	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.5	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
Total Metals (QCLot: 730535)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.6	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	91.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.8	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	94.1	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	93.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	110	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 730535) - continued									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.9	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	94.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	98.8	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.4	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.7	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	89.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	95.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	91.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.2	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
Dissolved Metals (QCLot: 727171)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	96.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.9	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 727171) - continued									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	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	99.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	111	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.1	80.0	120	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

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: 718290)										
VA22C5918-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 718291)										
VA22C5918-003	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 718292)										
VA22C5918-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 718476)										
VA22C5949-002	Anonymous	fluoride	16984-48-8	E235.F	0.953 mg/L	1 mg/L	95.3	75.0	125	----
Anions and Nutrients (QCLot: 718477)										
VA22C5949-002	Anonymous	chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 718478)										
VA22C5949-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 718479)										
VA22C5949-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 718480)										
VA22C5949-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.504 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 718481)										
VA22C5949-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 718482)										
VA22C5949-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0312 mg/L	0.03 mg/L	104	70.0	130	----
Cyanides (QCLot: 718496)										
VA22C5783-018	Anonymous	cyanide, weak acid dissociable	----	E336	0.658 mg/L	0.625 mg/L	105	75.0	125	----
Cyanides (QCLot: 718497)										
VA22C5783-018	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.24 mg/L	1.25 mg/L	99.4	75.0	125	----
Cyanides (QCLot: 718499)										
VA22C6002-003	705-10	cyanide, strong acid dissociable (total)	----	E333	0.231 mg/L	0.25 mg/L	92.3	75.0	125	----
Cyanides (QCLot: 718500)										
VA22C6002-003	705-10	cyanide, weak acid dissociable	----	E336	0.121 mg/L	0.125 mg/L	97.2	75.0	125	----

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
Cyanides (QCLot: 718700)										
VA22C5940-008	Anonymous	thiocyanate	302-04-5	E344	9.26 mg/L	10 mg/L	92.6	75.0	125	----
Organic / Inorganic Carbon (QCLot: 718293)										
VA22C5918-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 718294)										
VA22C5918-003	Anonymous	carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 722781)										
KS2204095-012	Anonymous	mercury, total	7439-97-6	E508	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----
Total Metals (QCLot: 722782)										
VA22C6002-005	Duplicate	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Total Metals (QCLot: 729036)										
VA22C5988-002	Anonymous	aluminum, total	7429-90-5	E420	0.193 mg/L	0.2 mg/L	96.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.4	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	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00904 mg/L	0.01 mg/L	90.4	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	94.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0182 mg/L	0.02 mg/L	90.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0997 mg/L	0.1 mg/L	99.7	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	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.36 mg/L	10 mg/L	93.6	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		silicon, total	7440-21-3	E420	9.91 mg/L	10 mg/L	99.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00408 mg/L	0.004 mg/L	102	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: 729036) - continued										
VA22C5988-002	Anonymous	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	21.0 mg/L	20 mg/L	105	70.0	130	----
		thallium, total	7440-28-0	E420	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.363 mg/L	0.4 mg/L	90.7	70.0	130	----
Total Metals (QCLot: 730535)										
KS2204140-001	Anonymous	aluminum, total	7429-90-5	E420	0.183 mg/L	0.2 mg/L	91.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0183 mg/L	0.02 mg/L	91.4	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	0.0346 mg/L	0.04 mg/L	86.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00834 mg/L	0.01 mg/L	83.4	70.0	130	----
		boron, total	7440-42-8	E420	0.085 mg/L	0.1 mg/L	84.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00358 mg/L	0.004 mg/L	89.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0175 mg/L	0.02 mg/L	87.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0170 mg/L	0.02 mg/L	85.3	70.0	130	----
		iron, total	7439-89-6	E420	1.74 mg/L	2 mg/L	86.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0165 mg/L	0.02 mg/L	82.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0836 mg/L	0.1 mg/L	83.6	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	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0341 mg/L	0.04 mg/L	85.3	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.58 mg/L	10 mg/L	95.8	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0385 mg/L	0.04 mg/L	96.2	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	0.00359 mg/L	0.004 mg/L	89.7	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	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: 730535) - continued										
KS2204140-001	Anonymous	strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00324 mg/L	0.004 mg/L	81.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00349 mg/L	0.004 mg/L	87.3	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0934 mg/L	0.1 mg/L	93.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.354 mg/L	0.4 mg/L	88.4	70.0	130	----
Dissolved Metals (QCLot: 722106)										
VA22C5932-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000962 mg/L	0.0001 mg/L	96.2	70.0	130	----
Dissolved Metals (QCLot: 722107)										
VA22C6002-003	705-10	mercury, dissolved	7439-97-6	E509	0.0000945 mg/L	0.0001 mg/L	94.5	70.0	130	----
Dissolved Metals (QCLot: 727171)										
VA22C6002-002	661-04	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00991 mg/L	0.01 mg/L	99.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.99 mg/L	2 mg/L	99.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	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	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.83 mg/L	4 mg/L	95.8	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: 727171) - continued										
VA22C6002-002	661-04	selenium, dissolved	7782-49-2	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.79 mg/L	10 mg/L	87.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.0 mg/L	20 mg/L	100	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.396 mg/L	0.4 mg/L	99.0	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	6002	ALS Contact: A. Springer	Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	661-01	25-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	661-04	25-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	705-10	25-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	TC15	25-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Duplicate 2	25-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	Field Blank	25-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C6002

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C	
			3 4	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Oct 26 22	Time: 1000	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 27/10/22	Time: 9100 am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C6137**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 28-Oct-2022 09:10
PO	: ----	Date Analysis Commenced	: 28-Oct-2022
C-O-C number	: ----	Issue Date	: 07-Nov-2022 23:06
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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*
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Delson Resende	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-10	CC-15	CC-20
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022
						VA22C6137-001	VA22C6137-002	VA22C6137-003	VA22C6137-004	VA22C6137-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	2.5
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		73.4	77.4	62.1	62.1	63.8
conductivity	----	E100	2.0	µS/cm		160	170	138	138	142
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		74.8	82.4	69.1	67.2	65.6
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		77.2	81.1	71.4	67.5	66.0
pH	----	E108	0.10	pH units		8.16	8.18	8.04	8.07	8.09
solids, total dissolved [TDS]	----	E162	10	mg/L		130	118	98	99	105
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	275	<3.0	<3.0
turbidity	----	E121	0.10	NTU		1.92	1.41	60.1	1.20	1.08
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	0.0062	0.0087	0.0098	0.0150
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.063	0.068	0.056	0.055	0.056
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.214	0.253	2.45	0.259	0.243
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	<0.0050	0.0109	0.0075
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0040	0.0052	<0.0010	0.0023	0.0022
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0154	0.0152	0.193	0.0144	0.0117
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.34	3.86	3.46	3.42	3.30
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.92	6.46	9.10	7.73	7.28
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		6.99	6.78	18.8	9.71	7.74
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0240	0.0169	1.00	0.0226	0.0134
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-10	CC-15	CC-20
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022
						VA22C6137-001	VA22C6137-002	VA22C6137-003	VA22C6137-004	VA22C6137-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00069	0.00082	0.00093	0.00063	0.00057
barium, total	7440-39-3	E420	0.00010	mg/L		0.00906	0.00835	0.0204	0.00757	0.00787
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	0.000053	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000182	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		21.7	22.8	20.3	19.5	19.1
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	0.00041	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	0.00184	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.369	0.369	1.30	0.163	0.150
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	0.000503	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		5.58	5.87	5.04	4.56	4.45
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0356	0.0308	0.109	0.0190	0.0210
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000058	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000926	0.000978	0.000654	0.000670	0.000692
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	0.00165	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.186	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.947	0.933	1.11	0.774	0.801
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000061	0.000067	0.000148	0.000060	0.000074
silicon, total	7440-21-3	E420	0.10	mg/L		5.05	4.93	4.99	4.41	4.59
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		4.64	4.57	3.42	3.34	3.48
strontium, total	7440-24-6	E420	0.00020	mg/L		0.112	0.117	0.105	0.100	0.0991
sulfur, total	7704-34-9	E420	0.50	mg/L		1.12	1.20	1.47	1.06	1.16
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00119	0.00076	0.0517	0.00103	0.00051
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000181	0.000219	0.000203	0.000124	0.000117
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00060	0.00052	0.00326	0.00053	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-10	CC-15	CC-20
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022
						VA22C6137-001	VA22C6137-002	VA22C6137-003	VA22C6137-004	VA22C6137-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0047	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	0.00164	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0029	0.0024	0.0070	0.0030	0.0030
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00052	0.00069	0.00043	0.00050	0.00049
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00767	0.00732	0.00752	0.00704	0.00693
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		21.6	23.6	20.1	19.7	18.9
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00031	0.00030	0.00039	0.00031	0.00034
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.239	0.262	0.025	0.101	0.106
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.06	5.70	4.60	4.38	4.48
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0251	0.0238	0.00712	0.0146	0.0181
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000915	0.000974	0.000582	0.000679	0.000659
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.840	0.869	0.769	0.722	0.713
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000067	<0.000050	0.000051	0.000055	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.70	4.81	3.08	4.13	4.31
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.44	4.68	3.29	3.32	3.49
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.110	0.116	0.0950	0.0989	0.101

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	CC-10	CC-15	CC-20
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022
						VA22C6137-001	VA22C6137-002	VA22C6137-003	VA22C6137-004	VA22C6137-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.95	1.29	1.07	0.73	1.00
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000172	0.000206	0.000100	0.000118	0.000112
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	DC-20	Duplicate1	Travel Blank	----	----
				Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C6137-006	VA22C6137-007	VA22C6137-008	--------	--------
					Result	Result	Result	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	<2.0	<2.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	58.4	58.2	<1.0	----	----
conductivity	----	E100	2.0	µS/cm	128	128	<2.0	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	61.0	60.6	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	59.1	60.1	<0.60	----	----
pH	----	E108	0.10	pH units	8.08	8.08	5.57	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	93	86	<10	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU	0.46	0.63	<0.10	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	<0.50	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.049	0.049	<0.020	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.087	0.062	<0.050	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0043	0.0046	<0.0010	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0074	0.0073	<0.0020	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.52	2.52	<0.30	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.78	2.55	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.98	2.86	<0.50	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0140	0.0153	<0.0030	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-20	Duplicate1	Travel Blank	----	----
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6137-006	VA22C6137-007	VA22C6137-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00058	0.00055	<0.00010	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00916	0.00937	<0.00010	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		16.7	17.3	<0.050	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.238	0.241	<0.010	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.22	4.11	<0.100	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0245	0.0255	<0.00010	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000845	0.000866	<0.000050	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.602	0.624	<0.100	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000057	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.34	6.58	<0.10	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.94	3.82	<0.050	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.106	0.107	<0.00020	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.71	0.75	<0.50	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00060 DLM	0.00082	<0.00030	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000282	0.000290	<0.000010	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	0.00052	<0.00050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-20	Duplicate1	Travel Blank	----	----
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6137-006	VA22C6137-007	VA22C6137-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0065	0.0057	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00050	0.00047	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00882	0.00869	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		17.5	17.7	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.196	0.188	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.21	3.99	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0227	0.0222	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000800	0.000822	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.580	0.567	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.14	6.16	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.80	3.66	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.105	0.102	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-20	Duplicate1	Travel Blank	----	----
					Client sampling date / time	26-Oct-2022	26-Oct-2022	26-Oct-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6137-006	VA22C6137-007	VA22C6137-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.76	0.74	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000254	0.000260	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C6137**	Page	: 1 of 34
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 28-Oct-2022 09:10
PO	: ----	Issue Date	: 07-Nov-2022 23:06
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Physical Tests	QC-720945-002	----	acidity (as CaCO3)	----	E283	134 % LCS-H	85.0-115%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
LCS-H	*Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-10	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-15	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-20	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-30	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-40	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-20	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate1	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-10	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-15	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-20	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-30	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-40	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
DC-20	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Duplicate1	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.Br-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-10	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-15	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-20	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-30	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-40	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-20	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Duplicate1	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Travel Blank	E235.Cl	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-10	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-15	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-20	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-30	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-40	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-20	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Duplicate1	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Travel Blank	E378-U	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-10	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-15	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-20	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-30	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-40	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-20	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate1	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Travel Blank	E235.F	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-10	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-15	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-20	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-30	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-40	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-20	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Duplicate1	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	26-Oct-2022	29-Oct-2022	3 days	3 days	✓	29-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-10	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-15	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-20	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-30	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-40	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-20	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Duplicate1	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-10	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-15	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-20	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-30	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-40	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-20	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate1	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Travel Blank	E235.SO4	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-10	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-15	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-20	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-30	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-40	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DC-20	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Duplicate1	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Travel Blank	E318	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-10	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-15	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-20	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-30	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-40	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
DC-20	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Duplicate1	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Travel Blank	E372-U	26-Oct-2022	02-Nov-2022	----	----		03-Nov-2022	28 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-10	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-15	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-20	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-30	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-40	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-20	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Duplicate1	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Travel Blank	E344	26-Oct-2022	----	----	----		03-Nov-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-10	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-15	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-20	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-30	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-20	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Duplicate1	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Travel Blank	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-40	E333	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	7 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-10	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-15	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-20	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-30	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-40	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-20	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Duplicate1	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Travel Blank	E336	26-Oct-2022	28-Oct-2022	----	----		28-Oct-2022	14 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-10	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-15	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-20	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-30	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-40	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-20	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate1	E509	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-10	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-15	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-20	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-30	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-40	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-20	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate1	E421	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	9 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-10	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-15	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-20	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-30	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-40	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-20	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Duplicate1	E358-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-10	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-15	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-20	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-30	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-40	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-20	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate1	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
Travel Blank	E355-L	26-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE										
CC-10	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
CC-15	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
CC-20	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
CC-30	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
CC-40	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
DC-20	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
Duplicate1	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
Travel Blank	E283	26-Oct-2022	29-Oct-2022	----	----		29-Oct-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE CC-10	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-15	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-20	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-30	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-40	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-20	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate1	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-10	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE CC-15	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-20	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-30	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-40	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-20	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate1	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE Travel Blank	E100	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE CC-10	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-15	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE CC-20	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-30	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-40	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-20	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate1	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	26-Oct-2022	29-Oct-2022	----	----		30-Oct-2022	0.25 hrs	33.25 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE CC-10	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-15	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-20	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-30	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-40	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-20	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Duplicate1	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-10	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-15	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-20	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-30	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE CC-40	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-20	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Duplicate1	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160	26-Oct-2022	----	----	----		29-Oct-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-10	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-15	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-20	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-30	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-40	E121	26-Oct-2022	----	----	----		28-Oct-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE DC-20	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Duplicate1	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Travel Blank	E121	26-Oct-2022	----	----	----		28-Oct-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-10	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-15	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-20	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-30	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-40	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-20	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Duplicate1	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Travel Blank	E508	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-10	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-15	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-20	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-30	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-40	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-20	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Duplicate1	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Travel Blank	E420	26-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	10 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)							
Acidity by Titration	E283	720945	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	720936	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	726281	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	720939	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	720938	1	18	5.5	5.0	✓
Conductivity in Water	E100	720935	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	729890	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727197	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	726284	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	720944	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	720937	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	720940	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	720941	1	19	5.2	5.0	✓
pH by Meter	E108	720934	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	720942	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	721753	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	729292	1	20	5.0	5.0	✓
Total Cyanide	E333	720798	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	726283	1	11	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	729821	2	29	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	729175	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	726285	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	726282	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	721745	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	720213	1	20	5.0	5.0	✓
WAD Cyanide	E336	720799	1	11	9.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	720945	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	720936	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	726281	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	720939	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	720938	1	18	5.5	5.0	✓
Conductivity in Water	E100	720935	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	729890	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727197	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	726284	1	9	11.1	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	720944	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	720937	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	720940	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	720941	1	19	5.2	5.0	✓
pH by Meter	E108	720934	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	720942	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	721753	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	729292	1	20	5.0	5.0	✓
Total Cyanide	E333	720798	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	726283	1	11	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	729821	2	29	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	729175	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	726285	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	726282	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	721745	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	720213	1	20	5.0	5.0	✓
WAD Cyanide	E336	720799	1	11	9.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	720945	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	720936	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	726281	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	720939	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	720938	1	18	5.5	5.0	✓
Conductivity in Water	E100	720935	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	729890	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727197	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	726284	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	720944	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	720937	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	720940	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	720941	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	720942	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	721753	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	729292	1	20	5.0	5.0	✓
Total Cyanide	E333	720798	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	726283	1	11	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	729821	2	29	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	729175	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	726285	1	11	9.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	726282	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	721745	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	720213	1	20	5.0	5.0	✓
WAD Cyanide	E336	720799	1	11	9.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	726281	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	720939	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	720938	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	729890	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	727197	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	726284	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	720944	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	720937	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	720940	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	720941	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	720942	1	13	7.6	5.0	✓
Thiocyanate by Colourimetry	E344	729292	1	20	5.0	5.0	✓
Total Cyanide	E333	720798	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	726283	1	11	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	729821	2	29	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	729175	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	726285	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	726282	1	17	5.8	5.0	✓
WAD Cyanide	E336	720799	1	11	9.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C6137**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 28-Oct-2022 09:10
PO	: ----	Date Analysis Commenced	: 28-Oct-2022
C-O-C number	: ----	Issue Date	: 07-Nov-2022 23:06
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Delson Resende	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 720213)											
KS2204124-001	Anonymous	turbidity	----	E121	0.10	NTU	6.69	6.28	6.33%	15%	----
Physical Tests (QC Lot: 720934)											
FJ2203054-001	Anonymous	pH	----	E108	0.10	pH units	8.47	8.46	0.118%	4%	----
Physical Tests (QC Lot: 720935)											
FJ2203054-001	Anonymous	conductivity	----	E100	2.0	µS/cm	361	361	0.00%	10%	----
Physical Tests (QC Lot: 720936)											
FJ2203054-001	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	185	182	1.12%	20%	----
Physical Tests (QC Lot: 720945)											
FJ2203054-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 721745)											
FJ2203054-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 721753)											
FJ2203054-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	253	229	9.96%	20%	----
Anions and Nutrients (QC Lot: 720937)											
FJ2203054-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.090	0.088	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 720938)											
FJ2203054-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 720939)											
FJ2203054-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 720940)											
FJ2203054-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.135	0.136	0.804%	20%	----
Anions and Nutrients (QC Lot: 720941)											
FJ2203054-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 720942)											
FJ2203054-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	4.90	4.90	0.127%	20%	----
Anions and Nutrients (QC Lot: 720944)											
FJ2203054-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 726281)											
KS2204069-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.250	mg/L	13.9	14.4	3.81%	20%	----
Anions and Nutrients (QC Lot: 726282)											

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*
Anions and Nutrients (QC Lot: 726282) - continued											
FJ2203062-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0186	0.0188	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 726283)											
FJ2203062-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L	0.357	0.399	0.041	Diff <2x LOR	----
Cyanides (QC Lot: 720798)											
VA22C5920-008	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 720799)											
VA22C6080-006	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 729292)											
VA22C6080-007	Anonymous	thiocyanate	302-04-5	E344	12.5	mg/L	334	328	1.76%	20%	----
Organic / Inorganic Carbon (QC Lot: 726284)											
FJ2203062-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.09	4.36	0.27	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 726285)											
FJ2203062-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.28	4.51	0.23	Diff <2x LOR	----
Total Metals (QC Lot: 729175)											
VA22C6108-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0534	0.0540	1.02%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00353	0.00366	3.58%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000270	0.0000268	0.0000001	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	7.99	8.15	1.95%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.372	0.384	3.07%	20%	----
		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	0.00614	0.00622	1.15%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.230	0.231	0.426%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00797	0.00831	4.18%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000227	0.000235	0.000008	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00988	0.0102	2.82%	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: 729175) - continued											
VA22C6108-001	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.229	0.236	0.007	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.66	1.67	0.567%	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	1.81	1.86	2.43%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0156	0.0156	0.127%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.209	0.213	1.92%	20%	----
Total Metals (QC Lot: 729821)											
KS2204140-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 729822)											
VA22C6137-003	CC-10	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000058	0.0000058	0.00000004	Diff <2x LOR	----
Dissolved Metals (QC Lot: 727197)											
VA22C6086-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0366	0.0370	0.946%	20%	----
		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	0.00101	0.00100	1.39%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0131	0.0136	3.36%	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	0.0000051	0.00000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	6.66	6.61	0.882%	20%	----
		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	0.108	0.110	2.21%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	0.000063	0.000000005	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0031	0.0030	0.00005	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: 727197) - continued											
VA22C6086-001	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.12	2.13	0.611%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0191	0.0188	1.26%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000188	0.000193	0.000004	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	0.069	0.066	0.003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.00	0.991	0.893%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	13.4	13.6	1.07%	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	2.70	2.82	4.06%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0901	0.0906	0.507%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	0.00086	0.00078	0.00008	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00219	0.00217	0.00003	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 729890)											
VA22C5934-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 729891)											
VA22C6137-004	CC-15	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 720213)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 720935)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 720936)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 720945)						
acidity (as CaCO3)	----	E283	2	mg/L	2.8	----
Physical Tests (QCLot: 721745)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 721753)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 720937)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 720938)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 720939)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 720940)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 720941)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 720942)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 720944)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 726281)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 726282)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 726283)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Cyanides (QCLot: 720798)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 720798) - continued						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 720799)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 729292)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 726284)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 726285)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 729175)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 729175) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 729821)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 729822)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 727197)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 727197) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 729890)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 729891)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 720213)									
turbidity	----	E121	0.1	NTU	200 NTU	97.7	85.0	115	----
Physical Tests (QCLot: 720934)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 720935)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 720936)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	97.2	85.0	115	----
Physical Tests (QCLot: 720945)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	# 134	85.0	115	LCS-H
Physical Tests (QCLot: 721745)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	85.0	85.0	115	----
Physical Tests (QCLot: 721753)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 720937)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 720938)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 720939)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 720940)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 720941)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 720942)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 720944)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	94.9	80.0	120	----
Anions and Nutrients (QCLot: 726281)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.3	85.0	115	----
Anions and Nutrients (QCLot: 726282)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	91.0	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 726283)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.9	75.0	125	----
Cyanides (QCLot: 720798)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	93.9	80.0	120	----
Cyanides (QCLot: 720799)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	92.1	80.0	120	----
Cyanides (QCLot: 729292)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	99.9	85.0	115	----
Organic / Inorganic Carbon (QCLot: 726284)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	107	80.0	120	----
Organic / Inorganic Carbon (QCLot: 726285)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Total Metals (QCLot: 729175)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	95.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	89.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	105	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 729175) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.0	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Total Metals (QCLot: 729821)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.5	80.0	120	----
Total Metals (QCLot: 729822)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
Dissolved Metals (QCLot: 727197)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.3	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	94.1	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 727197) - continued									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.8	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	93.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	84.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	87.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.6	80.0	120	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

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: 720937)										
FJ2203054-002	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 720938)										
FJ2203054-002	Anonymous	chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 720939)										
FJ2203054-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 720940)										
FJ2203054-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 720941)										
FJ2203054-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 720942)										
FJ2203054-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 720944)										
FJ2203054-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0309 mg/L	0.03 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 726281)										
KS2204145-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 726282)										
FJ2203062-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0489 mg/L	0.05 mg/L	97.8	70.0	130	----
Anions and Nutrients (QCLot: 726283)										
FJ2203062-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.63 mg/L	2.5 mg/L	105	70.0	130	----
Cyanides (QCLot: 720798)										
VA22C5920-009	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.223 mg/L	0.25 mg/L	89.2	75.0	125	----
Cyanides (QCLot: 720799)										
VA22C6080-007	Anonymous	cyanide, weak acid dissociable	----	E336	0.124 mg/L	0.125 mg/L	99.0	75.0	125	----
Cyanides (QCLot: 729292)										
VA22C6080-008	Anonymous	thiocyanate	302-04-5	E344	46.2 mg/L	50 mg/L	92.4	75.0	125	----
Organic / Inorganic Carbon (QCLot: 726284)										
FJ2203062-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.16 mg/L	5 mg/L	103	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
Organic / Inorganic Carbon (QCLot: 726285)										
FJ2203062-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.91 mg/L	5 mg/L	98.3	70.0	130	----
Total Metals (QCLot: 729175)										
VA22C6108-002	Anonymous	aluminum, total	7429-90-5	E420	0.182 mg/L	0.2 mg/L	90.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		barium, total	7440-39-3	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00975 mg/L	0.01 mg/L	97.5	70.0	130	----
		boron, total	7440-42-8	E420	0.094 mg/L	0.1 mg/L	93.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.89 mg/L	2 mg/L	94.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.0912 mg/L	0.1 mg/L	91.2	70.0	130	----
		magnesium, total	7439-95-4	E420	0.930 mg/L	1 mg/L	93.0	70.0	130	----
		manganese, total	7439-96-5	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		nickel, total	7440-02-0	E420	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		phosphorus, total	7723-14-0	E420	8.66 mg/L	10 mg/L	86.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.87 mg/L	4 mg/L	96.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	8.81 mg/L	10 mg/L	88.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00377 mg/L	0.004 mg/L	94.4	70.0	130	----
		sodium, total	7440-23-5	E420	1.76 mg/L	2 mg/L	87.9	70.0	130	----
		strontium, total	7440-24-6	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		sulfur, total	7704-34-9	E420	18.5 mg/L	20 mg/L	92.4	70.0	130	----
		thallium, total	7440-28-0	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0364 mg/L	0.04 mg/L	90.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0962 mg/L	0.1 mg/L	96.2	70.0	130	----
		zinc, total	7440-66-6	E420	0.376 mg/L	0.4 mg/L	94.0	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: 729821)										
VA22C5920-001	Anonymous	mercury, total	7439-97-6	E508	0.0000958 mg/L	0.0001 mg/L	95.8	70.0	130	----
Total Metals (QCLot: 729822)										
VA22C6137-004	CC-15	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 727197)										
VA22C6086-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.181 mg/L	0.2 mg/L	90.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00913 mg/L	0.01 mg/L	91.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	94.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	94.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0952 mg/L	0.1 mg/L	95.2	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	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.74 mg/L	10 mg/L	97.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.57 mg/L	4 mg/L	89.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00406 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.4 mg/L	20 mg/L	97.0	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0372 mg/L	0.04 mg/L	92.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00375 mg/L	0.004 mg/L	93.8	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: 727197) - continued										
VA22C6086-002	Anonymous	vanadium, dissolved	7440-62-2	E421	0.0953 mg/L	0.1 mg/L	95.3	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.353 mg/L	0.4 mg/L	88.3	70.0	130	----
Dissolved Metals (QCLot: 729890)										
VA22C5934-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.000108 mg/L	0.0001 mg/L	108	70.0	130	----
Dissolved Metals (QCLot: 729891)										
VA22C6137-005	CC-20	mercury, dissolved	7439-97-6	E509	0.0000935 mg/L	0.0001 mg/L	93.5	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

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

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

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

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

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

Project Information

ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): 6137

ALS Contact: A. Springer

Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
1	CC-30	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
2	CC-40	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
3	CC-10	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
4	CC-15	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
5	CC-20	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
6	DC-20	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
7	Duplicate 1	26-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
8	Travel Blank	26-Oct-22		Water	R	R		R	R		R		R					6
				Water														
				Water														
				Water														
				Water														

Environmental Division Vancouver

Work Order Reference

VA22C6137

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

Select additional codes to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com

Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
				6.4	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: <Original signed by>	Date: Oct 27, 2022	Time:	Received by:	Date:	Time:	<Original signed by>	Date: 10/28/22	Time: 9:10

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

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C6603**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 02-Nov-2022 08:50
PO	: 10857	Date Analysis Commenced	: 02-Nov-2022
C-O-C number	:	Issue Date	: 15-Nov-2022 17:41
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Ann Joby	Lab Assistant	Metals, Burnaby, British Columbia
Anshim Anshim	Lab Assistant	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no unit
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	----	----	----
					Client sampling date / time	31-Oct-2022	31-Oct-2022	----	----	----
						VA22C6603-001	VA22C6603-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		72.2	78.4	----	----	----
conductivity	----	E100	2.0	µS/cm		155	163	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		77.4	80.4	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		72.8	77.3	----	----	----
pH	----	E108	0.10	pH units		7.95	7.97	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		123	120	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	----	----	----
turbidity	----	E121	0.10	NTU		1.58	1.63	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	0.0053	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.056	0.060	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.220	0.264	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0061	0.0061	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0147	0.0156	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.18	3.60	----	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.41	6.54	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		5.93	6.33	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0200	0.0182	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-30	CC-40	----	----	----
					Client sampling date / time	31-Oct-2022	31-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6603-001	VA22C6603-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00055	0.00074	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00794	0.00810	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		21.3	21.8	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.390	0.383	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.76	5.56	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0300	0.0297	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000843	0.000941	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.847	0.905	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000053	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		5.13	5.26	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.77	4.38	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.102	0.110	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.11	1.19	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00099	0.00076	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000168	0.000205	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-30	CC-40	----	----	----
					Client sampling date / time	31-Oct-2022	31-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6603-001	VA22C6603-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0038	0.0035	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00056	0.00067	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00818	0.00783	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		21.9	22.6	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00031	0.00032	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.246	0.266	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.52	5.82	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0252	0.0236	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000808	0.000902	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.926	0.934	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.09	5.44	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.42	4.63	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.111	0.117	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-30	CC-40	----	----	----
					Client sampling date / time	31-Oct-2022	31-Oct-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C6603-001	VA22C6603-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.93	1.11	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000147	0.000188	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C6603**	Page	: 1 of 16
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 02-Nov-2022 08:50
PO	: 10857	Issue Date	: 15-Nov-2022 17:41
C-O-C number	:		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-30	E298	31-Oct-2022	06-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-40	E298	31-Oct-2022	06-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-30	E235.Br-L	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-40	E235.Br-L	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-30	E235.Cl	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-40	E235.Cl	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-30	E378-U	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-40	E378-U	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-30	E235.F	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-40	E235.F	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-30	E235.NO3-L	31-Oct-2022	02-Nov-2022	3 days	3 days	✓	02-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-40	E235.NO3-L	31-Oct-2022	02-Nov-2022	3 days	3 days	✓	02-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-30	E235.NO2-L	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-40	E235.NO2-L	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-30	E235.SO4	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-40	E235.SO4	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-30	E318	31-Oct-2022	06-Nov-2022	----	----		12-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-40	E318	31-Oct-2022	06-Nov-2022	----	----		12-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-30	E372-U	31-Oct-2022	06-Nov-2022	----	----		08-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-40	E372-U	31-Oct-2022	06-Nov-2022	----	----		08-Nov-2022	28 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-30	E344	31-Oct-2022	----	----	----		03-Nov-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-40	E344	31-Oct-2022	----	----	----		03-Nov-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E333	31-Oct-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E333	31-Oct-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	10 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E336	31-Oct-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E336	31-Oct-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-30	E509	31-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-40	E509	31-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-30	E421	31-Oct-2022	08-Nov-2022	----	----		11-Nov-2022	180 days	12 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-40	E421	31-Oct-2022	08-Nov-2022	----	----		11-Nov-2022	180 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-30	E358-L	31-Oct-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-40	E358-L	31-Oct-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-30	E355-L	31-Oct-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-40	E355-L	31-Oct-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	6 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-30	E283	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-40	E283	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-30	E290	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-40	E290	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-30	E100	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-40	E100	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE CC-30	E108	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-40	E108	31-Oct-2022	02-Nov-2022	----	----		02-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-30	E162	31-Oct-2022	----	----	----		03-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-40	E162	31-Oct-2022	----	----	----		03-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-30	E160	31-Oct-2022	----	----	----		03-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-40	E160	31-Oct-2022	----	----	----		03-Nov-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-30	E121	31-Oct-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-40	E121	31-Oct-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-30	E508	31-Oct-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-40	E508	31-Oct-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-30	E420	31-Oct-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	12 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
CC-40	E420	31-Oct-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	12 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)							
Acidity by Titration	E283	727319	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	727310	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	732633	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	727314	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	727313	1	15	6.6	5.0	✓
Conductivity in Water	E100	727311	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731290	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	735897	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	732634	1	6	16.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	727321	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	727312	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	727315	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	727316	1	15	6.6	5.0	✓
pH by Meter	E108	727309	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	727317	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	729700	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	729293	1	20	5.0	5.0	✓
Total Cyanide	E333	737503	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	732631	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	732619	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	733960	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	732635	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	732632	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	729694	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	728184	1	20	5.0	5.0	✓
WAD Cyanide	E336	737504	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	727319	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	727310	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	732633	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	727314	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	727313	1	15	6.6	5.0	✓
Conductivity in Water	E100	727311	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731290	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	735897	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	732634	1	6	16.6	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	727321	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	727312	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	727315	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	727316	1	15	6.6	5.0	✓
pH by Meter	E108	727309	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	727317	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	729700	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	729293	1	20	5.0	5.0	✓
Total Cyanide	E333	737503	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	732631	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	732619	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	733960	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	732635	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	732632	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	729694	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	728184	1	20	5.0	5.0	✓
WAD Cyanide	E336	737504	1	19	5.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	727319	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	727310	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	732633	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	727314	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	727313	1	15	6.6	5.0	✓
Conductivity in Water	E100	727311	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731290	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	735897	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	732634	1	6	16.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	727321	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	727312	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	727315	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	727316	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	727317	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	729700	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	729293	1	20	5.0	5.0	✓
Total Cyanide	E333	737503	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	732631	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	732619	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	733960	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	732635	1	6	16.6	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	732632	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	729694	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	728184	1	20	5.0	5.0	✓
WAD Cyanide	E336	737504	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	732633	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	727314	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	727313	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731290	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	735897	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	732634	1	6	16.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	727321	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	727312	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	727315	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	727316	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	727317	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	729293	1	20	5.0	5.0	✓
Total Cyanide	E333	737503	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	732631	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	732619	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	733960	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	732635	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	732632	1	19	5.2	5.0	✓
WAD Cyanide	E336	737504	1	19	5.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C6603**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 02-Nov-2022 08:50
PO	: 10857	Date Analysis Commenced	: 02-Nov-2022
C-O-C number	:	Issue Date	: 15-Nov-2022 17:41
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Ann Joby	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Anshim Anshim	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
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Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 727309)											
KS2204169-003	Anonymous	pH	----	E108	0.10	pH units	8.54	8.52	0.234%	4%	----
Physical Tests (QC Lot: 727310)											
KS2204169-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	463	467	1.01%	20%	----
Physical Tests (QC Lot: 727311)											
KS2204169-003	Anonymous	conductivity	----	E100	2.0	µS/cm	3290	3290	0.00%	10%	----
Physical Tests (QC Lot: 727319)											
KS2204169-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 728184)											
VA22C6444-002	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 729694)											
KS2204169-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	35.9	37.1	3.29%	20%	----
Physical Tests (QC Lot: 729700)											
KS2204169-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	604	618	2.37%	20%	----
Anions and Nutrients (QC Lot: 727312)											
KS2204169-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.186	0.178	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 727313)											
KS2204169-001	Anonymous	chloride	16887-00-6	E235.Cl	2.50	mg/L	4.06	3.95	0.11	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 727314)											
KS2204169-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 727315)											
KS2204169-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.369	0.371	0.439%	20%	----
Anions and Nutrients (QC Lot: 727316)											
KS2204169-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 727317)											
KS2204169-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	256	257	0.636%	20%	----
Anions and Nutrients (QC Lot: 727321)											
KS2204169-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0127	0.0129	1.27%	20%	----
Anions and Nutrients (QC Lot: 732631)											
KS2204215-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.536	0.568	5.87%	20%	----
Anions and Nutrients (QC Lot: 732632)											

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*
Anions and Nutrients (QC Lot: 732632) - continued											
KS2204215-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	7.02	8.57	19.8%	20%	----
Anions and Nutrients (QC Lot: 732633)											
KS2204215-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.250	mg/L	13.5	12.2	9.90%	20%	----
Cyanides (QC Lot: 729293)											
VA22C6528-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 737503)											
VA22C6529-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 737504)											
VA22C6529-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 732634)											
KS2204251-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.50	4.72	0.22	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 732635)											
KS2204251-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.10	4.43	0.32	Diff <2x LOR	----
Total Metals (QC Lot: 732619)											
VA22C6502-004	Anonymous	mercury, total	7439-97-6	E508	0.0000500	mg/L	0.000793	0.000908	13.6%	20%	----
Total Metals (QC Lot: 733960)											
VA22C6583-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00450	0.00445	1.17%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000158	0.0000157	0.00000005	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	5.80	5.80	0.162%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.315	0.305	3.32%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.020	0.018	0.002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00299	0.00299	0.0807%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.43	1.38	3.99%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00245	0.00231	5.82%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000074	0.000061	0.000013	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: 733960) - continued											
VA22C6583-001	Anonymous	nickel, total	7440-02-0	E420	0.00050	mg/L	0.00529	0.00491	7.39%	20%	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.149	0.147	0.003	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.93	1.90	1.45%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000206	0.000203	1.47%	20%	----
		sodium, total	7440-23-5	E420	0.050	mg/L	3.41	3.30	3.24%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0167	0.0170	2.19%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.518	0.504	2.85%	20%	----
Dissolved Metals (QC Lot: 731290)											
VA22C6535-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 735897)											
VA22C6603-001	CC-30	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0038	0.0038	0.00006	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	0.00056	0.00052	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00818	0.00802	1.97%	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	21.9	22.1	0.785%	20%	----
		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	0.00031	0.00027	0.00004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.246	0.253	2.61%	20%	----
		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	0.100	mg/L	5.52	5.36	2.84%	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*
Dissolved Metals (QC Lot: 735897) - continued											
VA22C6603-001	CC-30	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0252	0.0250	0.474%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000808	0.000827	2.33%	20%	----
		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	0.100	mg/L	0.926	0.920	0.006	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	0.000055	0.000005	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.09	5.25	3.20%	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	4.42	4.29	2.98%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.111	0.112	1.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.93	1.00	0.07	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000147	0.000158	6.91%	20%	----
		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	----

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: 727310)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 727311)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 727319)						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
Physical Tests (QCLot: 728184)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 729694)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 729700)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 727312)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 727313)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 727314)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 727315)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 727316)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 727317)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 727321)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 732631)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 732632)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 732633)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 729293)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 729293) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 737503)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 737504)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 732634)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 732635)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 732619)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 733960)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 733960) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 731290)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 735897)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	MBRR
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 735897) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Qualifiers

Qualifier	Description
MBRR	*Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible*

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 727309)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 727310)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 727311)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.6	90.0	110	----
Physical Tests (QCLot: 727319)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	98.7	85.0	115	----
Physical Tests (QCLot: 728184)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 729694)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.8	85.0	115	----
Physical Tests (QCLot: 729700)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.2	85.0	115	----
Anions and Nutrients (QCLot: 727312)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.8	90.0	110	----
Anions and Nutrients (QCLot: 727313)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 727314)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 727315)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 727316)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 727317)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 727321)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	95.1	80.0	120	----
Anions and Nutrients (QCLot: 732631)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.8	75.0	125	----
Anions and Nutrients (QCLot: 732632)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.9	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 732633)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	91.7	85.0	115	----
Cyanides (QCLot: 729293)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.3	85.0	115	----
Cyanides (QCLot: 737503)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	102	80.0	120	----
Cyanides (QCLot: 737504)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	108	80.0	120	----
Organic / Inorganic Carbon (QCLot: 732634)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	106	80.0	120	----
Organic / Inorganic Carbon (QCLot: 732635)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	97.1	80.0	120	----
Total Metals (QCLot: 732619)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Total Metals (QCLot: 733960)									
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	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.6	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 733960) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.1	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	93.1	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.5	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	114	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.4	80.0	120	----
Dissolved Metals (QCLot: 735897)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	109	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 735897) - continued									
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	112	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	109	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	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: 727312)										
KS2204169-002	Anonymous	fluoride	16984-48-8	E235.F	49.2 mg/L	50 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 727313)										
KS2204169-002	Anonymous	chloride	16887-00-6	E235.Cl	5160 mg/L	5000 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 727314)										
KS2204169-002	Anonymous	bromide	24959-67-9	E235.Br-L	26.1 mg/L	25 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 727315)										
KS2204169-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	129 mg/L	125 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 727316)										
KS2204169-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	24.4 mg/L	25 mg/L	97.7	75.0	125	----
Anions and Nutrients (QCLot: 727317)										
KS2204169-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	5090 mg/L	5000 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 727321)										
KS2204169-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0334 mg/L	0.03 mg/L	111	70.0	130	----
Anions and Nutrients (QCLot: 732631)										
KS2204215-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.31 mg/L	2.5 mg/L	92.5	70.0	130	----
Anions and Nutrients (QCLot: 732632)										
KS2204215-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0465 mg/L	0.05 mg/L	93.0	70.0	130	----
Anions and Nutrients (QCLot: 732633)										
KS2204215-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0946 mg/L	0.1 mg/L	94.6	75.0	125	----
Cyanides (QCLot: 729293)										
VA22C6529-001	Anonymous	thiocyanate	302-04-5	E344	8.68 mg/L	10 mg/L	86.8	75.0	125	----
Cyanides (QCLot: 737503)										
VA22C6531-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.247 mg/L	0.25 mg/L	98.8	75.0	125	----
Cyanides (QCLot: 737504)										
VA22C6531-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.133 mg/L	0.125 mg/L	106	75.0	125	----
Organic / Inorganic Carbon (QCLot: 732634)										
KS2204251-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.84 mg/L	5 mg/L	96.8	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
Organic / Inorganic Carbon (QCLot: 732635)										
KS2204251-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.49 mg/L	5 mg/L	89.9	70.0	130	----
Total Metals (QCLot: 732619)										
VA22C6502-013	Anonymous	mercury, total	7439-97-6	E508	0.0000886 mg/L	0.0001 mg/L	88.6	70.0	130	----
Total Metals (QCLot: 733960)										
VA22C6583-002	Anonymous	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		barium, total	7440-39-3	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0990 mg/L	0.1 mg/L	99.0	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	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	----
		nickel, total	7440-02-0	E420	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	3.82 mg/L	4 mg/L	95.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.50 mg/L	10 mg/L	95.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00383 mg/L	0.004 mg/L	95.8	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	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		sulfur, total	7704-34-9	E420	20.1 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00432 mg/L	0.004 mg/L	108	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: 733960) - continued										
VA22C6583-002	Anonymous	vanadium, total	7440-62-2	E420	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	95.9	70.0	130	----
Dissolved Metals (QCLot: 731290)										
VA22C6544-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000931 mg/L	0.0001 mg/L	93.1	70.0	130	----
Dissolved Metals (QCLot: 735897)										
VA22C6603-002	CC-40	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00912 mg/L	0.01 mg/L	91.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	90.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.1 mg/L	10 mg/L	111	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.03 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.1 mg/L	10 mg/L	101	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.5 mg/L	20 mg/L	108	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0401 mg/L	0.04 mg/L	100	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: 735897) - continued										
VA22C6603-002	CC-40	uranium, dissolved	7440-61-1	E421	0.00376 mg/L	0.004 mg/L	94.1	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	0.390 mg/L	0.4 mg/L	97.6	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	6603	ALS Contact: A. Springer	Sampler: Avison

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	CC-30	31-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-40	31-Oct-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
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				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C6603

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			3		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov 1-22	Time: 1100	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 2 Nov 22	Time: 8:50am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C6700**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 03-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 03-Nov-2022
C-O-C number	:	Issue Date	: 15-Nov-2022 15:53
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		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 unit
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-05	CC-03	DC-05
					Client sampling date / time	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022
						VA22C6700-001	VA22C6700-002	VA22C6700-003	VA22C6700-004	VA22C6700-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		41.8	43.2	86.1	107	54.3
conductivity	----	E100	2.0	µS/cm		92.5	91.5	183	220	114
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		40.4	39.0	86.3	105	50.4
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		43.7	40.4	90.9	110	52.2
pH	----	E108	0.10	pH units		7.75	7.85	8.15	8.21	8.01
solids, total dissolved [TDS]	----	E162	10	mg/L		76	81	131	164	84
solids, total suspended [TSS]	----	E160	3.0	mg/L		19.5	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		3.83	1.49	0.60	1.68	0.14
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0093	<0.0050	<0.0050	0.0075	0.0073
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.053	0.049	0.061	0.065	0.047
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.329	0.143	0.190	0.256	0.079
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	0.0291	0.0547	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0014	0.0179	0.0145	0.0125	0.0055
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0154	0.0257	0.0210	0.0224	0.0081
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.39	1.27	4.44	6.64	3.23
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.13	3.89	4.60	5.10	2.57
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.77	3.87	4.85	5.20	2.47
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.454	0.0532	0.0183	0.0381	0.0105
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-05	CC-03	DC-05
					Client sampling date / time	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022
						VA22C6700-001	VA22C6700-002	VA22C6700-003	VA22C6700-004	VA22C6700-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00065	0.00104	0.00071	0.00066	0.00062
barium, total	7440-39-3	E420	0.00010	mg/L		0.0104	0.00468	0.00619	0.00703	0.00776
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000021	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000168	0.0000085	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		11.9	11.5	25.7	31.0	15.8
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00018	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		0.00073	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.894	0.220	0.143	0.213	0.036
lead, total	7439-92-1	E420	0.000050	mg/L		0.000120	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		3.40	2.83	6.50	8.05	3.09
manganese, total	7439-96-5	E420	0.00010	mg/L		0.146	0.0204	0.0182	0.0603	0.00449
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000280	0.000642	0.000918	0.000891	0.000947
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00056	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.468	0.584	0.967	1.11	0.542
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000073	<0.000050	<0.000050	0.000076	0.000081
silicon, total	7440-21-3	E420	0.10	mg/L		8.47	8.54	7.53	7.71	6.73
silver, total	7440-22-4	E420	0.000010	mg/L		0.000014	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		3.46	3.74	4.49	4.86	3.63
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0647	0.0728	0.108	0.118	0.0986
sulfur, total	7704-34-9	E420	0.50	mg/L		0.62	0.53	1.81	2.76	1.36
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00959	0.00144	0.00060	0.00174	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000155	0.000138	0.000227	0.000216	0.000307
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00115	0.00099	<0.00050	<0.00050	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-05	CC-03	DC-05
					Client sampling date / time	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022
						VA22C6700-001	VA22C6700-002	VA22C6700-003	VA22C6700-004	VA22C6700-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00067	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0306	0.0159	0.0052	0.0037	0.0131
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00028	0.00092	0.00069	0.00062	0.00055
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00544	0.00465	0.00620	0.00664	0.00820
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000060	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		11.0	11.2	24.1	29.2	15.3
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00028	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.078	0.120	0.084	0.081	0.041
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		3.14	2.68	6.35	7.82	2.96
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0190	0.0109	0.0120	0.0220	0.00552
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000235	0.000621	0.000845	0.000871	0.000876
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.408	0.551	0.925	1.07	0.528
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		7.92	8.27	7.55	7.48	6.80
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.36	3.80	4.73	4.93	3.71
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0648	0.0726	0.106	0.117	0.101

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-03	661-10	CC-05	CC-03	DC-05
					Client sampling date / time	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022
						VA22C6700-001	VA22C6700-002	VA22C6700-003	VA22C6700-004	VA22C6700-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	1.64	2.01	1.02
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00035	0.00035	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000037	0.000115	0.000217	0.000189	0.000281
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	0.00078	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0013	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C6700**	Page	: 1 of 25
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 03-Nov-2022 09:00
PO	: 10857	Issue Date	: 15-Nov-2022 15:50
C-O-C number	:		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-MRG7-7305950 01	----	nitrite (as N)	14797-65-0	E235.NO2-L	0.0021 B mg/L	0.001 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-03	E298	01-Nov-2022	07-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-10	E298	01-Nov-2022	07-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-03	E298	01-Nov-2022	07-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-05	E298	01-Nov-2022	07-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-05	E298	01-Nov-2022	07-Nov-2022	----	----		10-Nov-2022	28 days	10 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-03	E235.Br-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-10	E235.Br-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-03	E235.Br-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-05	E235.Br-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-05	E235.Br-L	01-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-03	E235.Cl	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-10	E235.Cl	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-03	E235.Cl	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-05	E235.Cl	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-05	E235.Cl	01-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-03	E378-U	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-10	E378-U	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-03	E378-U	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-05	E378-U	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-05	E378-U	01-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	3 days	4 days	× EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-03	E235.F	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-10	E235.F	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-03	E235.F	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-05	E235.F	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-05	E235.F	01-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-03	E235.NO3-L	01-Nov-2022	03-Nov-2022	3 days	3 days	✓	03-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-10	E235.NO3-L	01-Nov-2022	03-Nov-2022	3 days	3 days	✓	03-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-03	E235.NO3-L	01-Nov-2022	03-Nov-2022	3 days	3 days	✓	03-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-05	E235.NO3-L	01-Nov-2022	03-Nov-2022	3 days	3 days	✓	03-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-05	E235.NO3-L	01-Nov-2022	04-Nov-2022	3 days	4 days	✓	04-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-03	E235.NO2-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-10	E235.NO2-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-03	E235.NO2-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
CC-05	E235.NO2-L	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
DC-05	E235.NO2-L	01-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	3 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-03	E235.SO4	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-10	E235.SO4	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-03	E235.SO4	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-05	E235.SO4	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
DC-05	E235.SO4	01-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-03	E318	01-Nov-2022	07-Nov-2022	----	----		14-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-10	E318	01-Nov-2022	07-Nov-2022	----	----		14-Nov-2022	28 days	14 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-03	E318	01-Nov-2022	07-Nov-2022	----	----		14-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-05	E318	01-Nov-2022	07-Nov-2022	----	----		14-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-05	E318	01-Nov-2022	07-Nov-2022	----	----		14-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-03	E372-U	01-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-10	E372-U	01-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-03	E372-U	01-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-05	E372-U	01-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-05	E372-U	01-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE 661-03	E344	01-Nov-2022	----	----	----		03-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE 661-10	E344	01-Nov-2022	----	----	----		03-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE CC-03	E344	01-Nov-2022	----	----	----		03-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE CC-05	E344	01-Nov-2022	----	----	----		03-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE DC-05	E344	01-Nov-2022	----	----	----		03-Nov-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E333	01-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-03	E333	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E333	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E333	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-05	E333	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-05	E336	01-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-03	E336	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-10	E336	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-03	E336	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-05	E336	01-Nov-2022	09-Nov-2022	----	----		09-Nov-2022	14 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-03	E509	01-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-10	E509	01-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-03	E509	01-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-05	E509	01-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-05	E509	01-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-03	E421	01-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-10	E421	01-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-03	E421	01-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-05	E421	01-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-05	E421	01-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-03	E358-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-10	E358-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-03	E358-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-05	E358-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-05	E358-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-03	E355-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-10	E355-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-03	E355-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-05	E355-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-05	E355-L	01-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-03	E283	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-10	E283	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-03	E283	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-05	E283	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-05	E283	01-Nov-2022	04-Nov-2022	----	----		05-Nov-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-03	E290	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-10	E290	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-03	E290	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-05	E290	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-05	E290	01-Nov-2022	04-Nov-2022	----	----		05-Nov-2022	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-03	E100	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 661-10	E100	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-03	E100	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-05	E100	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-05	E100	01-Nov-2022	04-Nov-2022	----	----		05-Nov-2022	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE 661-03	E108	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	0.25 hrs	1.15 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-10	E108	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	0.25 hrs	1.15 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-03	E108	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	0.25 hrs	1.15 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-05	E108	01-Nov-2022	03-Nov-2022	----	----		03-Nov-2022	0.25 hrs	1.15 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-05	E108	01-Nov-2022	04-Nov-2022	----	----		05-Nov-2022	0.25 hrs	19.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE 661-03	E162	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-10	E162	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-03	E162	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-05	E162	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-05	E162	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-03	E160	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-10	E160	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-03	E160	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-05	E160	01-Nov-2022	----	----	----		03-Nov-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE DC-05	E160	01-Nov-2022	----	----	----		03-Nov-2022	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-03	E121	01-Nov-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-10	E121	01-Nov-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-03	E121	01-Nov-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-05	E121	01-Nov-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-05	E121	01-Nov-2022	----	----	----		03-Nov-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-03	E508	01-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-10	E508	01-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-03	E508	01-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-05	E508	01-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-05	E508	01-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 661-03	E420	01-Nov-2022	10-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 661-10	E420	01-Nov-2022	10-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) CC-03	E420	01-Nov-2022	10-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) CC-05	E420	01-Nov-2022	10-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) DC-05	E420	01-Nov-2022	10-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	729167	2	13	15.3	5.0	✓
Alkalinity Species by Titration	E290	729157	2	24	8.3	5.0	✓
Ammonia by Fluorescence	E298	733530	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	729161	2	24	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	729160	2	31	6.4	5.0	✓
Conductivity in Water	E100	729158	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731623	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737462	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733532	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	729165	2	11	18.1	5.0	✓
Fluoride in Water by IC	E235.F	729159	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	729162	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	729163	2	30	6.6	5.0	✓
pH by Meter	E108	729156	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	729164	2	30	6.6	5.0	✓
TDS by Gravimetry	E162	729700	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	729293	2	40	5.0	5.0	✓
Total Cyanide	E333	737503	2	39	5.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733531	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	732620	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735832	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733533	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733534	1	8	12.5	5.0	✓
TSS by Gravimetry	E160	729694	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	728947	1	20	5.0	5.0	✓
WAD Cyanide	E336	737504	2	37	5.4	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	729167	2	13	15.3	5.0	✓
Alkalinity Species by Titration	E290	729157	2	24	8.3	5.0	✓
Ammonia by Fluorescence	E298	733530	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	729161	2	24	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	729160	2	31	6.4	5.0	✓
Conductivity in Water	E100	729158	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731623	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737462	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733532	1	5	20.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	729165	2	11	18.1	5.0	✓
Fluoride in Water by IC	E235.F	729159	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	729162	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	729163	2	30	6.6	5.0	✓
pH by Meter	E108	729156	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	729164	2	30	6.6	5.0	✓
TDS by Gravimetry	E162	729700	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	729293	2	40	5.0	5.0	✓
Total Cyanide	E333	737503	2	39	5.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733531	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	732620	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735832	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733533	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733534	1	8	12.5	5.0	✓
TSS by Gravimetry	E160	729694	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	728947	1	20	5.0	5.0	✓
WAD Cyanide	E336	737504	2	37	5.4	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	729167	2	13	15.3	5.0	✓
Alkalinity Species by Titration	E290	729157	2	24	8.3	5.0	✓
Ammonia by Fluorescence	E298	733530	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	729161	2	24	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	729160	2	31	6.4	5.0	✓
Conductivity in Water	E100	729158	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731623	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737462	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733532	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	729165	2	11	18.1	5.0	✓
Fluoride in Water by IC	E235.F	729159	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	729162	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	729163	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	729164	2	30	6.6	5.0	✓
TDS by Gravimetry	E162	729700	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	729293	2	40	5.0	5.0	✓
Total Cyanide	E333	737503	2	39	5.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733531	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	732620	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735832	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733533	1	9	11.1	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733534	1	8	12.5	5.0	✓
TSS by Gravimetry	E160	729694	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	728947	1	20	5.0	5.0	✓
WAD Cyanide	E336	737504	2	37	5.4	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	733530	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	729161	2	24	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	729160	2	31	6.4	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731623	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737462	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733532	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	729165	2	11	18.1	5.0	✓
Fluoride in Water by IC	E235.F	729159	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	729162	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	729163	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	729164	2	30	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	729293	2	40	5.0	5.0	✓
Total Cyanide	E333	737503	2	39	5.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733531	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	732620	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735832	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733533	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733534	1	8	12.5	5.0	✓
WAD Cyanide	E336	737504	2	37	5.4	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C6700**	Page	: 1 of 21
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 03-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 03-Nov-2022
C-O-C number	:	Issue Date	: 15-Nov-2022 15:51
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 728947)											
KS2204204-001	Anonymous	turbidity	----	E121	0.10	NTU	6.23	6.72	7.57%	15%	----
Physical Tests (QC Lot: 729156)											
FJ2203115-019	Anonymous	pH	----	E108	0.10	pH units	8.36	8.37	0.120%	4%	----
Physical Tests (QC Lot: 729157)											
FJ2203115-019	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	186	186	0%	20%	----
Physical Tests (QC Lot: 729158)											
FJ2203115-019	Anonymous	conductivity	----	E100	2.0	µS/cm	1200	1200	0.166%	10%	----
Physical Tests (QC Lot: 729167)											
KS2204204-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 729694)											
KS2204169-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	35.9	37.1	3.29%	20%	----
Physical Tests (QC Lot: 729700)											
KS2204169-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	604	618	2.37%	20%	----
Physical Tests (QC Lot: 730377)											
WR2201411-001	Anonymous	pH	----	E108	0.10	pH units	6.87	6.80	0.994%	4%	----
Physical Tests (QC Lot: 730378)											
WR2201411-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2710	2690	0.741%	10%	----
Physical Tests (QC Lot: 730379)											
WR2201411-001	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	210	210	0.0946%	20%	----
Physical Tests (QC Lot: 730388)											
WR2201411-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	80.6	83.3	3.34%	20%	----
Anions and Nutrients (QC Lot: 729159)											
FJ2203115-017	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.155	0.155	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 729160)											
FJ2203115-017	Anonymous	chloride	16887-00-6	E235.Cl	2.50	mg/L	<2.50	<2.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 729161)											
FJ2203115-017	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 729162)											
FJ2203115-017	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.21	2.22	0.398%	20%	----
Anions and Nutrients (QC Lot: 729163)											

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*
Anions and Nutrients (QC Lot: 729163) - continued											
FJ2203115-017	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 729164)											
FJ2203115-017	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	338	338	0.00380%	20%	----
Anions and Nutrients (QC Lot: 729165)											
FJ2203115-017	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0066	0.0060	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 730389)											
VA22B9648-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0234	0.0240	2.36%	20%	----
Anions and Nutrients (QC Lot: 730595)											
VA22C6700-005	DC-05	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: 730596)											
VA22C6700-005	DC-05	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 730597)											
VA22C6700-005	DC-05	fluoride	16984-48-8	E235.F	0.020	mg/L	0.047	0.050	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 730598)											
VA22C6698-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	0.54	0.55	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 730600)											
VA22C6698-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	4.52	4.55	0.748%	20%	----
Anions and Nutrients (QC Lot: 730601)											
VA22C6700-005	DC-05	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733530)											
KS2204242-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0202	0.0205	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733531)											
KS2204242-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.142	0.128	0.014	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733534)											
VA22C6700-001	661-03	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0154	0.0135	0.0019	Diff <2x LOR	----
Cyanides (QC Lot: 729293)											
VA22C6528-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 729294)											
VA22C6700-003	CC-05	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 737503)											
VA22C6529-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 737504)											
VA22C6529-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	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*
Cyanides (QC Lot: 739022)											
VA22C6700-005	DC-05	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 739023)											
VA22C6700-005	DC-05	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 733532)											
VA22C6700-001	661-03	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	7.13	7.56	5.87%	20%	----
Organic / Inorganic Carbon (QC Lot: 733533)											
KS2204242-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.22	1.26	0.04	Diff <2x LOR	----
Total Metals (QC Lot: 732620)											
VA22C6656-001	Anonymous	mercury, total	7439-97-6	E508	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
Total Metals (QC Lot: 735832)											
KS2204199-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0256	0.0235	0.0021	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00476	0.00499	4.66%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	15.4	15.6	1.36%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00033	0.00031	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0314	0.0332	5.36%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	2.19	2.24	2.19%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00418	0.00433	3.52%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0035	0.0035	0.000005	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	2.76	2.89	4.40%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0110	0.0119	7.74%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000414	0.000392	0.000022	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00143	0.00149	0.00006	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.09	1.15	5.12%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000053	0.000067	0.000014	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.63	5.67	0.766%	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: 735832) - continued											
KS2204199-001	Anonymous	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	2.96	3.01	1.70%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0680	0.0668	1.79%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	1.52	1.53	0.01	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00252	0.00245	2.97%	20%	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00091	0.00107	0.00016	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000694	0.000714	2.84%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0136	0.0142	0.0006	Diff <2x LOR	----
Dissolved Metals (QC Lot: 731623)											
VA22C6110-014	Anonymous	mercury, dissolved	7439-97-6	E509	0.00250	mg/L	0.0144	0.0160	0.00154	Diff <2x LOR	----
Dissolved Metals (QC Lot: 737462)											
VA22C6700-001	661-03	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0306	0.0333	8.25%	20%	----
		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	0.00028	0.00031	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00544	0.00519	4.75%	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	11.0	11.1	1.11%	20%	----
		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	0.00028	0.00028	0.000005	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.078	0.079	0.001	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	0.100	mg/L	3.14	3.18	1.30%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0190	0.0191	0.553%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000235	0.000225	0.000009	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	0.100	mg/L	0.408	0.412	0.004	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: 737462) - continued											
VA22C6700-001	661-03	selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.92	7.77	1.85%	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	3.36	3.34	0.622%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0648	0.0627	3.34%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	0.00035	0.00036	0.000008	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000037	0.000036	0.0000008	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	----

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: 728947)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 729157)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 729158)						
conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 729167)						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
Physical Tests (QCLot: 729694)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 729700)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 730378)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 730379)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 730388)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Anions and Nutrients (QCLot: 729159)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 729160)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 729161)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 729162)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 729163)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 729164)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 729165)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 730389)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 730389) - continued						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 730595)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 730596)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	# 0.0021	B
Anions and Nutrients (QCLot: 730597)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 730598)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 730600)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 730601)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 733530)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 733531)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 733534)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 729293)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 729294)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 737503)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 737504)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 739022)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 739023)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 733532)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 733533)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 732620)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 735832)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 731623)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 737462)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Qualifiers

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 728947)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 729156)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 729157)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Physical Tests (QCLot: 729158)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 729167)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	97.7	85.0	115	----
Physical Tests (QCLot: 729694)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.8	85.0	115	----
Physical Tests (QCLot: 729700)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.2	85.0	115	----
Physical Tests (QCLot: 730377)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 730378)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.5	90.0	110	----
Physical Tests (QCLot: 730379)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 730388)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	97.6	85.0	115	----
Anions and Nutrients (QCLot: 729159)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 729160)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 729161)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 729162)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 729163)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.6	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 729164)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 729165)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	103	80.0	120	----
Anions and Nutrients (QCLot: 730389)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	----
Anions and Nutrients (QCLot: 730595)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 730596)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 730597)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 730598)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 730600)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 730601)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 733530)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.8	85.0	115	----
Anions and Nutrients (QCLot: 733531)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.6	75.0	125	----
Anions and Nutrients (QCLot: 733534)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	93.7	80.0	120	----
Cyanides (QCLot: 729293)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.3	85.0	115	----
Cyanides (QCLot: 729294)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.1	85.0	115	----
Cyanides (QCLot: 737503)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	102	80.0	120	----
Cyanides (QCLot: 737504)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	108	80.0	120	----
Cyanides (QCLot: 739022)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.9	80.0	120	----
Cyanides (QCLot: 739023)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Cyanides (QCLot: 739023) - continued									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	107	80.0	120	----
Organic / Inorganic Carbon (QCLot: 733532)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	108	80.0	120	----
Organic / Inorganic Carbon (QCLot: 733533)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	109	80.0	120	----
Total Metals (QCLot: 732620)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	96.7	80.0	120	----
Total Metals (QCLot: 735832)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.5	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.5	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.6	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.9	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 735832) - continued									
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	85.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.4	80.0	120	----
Dissolved Metals (QCLot: 737462)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.3	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	99.5	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	108	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.2	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	111	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 737462) - continued									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.8	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: 729159)										
FJ2203115-018	Anonymous	fluoride	16984-48-8	E235.F	4.72 mg/L	5 mg/L	94.3	75.0	125	----
Anions and Nutrients (QCLot: 729160)										
FJ2203115-018	Anonymous	chloride	16887-00-6	E235.Cl	489 mg/L	500 mg/L	97.8	75.0	125	----
Anions and Nutrients (QCLot: 729161)										
FJ2203115-018	Anonymous	bromide	24959-67-9	E235.Br-L	2.40 mg/L	2.5 mg/L	96.0	75.0	125	----
Anions and Nutrients (QCLot: 729162)										
FJ2203115-018	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	12.2 mg/L	12.5 mg/L	97.8	75.0	125	----
Anions and Nutrients (QCLot: 729163)										
FJ2203115-018	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2.40 mg/L	2.5 mg/L	96.0	75.0	125	----
Anions and Nutrients (QCLot: 729164)										
FJ2203115-018	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	491 mg/L	500 mg/L	98.3	75.0	125	----
Anions and Nutrients (QCLot: 729165)										
FJ2203115-018	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0360 mg/L	0.03 mg/L	120	70.0	130	----
Anions and Nutrients (QCLot: 730389)										
VA22C6700-005	DC-05	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0315 mg/L	0.03 mg/L	105	70.0	130	----
Anions and Nutrients (QCLot: 730595)										
VA22C6743-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	12.8 mg/L	12.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 730596)										
VA22C6743-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2.38 mg/L	2.5 mg/L	95.3	75.0	125	----
Anions and Nutrients (QCLot: 730597)										
VA22C6743-001	Anonymous	fluoride	16984-48-8	E235.F	4.87 mg/L	5 mg/L	97.5	75.0	125	----
Anions and Nutrients (QCLot: 730598)										
VA22C6743-001	Anonymous	chloride	16887-00-6	E235.Cl	506 mg/L	500 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 730600)										
VA22C6743-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	508 mg/L	500 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 730601)										
VA22C6743-001	Anonymous	bromide	24959-67-9	E235.Br-L	2.49 mg/L	2.5 mg/L	99.7	75.0	125	----

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: 733530)										
KS2204242-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0944 mg/L	0.1 mg/L	94.4	75.0	125	----
Anions and Nutrients (QCLot: 733531)										
KS2204242-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.88 mg/L	2.5 mg/L	115	70.0	130	----
Anions and Nutrients (QCLot: 733534)										
VA22C6700-002	661-10	phosphorus, total	7723-14-0	E372-U	0.0507 mg/L	0.05 mg/L	101	70.0	130	----
Cyanides (QCLot: 729293)										
VA22C6529-001	Anonymous	thiocyanate	302-04-5	E344	8.68 mg/L	10 mg/L	86.8	75.0	125	----
Cyanides (QCLot: 729294)										
VA22C6700-004	CC-03	thiocyanate	302-04-5	E344	9.62 mg/L	10 mg/L	96.2	75.0	125	----
Cyanides (QCLot: 737503)										
VA22C6531-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.247 mg/L	0.25 mg/L	98.8	75.0	125	----
Cyanides (QCLot: 737504)										
VA22C6531-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.133 mg/L	0.125 mg/L	106	75.0	125	----
Cyanides (QCLot: 739022)										
VA22C6705-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.254 mg/L	0.25 mg/L	102	75.0	125	----
Cyanides (QCLot: 739023)										
VA22C6751-010	Anonymous	cyanide, weak acid dissociable	----	E336	0.126 mg/L	0.125 mg/L	101	75.0	125	----
Organic / Inorganic Carbon (QCLot: 733532)										
VA22C6700-002	661-10	carbon, dissolved organic [DOC]	----	E358-L	4.80 mg/L	5 mg/L	95.9	70.0	130	----
Organic / Inorganic Carbon (QCLot: 733533)										
KS2204242-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.13 mg/L	5 mg/L	103	70.0	130	----
Total Metals (QCLot: 732620)										
VA22C6700-001	661-03	mercury, total	7439-97-6	E508	0.0000924 mg/L	0.0001 mg/L	92.4	70.0	130	----
Total Metals (QCLot: 735832)										
KS2204199-002	Anonymous	aluminum, total	7429-90-5	E420	0.191 mg/L	0.2 mg/L	95.5	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		barium, total	7440-39-3	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00977 mg/L	0.01 mg/L	97.7	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	97.4	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: 735832) - continued										
KS2204199-002	Anonymous	cadmium, total	7440-43-9	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		copper, total	7440-50-8	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.0980 mg/L	0.1 mg/L	98.0	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	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.17 mg/L	10 mg/L	91.7	70.0	130	----
		potassium, total	7440-09-7	E420	4.06 mg/L	4 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		silicon, total	7440-21-3	E420	9.55 mg/L	10 mg/L	95.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00388 mg/L	0.004 mg/L	97.1	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	20.5 mg/L	20 mg/L	102	70.0	130	----
		thallium, total	7440-28-0	E420	0.00391 mg/L	0.004 mg/L	97.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
Dissolved Metals (QCLot: 731623)										
VA22C6700-001	661-03	mercury, dissolved	7439-97-6	E509	0.0000912 mg/L	0.0001 mg/L	91.2	70.0	130	----
Dissolved Metals (QCLot: 737462)										
KS2204214-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00867 mg/L	0.01 mg/L	86.7	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: 737462) - continued										
KS2204214-002	Anonymous	boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0399 mg/L	0.04 mg/L	99.6	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0367 mg/L	0.04 mg/L	91.7	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00357 mg/L	0.004 mg/L	89.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.358 mg/L	0.4 mg/L	89.5	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

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

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

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Tonia.Robb@erm.com

Email 2: tdesormeaux@artemisgoldinc.com

Email 3: ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: tdesormeaux@artemisgoldinc.com

Email 2: accounts@artemisgoldinc.com

Project Information

ALS Account # / Quote #: Q56205

Job #: VA22-BWGL100-002

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): 6700

ALS Contact: A. Springer

Sampler:

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	661-03	1-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	661-10	1-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-05	1-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-03	1-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-05	1-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C6700

Telephone : +1 604 253 4188

Drinking Water (DW) Samples (client use)

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

Are samples for human drinking water use? ☐ YES ☑ NO

...fy Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
				2	1

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov 2-22	Time: 0800	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 3Nov22	Time: 9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C6840**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 04-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 04-Nov-2022
C-O-C number	:	Issue Date	: 15-Nov-2022 15:18
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Qammar Almas	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 unit
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Sample Comments

Sample	Client Id	*Comment*
VA22C6840-002	705-10-DUP	Sample 2: Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	705-10	705-10-DUP	661-01	----	----
					Client sampling date / time	02-Nov-2022	02-Nov-2022	02-Nov-2022	----	----
						VA22C6840-001	VA22C6840-002	VA22C6840-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		41.5	40.9	22.0	----	----
conductivity	----	E100	2.0	µS/cm		92.8	91.8	49.7	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		43.1	42.8	20.8	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		45.5	45.9	21.2	----	----
pH	----	E108	0.10	pH units		7.72	7.74	7.44	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		76	58	47	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU		0.12	0.12	0.26	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.029	0.030	0.029	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.139	0.151	0.110	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0505	0.0497	0.0440	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0014	<0.0010	0.0017	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0033	0.0029	0.0054	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.64	1.60	0.42	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		4.48	4.66	3.57	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		4.75	4.82	4.23	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0227	0.0198	0.0453	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	705-10	705-10-DUP	661-01	----	----
					Client sampling date / time	02-Nov-2022	02-Nov-2022	02-Nov-2022	----	----
						VA22C6840-001	VA22C6840-002	VA22C6840-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00018	0.00019	0.00044	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0118	0.0121	0.00439	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000064	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		14.0	14.0	5.90	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.028	0.023	0.122	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		2.56	2.65	1.58	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00171	0.00132	0.0599	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000581	0.000595	0.000235	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.404	0.431	0.473	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000061	<0.000050	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		5.38	5.50	6.64	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.15	3.27	2.60	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0865	0.0849	0.0432	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.68	0.58	<0.50	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	0.00055	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000125	0.000121	0.000031	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	705-10	705-10-DUP	661-01	----	----
					Client sampling date / time	02-Nov-2022	02-Nov-2022	02-Nov-2022	----	----
						VA22C6840-001	VA22C6840-002	VA22C6840-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0152	0.0149	0.0304	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00014	0.00014	0.00036	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0111	0.0112	0.00386	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		13.3	13.2	5.96	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00031	0.00031	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.018	0.018	0.063	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.41	2.38	1.44	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00093	0.00101	0.0385	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000547	0.000566	0.000252	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.369	0.369	0.417	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.92	4.89	6.10	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.84	2.83	2.34	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0772	0.0786	0.0428	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	705-10	705-10-DUP	661-01	----	----
				Client sampling date / time	02-Nov-2022	02-Nov-2022	02-Nov-2022	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C6840-001	VA22C6840-002	VA22C6840-003	--------	--------
					Result	Result	Result	----	----
Dissolved Metals									
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.59	0.65	<0.50	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000114	0.000113	0.000029	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C6840**	Page	: 1 of 20
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 04-Nov-2022 09:00
PO	: 10857	Issue Date	: 15-Nov-2022 15:17
C-O-C number	:		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Total Metals	QC-735869-002	----	phosphorus, total	7723-14-0	E420	122 % MES	80.0-120%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	*Description*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-01	E298	02-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-10	E298	02-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-10-DUP	E298	02-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-01	E235.Br-L	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 705-10	E235.Br-L	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 705-10-DUP	E235.Br-L	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-01	E235.Cl	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-10	E235.Cl	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-10-DUP	E235.Cl	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-01	E378-U	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-10	E378-U	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-10-DUP	E378-U	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-01	E235.F	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-10	E235.F	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-10-DUP	E235.F	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-01	E235.NO3-L	02-Nov-2022	05-Nov-2022	3 days	3 days	✓	05-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-10	E235.NO3-L	02-Nov-2022	05-Nov-2022	3 days	3 days	✓	05-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-10-DUP	E235.NO3-L	02-Nov-2022	05-Nov-2022	3 days	3 days	✓	05-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-01	E235.NO2-L	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-10	E235.NO2-L	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-10-DUP	E235.NO2-L	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-01	E235.SO4	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 705-10	E235.SO4	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 705-10-DUP	E235.SO4	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-01	E318	02-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 705-10	E318	02-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 705-10-DUP	E318	02-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-01	E372-U	02-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-10	E372-U	02-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-10-DUP	E372-U	02-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-01	E344	02-Nov-2022	----	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 705-10	E344	02-Nov-2022	----	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 705-10-DUP	E344	02-Nov-2022	----	----	----		10-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-01	E333	02-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-10	E333	02-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-10-DUP	E333	02-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-01	E336	02-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-10	E336	02-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-10-DUP	E336	02-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	14 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-01	E509	02-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
705-10	E509	02-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
705-10-DUP	E509	02-Nov-2022	04-Nov-2022	----	----		04-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-01	E421	02-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-10	E421	02-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-10-DUP	E421	02-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-01	E358-L	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-10	E358-L	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-10-DUP	E358-L	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-01	E355-L	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-10	E355-L	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-10-DUP	E355-L	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE 661-01	E283	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-10	E283	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-10-DUP	E283	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-01	E290	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-10	E290	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-10-DUP	E290	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-01	E100	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-10	E100	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-10-DUP	E100	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 661-01	E108	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	0.25 hrs	5.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-10	E108	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	0.25 hrs	5.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-10-DUP	E108	02-Nov-2022	05-Nov-2022	----	----		05-Nov-2022	0.25 hrs	5.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-01	E162	02-Nov-2022	----	----	----		04-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-10	E162	02-Nov-2022	----	----	----		04-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-10-DUP	E162	02-Nov-2022	----	----	----		04-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-01	E160	02-Nov-2022	----	----	----		04-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-10	E160	02-Nov-2022	----	----	----		04-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-10-DUP	E160	02-Nov-2022	----	----	----		04-Nov-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE 661-01	E121	02-Nov-2022	----	----	----		04-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 705-10	E121	02-Nov-2022	----	----	----		04-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 705-10-DUP	E121	02-Nov-2022	----	----	----		04-Nov-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) 705-10-DUP	E508	02-Nov-2022	11-Nov-2022	0 hrs	16 hrs	× EHTR-FM	11-Nov-2022	-201.05 hrs	0 hrs	× EHTR-FM
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-01	E508	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 705-10	E508	02-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-01	E420	02-Nov-2022	11-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-10	E420	02-Nov-2022	11-Nov-2022	----	----		13-Nov-2022	180 days	12 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-10-DUP	E420	02-Nov-2022	11-Nov-2022	----	----		13-Nov-2022	180 days	12 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)							
Acidity by Titration	E283	731540	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	731531	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	731535	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	731534	1	19	5.2	5.0	✓
Conductivity in Water	E100	731532	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731388	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	738711	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	731539	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	731533	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	731536	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	731537	1	17	5.8	5.0	✓
pH by Meter	E108	731530	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	731538	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	730935	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	739462	1	20	5.0	5.0	✓
Total Cyanide	E333	739022	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	733393	2	26	7.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	735869	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	730915	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	730988	1	18	5.5	5.0	✓
WAD Cyanide	E336	739023	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	731540	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	731531	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	731535	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	731534	1	19	5.2	5.0	✓
Conductivity in Water	E100	731532	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731388	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	738711	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	731539	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	731533	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	731536	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	731537	1	17	5.8	5.0	✓
pH by Meter	E108	731530	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	731538	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	730935	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	739462	1	20	5.0	5.0	✓
Total Cyanide	E333	739022	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	733393	2	26	7.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	735869	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	730915	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	730988	1	18	5.5	5.0	✓
WAD Cyanide	E336	739023	1	18	5.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	731540	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	731531	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	731535	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	731534	1	19	5.2	5.0	✓
Conductivity in Water	E100	731532	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731388	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	738711	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	731539	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	731533	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	731536	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	731537	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	731538	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	730935	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	739462	1	20	5.0	5.0	✓
Total Cyanide	E333	739022	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	733393	2	26	7.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	735869	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	730915	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	730988	1	18	5.5	5.0	✓
WAD Cyanide	E336	739023	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	731535	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	731534	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	731388	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	738711	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	731539	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	731533	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	731536	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	731537	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	731538	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	739462	1	20	5.0	5.0	✓
Total Cyanide	E333	739022	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	733393	2	26	7.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	735869	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
WAD Cyanide	E336	739023	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C6840**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 04-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 04-Nov-2022
C-O-C number	:	Issue Date	: 15-Nov-2022 15:18
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 730915)											
FJ2203129-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 730935)											
VA22C6806-001	Anonymous	solids, total dissolved [TDS]	----	E162	400	mg/L	38200	37500	1.82%	20%	----
Physical Tests (QC Lot: 730988)											
VA22C6747-001	Anonymous	turbidity	----	E121	0.10	NTU	8.67	7.90	9.32%	15%	----
Physical Tests (QC Lot: 731530)											
KS2204232-001	Anonymous	pH	----	E108	0.10	pH units	7.92	7.90	0.253%	4%	----
Physical Tests (QC Lot: 731531)											
KS2204232-001	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	44.0	44.0	0.00%	20%	----
Physical Tests (QC Lot: 731532)											
KS2204232-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1050	1050	0.286%	10%	----
Physical Tests (QC Lot: 731540)											
VA22C6840-002	705-10-DUP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 731533)											
KS2204232-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 731534)											
KS2204232-001	Anonymous	chloride	16887-00-6	E235.Cl	2.50	mg/L	5.87	5.84	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 731535)											
KS2204232-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 731536)											
KS2204232-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 731537)											
KS2204232-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 731538)											
KS2204232-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	468	466	0.546%	20%	----
Anions and Nutrients (QC Lot: 731539)											
KS2204232-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0100	mg/L	0.0563	0.0562	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733595)											
VA22C6840-001	705-10	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.139	0.155	0.016	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733598)											

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*
Anions and Nutrients (QC Lot: 733598) - continued											
VA22C6840-001	705-10	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0033	0.0030	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733599)											
VA22C6840-001	705-10	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 739022)											
VA22C6700-005	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 739023)											
VA22C6700-005	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 739462)											
VA22C6751-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 733596)											
VA22C6840-001	705-10	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.48	4.70	0.22	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 733597)											
VA22C6840-001	705-10	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.75	5.13	0.39	Diff <2x LOR	----
Total Metals (QC Lot: 733393)											
VA22C6840-001	705-10	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 735869)											
KS2204245-001	Anonymous	aluminum, total	7429-90-5	E420	0.0150	mg/L	<0.0150	<0.0150	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00050	mg/L	0.00078	0.00076	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00050	mg/L	0.00114	0.00127	0.00012	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00050	mg/L	0.0197	0.0191	3.06%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.050	mg/L	0.108	0.105	0.003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.000430	mg/L	<0.000430	<0.000430	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.250	mg/L	265	262	0.876%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00250	mg/L	0.00300	0.00294	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0050	mg/L	0.0247	0.0242	0.0004	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	370	358	3.35%	20%	----
		manganese, total	7439-96-5	E420	0.00050	mg/L	0.00508	0.00519	2.05%	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: 735869) - continued											
KS2204245-001	Anonymous	molybdenum, total	7439-98-7	E420	0.000250	mg/L	2.17	2.18	0.408%	20%	----
		nickel, total	7440-02-0	E420	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.250	mg/L	60.2	58.8	2.38%	20%	----
		selenium, total	7782-49-2	E420	0.000250	mg/L	0.0137	0.0150	9.08%	20%	----
		silicon, total	7440-21-3	E420	0.50	mg/L	6.73	6.58	2.32%	20%	----
		silver, total	7440-22-4	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.250	mg/L	174	168	3.28%	20%	----
		strontium, total	7440-24-6	E420	0.00100	mg/L	2.65	2.70	1.86%	20%	----
		sulfur, total	7704-34-9	E420	2.50	mg/L	883	866	1.98%	20%	----
		thallium, total	7440-28-0	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00150	mg/L	<0.00210	<0.00150	0.00060	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000050	mg/L	0.00776	0.00814	4.78%	20%	----
		vanadium, total	7440-62-2	E420	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0150	mg/L	<0.0150	<0.0150	0	Diff <2x LOR	----
Total Metals (QC Lot: 739890)											
FJ2203169-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 731388)											
VA22C6745-010	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 738711)											
KS2204204-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	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	0.00450	0.00451	0.255%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0721	0.0710	1.57%	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	0.076	0.075	0.0004	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	122	121	1.28%	20%	----
		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	0.587	0.593	1.04%	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*
Dissolved Metals (QC Lot: 738711) - continued											
KS2204204-001	Anonymous	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	0.0067	0.0066	0.00010	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	98.4	101	2.56%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.376	0.377	0.0946%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00492	0.00480	2.49%	20%	----
		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	0.078	0.059	0.018	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	11.4	11.6	1.51%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	11.1	11.3	1.20%	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	59.4	59.2	0.336%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.74	1.68	3.66%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	107	112	4.24%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00328	0.00324	1.40%	20%	----
		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	----

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: 730915)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 730935)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 730988)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 731531)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 731532)						
conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 731540)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Anions and Nutrients (QCLot: 731533)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 731534)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 731535)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 731536)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 731537)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 731538)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 731539)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 733595)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 733598)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 733599)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 739022)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 739022) - continued						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 739023)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 739462)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 733596)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 733597)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 733393)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 735869)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 735869) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 739890)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 731388)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 738711)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 738711) - continued						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 730915)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	103	85.0	115	----
Physical Tests (QCLot: 730935)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.5	85.0	115	----
Physical Tests (QCLot: 730988)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 731530)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 731531)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 731532)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.3	90.0	110	----
Physical Tests (QCLot: 731540)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	97.8	85.0	115	----
Anions and Nutrients (QCLot: 731533)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 731534)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 731535)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 731536)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 731537)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 731538)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 731539)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	93.6	80.0	120	----
Anions and Nutrients (QCLot: 733595)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 733598)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 733599)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.7	85.0	115	----
Cyanides (QCLot: 739022)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.9	80.0	120	----
Cyanides (QCLot: 739023)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	107	80.0	120	----
Cyanides (QCLot: 739462)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	97.8	85.0	115	----
Organic / Inorganic Carbon (QCLot: 733596)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Organic / Inorganic Carbon (QCLot: 733597)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Total Metals (QCLot: 733393)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Total Metals (QCLot: 735869)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	112	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	110	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	107	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 735869) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	# 122	80.0	120	MES
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	116	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	117	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	109	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	108	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	112	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	109	80.0	120	----
Total Metals (QCLot: 739890)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	91.9	80.0	120	----
Dissolved Metals (QCLot: 738711)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	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	109	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	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	104	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	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	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 738711) - continued									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	117	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

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: 731533)										
VA22C6784-001	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 731534)										
VA22C6784-001	Anonymous	chloride	16887-00-6	E235.Cl	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 731535)										
VA22C6784-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 731536)										
VA22C6784-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 731537)										
VA22C6784-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 731538)										
VA22C6784-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 731539)										
VA22C6784-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0284 mg/L	0.03 mg/L	94.5	70.0	130	----
Anions and Nutrients (QCLot: 733595)										
VA22C6840-002	705-10-DUP	Kjeldahl nitrogen, total [TKN]	----	E318	2.91 mg/L	2.5 mg/L	116	70.0	130	----
Anions and Nutrients (QCLot: 733598)										
VA22C6840-002	705-10-DUP	phosphorus, total	7723-14-0	E372-U	0.0469 mg/L	0.05 mg/L	93.8	70.0	130	----
Anions and Nutrients (QCLot: 733599)										
VA22C6840-002	705-10-DUP	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
Cyanides (QCLot: 739022)										
VA22C6705-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.254 mg/L	0.25 mg/L	102	75.0	125	----
Cyanides (QCLot: 739023)										
VA22C6751-010	Anonymous	cyanide, weak acid dissociable	----	E336	0.126 mg/L	0.125 mg/L	101	75.0	125	----
Cyanides (QCLot: 739462)										
VA22C6751-002	Anonymous	thiocyanate	302-04-5	E344	8.66 mg/L	10 mg/L	86.6	75.0	125	----
Organic / Inorganic Carbon (QCLot: 733596)										
VA22C6840-002	705-10-DUP	carbon, dissolved organic [DOC]	----	E358-L	4.94 mg/L	5 mg/L	98.8	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
Organic / Inorganic Carbon (QCLot: 733597)										
VA22C6840-002	705-10-DUP	carbon, total organic [TOC]	----	E355-L	5.10 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 733393)										
VA22C6840-003	661-01	mercury, total	7439-97-6	E508	0.0000932 mg/L	0.0001 mg/L	93.2	70.0	130	----
Total Metals (QCLot: 735869)										
KS2204245-002	Anonymous	aluminum, total	7429-90-5	E420	0.998 mg/L	1 mg/L	99.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		beryllium, total	7440-41-7	E420	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0442 mg/L	0.05 mg/L	88.4	70.0	130	----
		boron, total	7440-42-8	E420	0.479 mg/L	0.5 mg/L	95.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0954 mg/L	0.1 mg/L	95.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0924 mg/L	0.1 mg/L	92.4	70.0	130	----
		iron, total	7439-89-6	E420	9.71 mg/L	10 mg/L	97.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0923 mg/L	0.1 mg/L	92.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.509 mg/L	0.5 mg/L	102	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	5 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.185 mg/L	0.2 mg/L	92.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	55.0 mg/L	50 mg/L	110	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.211 mg/L	0.2 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	49.9 mg/L	50 mg/L	99.8	70.0	130	----
		silver, total	7440-22-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	100 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		tin, total	7440-31-5	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.200 mg/L	0.2 mg/L	99.8	70.0	130	----
		uranium, total	7440-61-1	E420	0.0193 mg/L	0.02 mg/L	96.4	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: 735869) - continued										
KS2204245-002	Anonymous	vanadium, total	7440-62-2	E420	0.510 mg/L	0.5 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	1.93 mg/L	2 mg/L	96.6	70.0	130	----
Total Metals (QCLot: 739890)										
VA22C6840-002	705-10-DUP	mercury, total	7439-97-6	E508	0.0000994 mg/L	0.0001 mg/L	99.4	70.0	130	----
Dissolved Metals (QCLot: 731388)										
VA22C6745-011	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000778 mg/L	0.0001 mg/L	77.8	70.0	130	----
Dissolved Metals (QCLot: 738711)										
KS2204204-002	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	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00898 mg/L	0.01 mg/L	89.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0179 mg/L	0.02 mg/L	89.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0357 mg/L	0.04 mg/L	89.4	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.7 mg/L	10 mg/L	107	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.91 mg/L	10 mg/L	99.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----

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: 738711) - continued										
KS2204204-002	Anonymous	thallium, dissolved	7440-28-0	E421	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.362 mg/L	0.4 mg/L	90.5	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

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

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

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Tonia.Robb@erm.com

Email 2: tdesormeaux@artemisgoldinc.com

Email 3: ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: tdesormeaux@artemisgoldinc.com

Email 2: accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Project Information

ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): 6840

ALS Contact: A. Springer

Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	705-10	2-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	705-10-DUP	2-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	661-01	2-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division Vancouver

Work Order Reference

VA22C6840

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com

Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
<Original signed by>	04 Nov. 3-22	0840				<Original signed by>	4 Nov 22	9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
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Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	6840	ALS Contact: A. Springer	Sampler:

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	705-10	2-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	705-10-DUP	2-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	661-01	2-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
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				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C6840

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: 04 Nov. 3 - 22	Time: 0830	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 4 Nov 22	Time: 9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C6948**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 05-Nov-2022 09:50
PO	: 10857	Date Analysis Commenced	: 05-Nov-2022
C-O-C number	: ----	Issue Date	: 15-Nov-2022 15:17
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Qammar Almas	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 unit
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	DC-20	Field Blank
					Client sampling date / time	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022
						VA22C6948-001	VA22C6948-002	VA22C6948-003	VA22C6948-004	VA22C6948-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	2.1	2.4	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		69.3	66.4	71.8	68.0	<1.0
conductivity	----	E100	2.0	µS/cm		136	137	138	132	<2.0
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		67.5	68.3	67.6	62.5	<0.60
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		73.8	70.1	71.2	65.1	<0.60
pH	----	E108	0.10	pH units		7.92	7.89	7.89	7.91	5.43
solids, total dissolved [TDS]	----	E162	10	mg/L		93	95	98	81	<10
solids, total suspended [TSS]	----	E160	3.0	mg/L		38.9	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		9.34	1.69	1.30	0.67	<0.10
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0084	0.0121	0.0115	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.057	0.056	0.056	0.051	<0.020
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.857	0.349	0.334	0.091	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0134	0.0314	0.0230 HTD	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	0.0021	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0029	0.0059	0.0053	0.0052	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0604	0.0176	0.0176	0.0087	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.49	3.59	3.52	2.73	<0.30
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.26	7.57	7.22	2.84	<0.50
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.7	8.56	8.66	2.79	<0.50
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.264	0.0259	0.0275	0.0263	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	DC-20	Field Blank
					Client sampling date / time	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022
						VA22C6948-001	VA22C6948-002	VA22C6948-003	VA22C6948-004	VA22C6948-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00063	0.00060	0.00059	0.00052	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L		0.0108	0.00788	0.00797	0.0101	<0.00010
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		21.0	20.1	20.4	18.3	<0.050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00013	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		0.00079	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.355	0.161	0.180	0.246	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L		0.000155	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		5.18	4.83	4.93	4.72	<0.100
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0397	0.0240	0.0293	0.0300	<0.00010
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000599	0.000715	0.000685	0.000869	<0.000050
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00052	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.078	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.924	0.820	0.834	0.630	<0.100
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000065	0.000062	0.000053	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		4.45	5.11	5.38	7.27	<0.10
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		3.65	3.61	3.68	4.18	<0.050
strontium, total	7440-24-6	E420	0.00020	mg/L		0.106	0.107	0.110	0.117	<0.00020
sulfur, total	7704-34-9	E420	0.50	mg/L		1.17	1.18	1.00	0.74	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0154	0.00128	0.00120	0.00076	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000129	0.000130	0.000132	0.000312	<0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00118	<0.00050	0.00054	0.00052	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	DC-20	Field Blank
					Client sampling date / time	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022
						VA22C6948-001	VA22C6948-002	VA22C6948-003	VA22C6948-004	VA22C6948-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00058	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0039	0.0028	0.0032	0.0065	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00047	0.00054	0.00055	0.00044	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00723	0.00743	0.00724	0.00955	<0.00010
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		19.5	19.6	19.7	18.0	<0.050
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00034	0.00033	0.00036	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.018	0.099	0.105	0.174	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.56	4.70	4.46	4.27	<0.100
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00405	0.0189	0.0229	0.0263	<0.00010
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000565	0.000659	0.000672	0.000814	<0.000050
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.866	0.868	0.839	0.643	<0.100
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000071	0.000050	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.99	4.97	5.18	7.01	<0.050
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.44	3.61	3.51	3.98	<0.050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0998	0.101	0.102	0.106	<0.00020

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-10	CC-15	CC-20	DC-20	Field Blank
					Client sampling date / time	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022
						VA22C6948-001	VA22C6948-002	VA22C6948-003	VA22C6948-004	VA22C6948-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.18	1.14	1.14	0.85	<0.50
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000094	0.000124	0.000118	0.000288	<0.000010
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C6948**	Page	: 1 of 25
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 05-Nov-2022 09:50
PO	: 10857	Issue Date	: 15-Nov-2022 15:17
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Physical Tests	QC-732610-001	----	acidity (as CaCO3)	----	E283	3.2 mg/L [B]	3 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-10	E298	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-15	E298	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-20	E298	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-20	E298	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-10	E235.Br-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-15	E235.Br-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-20	E235.Br-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-20	E235.Br-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-10	E235.Cl	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-15	E235.Cl	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-20	E235.Cl	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-20	E235.Cl	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-10	E378-U	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-15	E378-U	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-20	E378-U	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-20	E378-U	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Field Blank	E378-U	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-10	E235.F	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-15	E235.F	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-20	E235.F	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-20	E235.F	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-10	E235.NO3-L	03-Nov-2022	06-Nov-2022	3 days	3 days	✓	07-Nov-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-15	E235.NO3-L	03-Nov-2022	06-Nov-2022	3 days	3 days	✓	07-Nov-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-20	E235.NO3-L	03-Nov-2022	06-Nov-2022	3 days	3 days	✓	07-Nov-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-20	E235.NO3-L	03-Nov-2022	06-Nov-2022	3 days	3 days	✓	07-Nov-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	03-Nov-2022	06-Nov-2022	3 days	3 days	✓	07-Nov-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-10	E235.NO2-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-15	E235.NO2-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-20	E235.NO2-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	3 days	4 days	✖ EHT

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-20	E235.NO2-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	3 days	4 days	✖ EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-10	E235.SO4	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-15	E235.SO4	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-20	E235.SO4	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-20	E235.SO4	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Field Blank	E235.SO4	03-Nov-2022	06-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-10	E318	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-15	E318	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-20	E318	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DC-20	E318	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Field Blank	E318	03-Nov-2022	07-Nov-2022	----	----		15-Nov-2022	28 days	12 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-10	E372-U	03-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-15	E372-U	03-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-20	E372-U	03-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
DC-20	E372-U	03-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Field Blank	E372-U	03-Nov-2022	07-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-10	E344	03-Nov-2022	----	----	----		08-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-15	E344	03-Nov-2022	----	----	----		08-Nov-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-20	E344	03-Nov-2022	----	----	----		08-Nov-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-20	E344	03-Nov-2022	----	----	----		08-Nov-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) Field Blank	E344	03-Nov-2022	----	----	----		08-Nov-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-10	E333	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-15	E333	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-20	E333	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-20	E333	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Field Blank	E333	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-10	E336	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-15	E336	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-20	E336	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-20	E336	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Field Blank	E336	03-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	14 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-10	E509	03-Nov-2022	08-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-15	E509	03-Nov-2022	08-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-20	E509	03-Nov-2022	08-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-20	E509	03-Nov-2022	08-Nov-2022	----	----		08-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
Field Blank	E509	03-Nov-2022	08-Nov-2022	----	----		08-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-10	E421	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-15	E421	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-20	E421	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
DC-20	E421	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Field Blank	E421	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-10	E358-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-15	E358-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-20	E358-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-20	E358-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-10	E355-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-15	E355-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-20	E355-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-20	E355-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-10	E283	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-15	E283	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-20	E283	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-20	E283	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE Field Blank	E283	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-10	E290	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-15	E290	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-20	E290	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-20	E290	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-10	E100	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE CC-15	E100	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-20	E100	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-20	E100	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE CC-10	E108	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-15	E108	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-20	E108	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-20	E108	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	03-Nov-2022	06-Nov-2022	----	----		06-Nov-2022	0.25 hrs	3.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-10	E162	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-15	E162	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-20	E162	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-20	E162	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-10	E160	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-15	E160	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-20	E160	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-20	E160	03-Nov-2022	----	----	----		07-Nov-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE										
Field Blank	E160	03-Nov-2022	----	----	----		07-Nov-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
CC-10	E121	03-Nov-2022	----	----	----		05-Nov-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
CC-15	E121	03-Nov-2022	----	----	----		05-Nov-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
CC-20	E121	03-Nov-2022	----	----	----		05-Nov-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
DC-20	E121	03-Nov-2022	----	----	----		05-Nov-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Field Blank	E121	03-Nov-2022	----	----	----		05-Nov-2022	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-10	E508	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-15	E508	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-20	E508	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-20	E508	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Field Blank	E508	03-Nov-2022	07-Nov-2022	----	----		07-Nov-2022	28 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-10	E420	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-15	E420	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-20	E420	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-20	E420	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	03-Nov-2022	10-Nov-2022	----	----		11-Nov-2022	180 days	8 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	732610	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	732608	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	732613	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	732611	1	18	5.5	5.0	✓
Conductivity in Water	E100	732609	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	736031	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737626	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	732618	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	732612	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	732614	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	732615	1	15	6.6	5.0	✓
pH by Meter	E108	732607	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	732616	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	733467	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	736176	1	19	5.2	5.0	✓
Total Cyanide	E333	741284	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	734214	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735845	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	733456	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	732393	1	19	5.2	5.0	✓
WAD Cyanide	E336	741285	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	732610	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	732608	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	732613	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	732611	1	18	5.5	5.0	✓
Conductivity in Water	E100	732609	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	736031	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737626	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	732618	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	732612	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	732614	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	732615	1	15	6.6	5.0	✓
pH by Meter	E108	732607	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	732616	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	733467	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	736176	1	19	5.2	5.0	✓
Total Cyanide	E333	741284	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	734214	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735845	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	733456	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	732393	1	19	5.2	5.0	✓
WAD Cyanide	E336	741285	1	7	14.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	732610	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	732608	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	732613	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	732611	1	18	5.5	5.0	✓
Conductivity in Water	E100	732609	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	736031	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737626	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	732618	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	732612	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	732614	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	732615	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	732616	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	733467	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	736176	1	19	5.2	5.0	✓
Total Cyanide	E333	741284	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	734214	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735845	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	733456	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	732393	1	19	5.2	5.0	✓
WAD Cyanide	E336	741285	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	733599	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	732613	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	732611	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	736031	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	737626	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	733596	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	732618	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	732612	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	732614	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	732615	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	732616	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	736176	1	19	5.2	5.0	✓
Total Cyanide	E333	741284	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	733595	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	734214	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	735845	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	733597	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	733598	1	13	7.6	5.0	✓
WAD Cyanide	E336	741285	1	7	14.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C6948**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 05-Nov-2022 09:50
PO	: 10857	Date Analysis Commenced	: 05-Nov-2022
C-O-C number	: ----	Issue Date	: 15-Nov-2022 15:17
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 732393)											
VA22C6889-001	Anonymous	turbidity	----	E121	0.10	NTU	1.42	1.28	10.6%	15%	----
Physical Tests (QC Lot: 732607)											
VA22C6948-003	CC-20	pH	----	E108	0.10	pH units	7.89	7.90	0.127%	4%	----
Physical Tests (QC Lot: 732608)											
VA22C6948-003	CC-20	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	71.8	68.3	5.00%	20%	----
Physical Tests (QC Lot: 732609)											
VA22C6948-003	CC-20	conductivity	----	E100	2.0	µS/cm	138	139	0.505%	10%	----
Physical Tests (QC Lot: 732610)											
VA22C6948-002	CC-15	acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	2.3	0.1	Diff <2x LOR	----
Physical Tests (QC Lot: 733456)											
VA22C6918-005	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 733467)											
FJ2203142-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	230	227	1.10%	20%	----
Anions and Nutrients (QC Lot: 732611)											
VA22C6948-001	CC-10	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 732612)											
VA22C6948-001	CC-10	fluoride	16984-48-8	E235.F	0.020	mg/L	0.057	0.057	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 732613)											
VA22C6948-001	CC-10	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 732614)											
VA22C6948-001	CC-10	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0134	0.0080	0.0054	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 732615)											
VA22C6948-001	CC-10	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 732616)											
VA22C6948-001	CC-10	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.49	3.48	0.162%	20%	----
Anions and Nutrients (QC Lot: 732618)											
VA22C6948-001	CC-10	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0019	0.0010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733595)											
VA22C6840-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.139	0.155	0.016	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733598)											

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*
Anions and Nutrients (QC Lot: 733598) - continued											
VA22C6840-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0033	0.0030	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 733599)											
VA22C6840-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 736176)											
VA22C6753-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	0.67	0.69	0.02	Diff <2x LOR	----
Cyanides (QC Lot: 741284)											
VA22C7459-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0100	mg/L	0.476	0.480	0.812%	20%	----
Cyanides (QC Lot: 741285)											
VA22C7459-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0100	mg/L	0.488	0.504	3.34%	20%	----
Organic / Inorganic Carbon (QC Lot: 733596)											
VA22C6840-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.48	4.70	0.22	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 733597)											
VA22C6840-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.75	5.13	0.39	Diff <2x LOR	----
Total Metals (QC Lot: 734214)											
VA22C6918-005	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 735845)											
VA22C6789-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0509	0.0534	4.73%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00139	0.00142	2.17%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00147	0.00157	6.44%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0345	0.0356	3.07%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000326	0.000322	1.09%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	157	161	2.05%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00043	0.00044	0.00001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00542	0.00554	2.29%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.154	0.161	4.21%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000223	0.000233	0.000010	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0230	0.0230	0.174%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	57.8	59.1	2.22%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.258	0.266	2.89%	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: 735845) - continued											
VA22C6789-001	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00297	0.00300	0.979%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00300	0.00320	0.00020	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.38	2.42	1.61%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000139	0.000161	0.000022	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.87	3.93	1.66%	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	15.1	15.3	1.54%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	1.14	1.16	2.14%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	221	223	0.865%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00120	mg/L	<0.00120	<0.00120	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000299	0.000305	1.96%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0072	0.0074	0.0001	Diff <2x LOR	----
Dissolved Metals (QC Lot: 736031)											
VA22C6947-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 737626)											
VA22C6831-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		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	<0.050	<0.050	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	----

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: 737626) - continued											
VA22C6831-003	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	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	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		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	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

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: 732393)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 732608)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 732609)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 732610)						
acidity (as CaCO3)	----	E283	2	mg/L	# 3.2	B
Physical Tests (QCLot: 733456)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 733467)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 732611)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 732612)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 732613)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 732614)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 732615)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 732616)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 732618)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 733595)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 733598)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 733599)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 736176)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 736176) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 741284)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 741285)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 733596)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 733597)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 734214)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 735845)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 735845) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 736031)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 737626)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 737626) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 732393)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 732607)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 732608)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	98.8	85.0	115	----
Physical Tests (QCLot: 732609)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.1	90.0	110	----
Physical Tests (QCLot: 732610)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
Physical Tests (QCLot: 733456)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	92.8	85.0	115	----
Physical Tests (QCLot: 733467)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.2	85.0	115	----
Anions and Nutrients (QCLot: 732611)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 732612)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.4	90.0	110	----
Anions and Nutrients (QCLot: 732613)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 732614)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 732615)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.5	90.0	110	----
Anions and Nutrients (QCLot: 732616)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 732618)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 733595)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 733598)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 733599)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.7	85.0	115	----
Cyanides (QCLot: 736176)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	98.4	85.0	115	----
Cyanides (QCLot: 741284)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	90.4	80.0	120	----
Cyanides (QCLot: 741285)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 733596)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Organic / Inorganic Carbon (QCLot: 733597)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Total Metals (QCLot: 734214)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
Total Metals (QCLot: 735845)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	111	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 735845) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	112	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	96.5	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.8	80.0	120	----
Dissolved Metals (QCLot: 737626)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	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	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 737626) - continued									
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	114	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	107	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	94.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	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: 732611)										
VA22C6948-002	CC-15	chloride	16887-00-6	E235.Cl	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 732612)										
VA22C6948-002	CC-15	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 732613)										
VA22C6948-002	CC-15	bromide	24959-67-9	E235.Br-L	0.525 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 732614)										
VA22C6948-002	CC-15	nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 732615)										
VA22C6948-002	CC-15	nitrite (as N)	14797-65-0	E235.NO2-L	0.507 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 732616)										
VA22C6948-002	CC-15	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 732618)										
VA22C6948-002	CC-15	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0315 mg/L	0.03 mg/L	105	70.0	130	----
Anions and Nutrients (QCLot: 733595)										
VA22C6840-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.91 mg/L	2.5 mg/L	116	70.0	130	----
Anions and Nutrients (QCLot: 733598)										
VA22C6840-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0469 mg/L	0.05 mg/L	93.8	70.0	130	----
Anions and Nutrients (QCLot: 733599)										
VA22C6840-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
Cyanides (QCLot: 736176)										
VA22C6754-001	Anonymous	thiocyanate	302-04-5	E344	8.99 mg/L	10 mg/L	89.9	75.0	125	----
Cyanides (QCLot: 741284)										
VA22C7459-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.13 mg/L	1.25 mg/L	90.3	75.0	125	----
Cyanides (QCLot: 741285)										
VA22C7459-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.619 mg/L	0.625 mg/L	99.0	75.0	125	----
Organic / Inorganic Carbon (QCLot: 733596)										
VA22C6840-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.94 mg/L	5 mg/L	98.8	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
Organic / Inorganic Carbon (QCLot: 733597)										
VA22C6840-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.10 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 734214)										
VA22C6926-001	Anonymous	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Total Metals (QCLot: 735845)										
VA22C6789-002	Anonymous	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	94.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.0	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	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00993 mg/L	0.01 mg/L	99.3	70.0	130	----
		boron, total	7440-42-8	E420	0.099 mg/L	0.1 mg/L	99.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0236 mg/L	0.02 mg/L	118	70.0	130	----
		iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	97.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0960 mg/L	0.1 mg/L	96.0	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	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		nickel, total	7440-02-0	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.3 mg/L	10 mg/L	103	70.0	130	----
		potassium, total	7440-09-7	E420	3.93 mg/L	4 mg/L	98.3	70.0	130	----
		selenium, total	7782-49-2	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	9.84 mg/L	10 mg/L	98.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00400 mg/L	0.004 mg/L	100	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	21.3 mg/L	20 mg/L	107	70.0	130	----
		thallium, total	7440-28-0	E420	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		uranium, total	7440-61-1	E420	0.00412 mg/L	0.004 mg/L	103	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: 735845) - continued										
VA22C6789-002	Anonymous	vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.393 mg/L	0.4 mg/L	98.2	70.0	130	----
Dissolved Metals (QCLot: 736031)										
VA22C6947-002	Anonymous	mercury, dissolved	7439-97-6	E509	ND mg/L	0.0001 mg/L	ND	70.0	130	----
Dissolved Metals (QCLot: 737626)										
VA22C6831-004	Anonymous	aluminum, dissolved	7429-90-5	E421	0.419 mg/L	0.4 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0829 mg/L	0.08 mg/L	104	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.192 mg/L	0.2 mg/L	96.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00814 mg/L	0.008 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0810 mg/L	0.08 mg/L	101	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.95 mg/L	4 mg/L	98.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0778 mg/L	0.08 mg/L	97.2	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	23.0 mg/L	20 mg/L	115	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0882 mg/L	0.08 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	21.1 mg/L	20 mg/L	106	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00840 mg/L	0.008 mg/L	105	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00787 mg/L	0.008 mg/L	98.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0816 mg/L	0.08 mg/L	102	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: 737626) - continued										
VA22C6831-004	Anonymous	uranium, dissolved	7440-61-1	E421	0.00838 mg/L	0.008 mg/L	105	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.211 mg/L	0.2 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.769 mg/L	0.8 mg/L	96.1	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

Affix ALS barcode label here
(lab use only)

Environmental Division
Vancouver
Work Order Reference
VA22C6948

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with y

Regular [R] ☑ Standard TAT if received b

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 [illegible] | S[illegible]

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service leve

Analysis Re

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: A. Springer

Sampler: Avison

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	CC-10	3-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-15	3-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-20	3-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-20	3-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	Field Blank	3-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

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

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

Are samples for human drinking water use?
☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			3.0		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov. 4-22	Time: 0900	Received by:	Date:	Time:	<Original signed by>	Date: NOV 4	Time: 1950

ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C7312**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 10-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 10-Nov-2022
C-O-C number	: 15-	Issue Date	: 21-Nov-2022 11:01
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Benjamin Oke	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		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 unit
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Sample Comments

Sample	Client Id	*Comment*
VA22C7312-002	TC-05	Sample 2: Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	09-Nov-2022	09-Nov-2022	09-Nov-2022	----	----
						VA22C7312-001	VA22C7312-002	VA22C7312-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		109	121	109	----	----
conductivity	----	E100	2.0	µS/cm		212	214	213	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		104	102	101	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		113	111	113	----	----
pH	----	E108	0.10	pH units		8.24	8.24	8.24	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		124	135	153	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU		0.49	1.03	1.06	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0073	0.0174	0.0066	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	0.56	0.62	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.048	0.055	0.061	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.050	0.428	0.107	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0584	0.0065	<0.0050	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0018	0.0032	0.0039	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0056	0.0216	0.0097	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.04	3.96	3.64	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.59	3.18	4.26	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.43	4.54	4.66	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0070	0.0291	0.0106	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	09-Nov-2022	09-Nov-2022	09-Nov-2022	----	----
						VA22C7312-001	VA22C7312-002	VA22C7312-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00061	0.00042	0.00042	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0108	0.0136	0.0149	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	0.0000064	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		37.5	34.3	34.2	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	0.00127	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.059	0.252	0.272	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	0.000053	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.71	6.08	6.79	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00829	0.0276	0.0614	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000611	0.000697	0.000530	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.821	1.15	1.19	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000092	0.000067	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		7.46	7.94	8.15	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.27	4.53	5.14	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.137	0.151	0.161	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.54	1.04	0.95	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00083	<0.00030	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000311	0.000310	0.000203	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00060	<0.00050	<0.00050	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	09-Nov-2022	09-Nov-2022	09-Nov-2022	----	----
						VA22C7312-001	VA22C7312-002	VA22C7312-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0045	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0038	0.0060	0.0034	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00052	0.00031	0.00031	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0103	0.0128	0.0137	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		34.2	30.8	30.2	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.037	0.168	0.168	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.41	6.00	6.25	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00661	0.0262	0.0526	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000589	0.000664	0.000518	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.801	1.09	1.17	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000063	0.000062	<0.000050	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		7.06	7.68	7.75	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.92	4.10	4.49	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.127	0.138	0.149	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-05	TC-10	----	----
					Client sampling date / time	09-Nov-2022	09-Nov-2022	09-Nov-2022	----	----
						VA22C7312-001	VA22C7312-002	VA22C7312-003	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	1.12	1.09	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000295	0.000286	0.000186	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0011	<0.0010	<0.0010	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C7312**	Page	: 1 of 19
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 10-Nov-2022 09:00
PO	: 10857	Issue Date	: 21-Nov-2022 11:03
C-O-C number	: 15-		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-01	E298	09-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-05	E298	09-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-10	E298	09-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-01	E235.Br-L	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-05	E235.Br-L	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-10	E235.Br-L	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-01	E235.Cl	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-05	E235.Cl	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-10	E235.Cl	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-01	E378-U	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-05	E378-U	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-10	E378-U	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-01	E235.F	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-05	E235.F	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-10	E235.F	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-01	E235.NO3-L	09-Nov-2022	10-Nov-2022	3 days	2 days	✓	10-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-05	E235.NO3-L	09-Nov-2022	10-Nov-2022	3 days	2 days	✓	10-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-10	E235.NO3-L	09-Nov-2022	10-Nov-2022	3 days	2 days	✓	10-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-01	E235.NO2-L	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-05	E235.NO2-L	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-10	E235.NO2-L	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-01	E235.SO4	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-05	E235.SO4	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-10	E235.SO4	09-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC-01	E318	09-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC-05	E318	09-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) TC-10	E318	09-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) TC-01	E372-U	09-Nov-2022	13-Nov-2022	----	----		14-Nov-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) TC-05	E372-U	09-Nov-2022	13-Nov-2022	----	----		14-Nov-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) TC-10	E372-U	09-Nov-2022	13-Nov-2022	----	----		14-Nov-2022	28 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-01	E344	09-Nov-2022	----	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-05	E344	09-Nov-2022	----	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-10	E344	09-Nov-2022	----	----	----		15-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-01	E333	09-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-05	E333	09-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-10	E333	09-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-01	E336	09-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-05	E336	09-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-10	E336	09-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
TC-01	E509	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
TC-05	E509	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
TC-10	E509	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-01	E421	09-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-05	E421	09-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-10	E421	09-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-01	E358-L	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-05	E358-L	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-10	E358-L	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-01	E355-L	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-05	E355-L	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-10	E355-L	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE TC-01	E283	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-05	E283	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-10	E283	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-01	E290	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-05	E290	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-10	E290	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-01	E100	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-05	E100	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-10	E100	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE TC-01	E108	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	0.25 hrs	44.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-05	E108	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	0.25 hrs	44.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-10	E108	09-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	0.25 hrs	44.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE TC-01	E162	09-Nov-2022	----	----	----		10-Nov-2022	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-05	E162	09-Nov-2022	----	----	----		10-Nov-2022	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-10	E162	09-Nov-2022	----	----	----		10-Nov-2022	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-01	E160	09-Nov-2022	----	----	----		10-Nov-2022	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-05	E160	09-Nov-2022	----	----	----		10-Nov-2022	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-10	E160	09-Nov-2022	----	----	----		10-Nov-2022	7 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE TC-01	E121	09-Nov-2022	----	----	----		12-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-05	E121	09-Nov-2022	----	----	----		12-Nov-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-10	E121	09-Nov-2022	----	----	----		12-Nov-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) TC-05	E508	09-Nov-2022	17-Nov-2022	0.05 hrs	15 hrs	× EHTR-FM	17-Nov-2022	-179.22 hrs	0.05 hrs	× EHTR-FM
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-01	E508	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-10	E508	09-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-01	E420	09-Nov-2022	16-Nov-2022	----	----		17-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-05	E420	09-Nov-2022	16-Nov-2022	----	----		17-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-10	E420	09-Nov-2022	16-Nov-2022	----	----		17-Nov-2022	180 days	8 days	✓

Legend & Qualifier Definitions

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

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	739426	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	739410	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Conductivity in Water	E100	739412	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
pH by Meter	E108	739411	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	739496	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	2	30	6.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	739488	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	740624	2	40	5.0	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	739426	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	739410	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Conductivity in Water	E100	739412	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
pH by Meter	E108	739411	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	739496	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	2	30	6.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	739488	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	740624	2	40	5.0	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	739426	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	739410	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Conductivity in Water	E100	739412	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	739496	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	2	30	6.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	739488	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	740624	2	40	5.0	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	2	30	6.6	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **VA22C7312**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 10-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 10-Nov-2022
C-O-C number	: 15-	Issue Date	: 21-Nov-2022 11:02
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Benjamin Oke	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 739410)											
VA22C7312-002	TC-05	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	121	107	13.0%	20%	----
Physical Tests (QC Lot: 739411)											
VA22C7312-002	TC-05	pH	----	E108	0.10	pH units	8.24	8.23	0.121%	4%	----
Physical Tests (QC Lot: 739412)											
VA22C7312-002	TC-05	conductivity	----	E100	2.0	µS/cm	214	210	1.89%	10%	----
Physical Tests (QC Lot: 739426)											
VA22C7312-002	TC-05	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 739488)											
FJ2203156-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	7.8	7.8	0	Diff <2x LOR	----
Physical Tests (QC Lot: 739496)											
FJ2203156-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	3940	3820	3.05%	20%	----
Physical Tests (QC Lot: 740624)											
FJ2203173-001	Anonymous	turbidity	----	E121	0.10	NTU	12.5	12.7	1.91%	15%	----
Physical Tests (QC Lot: 740625)											
VA22C7312-002	TC-05	turbidity	----	E121	0.10	NTU	1.03	1.00	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739413)											
KS2204292-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.174	0.174	0.0010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739414)											
KS2204292-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	0.59	0.58	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739415)											
KS2204292-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739416)											
KS2204292-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.650	0.649	0.146%	20%	----
Anions and Nutrients (QC Lot: 739417)											
KS2204292-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739418)											
KS2204292-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.08	3.08	0.00643%	20%	----
Anions and Nutrients (QC Lot: 739425)											
VA22C7312-001	TC-01	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0010	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 741360)											

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*
Anions and Nutrients (QC Lot: 741360) - continued											
VA22C7312-001	TC-01	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.050	0.056	0.006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 741363)											
VA22C7312-001	TC-01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0056	0.0052	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 741364)											
VA22C7312-001	TC-01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0073	0.0072	0.0001	Diff <2x LOR	----
Cyanides (QC Lot: 741776)											
VA22C7373-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
Cyanides (QC Lot: 741777)											
VA22C7373-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0100	mg/L	0.0191	0.0134	0.0057	Diff <2x LOR	----
Cyanides (QC Lot: 746109)											
EO2209944-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 741361)											
VA22C7312-001	TC-01	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.59	1.66	0.07	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 741362)											
VA22C7312-001	TC-01	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.43	1.46	0.03	Diff <2x LOR	----
Total Metals (QC Lot: 741292)											
KS2204289-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 742556)											
VA22C7312-001	TC-01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0070	0.0064	0.0006	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00061	0.00057	0.00004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0108	0.0108	0.0174%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	37.5	37.4	0.201%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.059	0.058	0.0010	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	<0.0010	<0.0010	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: 742556) - continued											
VA22C7312-001	TC-01	magnesium, total	7439-95-4	E420	0.100	mg/L	4.71	4.60	2.29%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00829	0.00836	0.842%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000611	0.000602	1.47%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.821	0.805	0.016	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000092	0.000060	0.000032	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.46	7.25	2.86%	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	3.27	3.21	1.94%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.137	0.138	1.16%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.54	0.51	0.03	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000311	0.000314	0.941%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00060	0.00062	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 746594)											
KS2204347-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 741305)											
VA22C7300-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 742331)											
YL2201926-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0023	0.0009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00221	0.00211	4.84%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0233	0.0228	2.11%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0147	0.0141	3.89%	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	0.080	0.078	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000054	0.0000058	0.0000004	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	183	181	1.02%	20%	----
		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	0.00175	0.00180	3.12%	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*
Dissolved Metals (QC Lot: 742331) - continued											
YL2201926-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00360	0.00352	1.95%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.218	0.218	0.294%	20%	----
		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	0.0520	0.0500	3.90%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	75.6	72.4	4.31%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0701	0.0688	1.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00326	0.00314	3.78%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00123	0.00130	0.00007	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.370	0.345	0.025	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	8.22	8.06	1.96%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000439	0.000406	0.000033	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.35	5.24	1.96%	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	24.4	24.4	0.104%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.726	0.697	4.10%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	202	198	1.79%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0537	0.0527	1.97%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00079	0.00078	0.000009	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0028	0.00003	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: 739410)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 739412)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 739426)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Physical Tests (QCLot: 739488)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 739496)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 740624)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 740625)						
turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 739413)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 739414)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 739415)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 739416)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 739417)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 739418)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 739425)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 741360)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 741363)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 741364)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 741364) - continued						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 741776)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 741777)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 746109)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 741361)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 741362)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 741292)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 742556)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 742556) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 746594)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 741305)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 742331)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 742331) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 739410)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 739411)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 739412)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.6	90.0	110	----
Physical Tests (QCLot: 739426)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	100	85.0	115	----
Physical Tests (QCLot: 739488)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	107	85.0	115	----
Physical Tests (QCLot: 739496)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.4	85.0	115	----
Physical Tests (QCLot: 740624)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 740625)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Anions and Nutrients (QCLot: 739413)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.1	90.0	110	----
Anions and Nutrients (QCLot: 739414)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 739415)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.0	85.0	115	----
Anions and Nutrients (QCLot: 739416)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 739417)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.6	90.0	110	----
Anions and Nutrients (QCLot: 739418)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 739425)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	99.8	80.0	120	----
Anions and Nutrients (QCLot: 741360)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.0	75.0	125	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 741363)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	88.3	80.0	120	----
Anions and Nutrients (QCLot: 741364)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.1	85.0	115	----
Cyanides (QCLot: 741776)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	96.8	80.0	120	----
Cyanides (QCLot: 741777)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	93.2	80.0	120	----
Cyanides (QCLot: 746109)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Organic / Inorganic Carbon (QCLot: 741361)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 741362)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	109	80.0	120	----
Total Metals (QCLot: 741292)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.7	80.0	120	----
Total Metals (QCLot: 742556)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	110	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 742556) - continued									
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	117	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	115	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.6	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	113	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	86.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
Total Metals (QCLot: 746594)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.4	80.0	120	----
Dissolved Metals (QCLot: 742331)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 742331) - continued									
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	98.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.5	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	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: 739413)										
VA22C7312-001	TC-01	fluoride	16984-48-8	E235.F	0.968 mg/L	1 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 739414)										
VA22C7312-001	TC-01	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 739415)										
VA22C7312-001	TC-01	bromide	24959-67-9	E235.Br-L	0.491 mg/L	0.5 mg/L	98.2	75.0	125	----
Anions and Nutrients (QCLot: 739416)										
VA22C7312-001	TC-01	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 739417)										
VA22C7312-001	TC-01	nitrite (as N)	14797-65-0	E235.NO2-L	0.482 mg/L	0.5 mg/L	96.4	75.0	125	----
Anions and Nutrients (QCLot: 739418)										
VA22C7312-001	TC-01	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 739425)										
VA22C7312-002	TC-05	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0310 mg/L	0.03 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 741360)										
VA22C7312-002	TC-05	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 741363)										
VA22C7312-002	TC-05	phosphorus, total	7723-14-0	E372-U	0.0488 mg/L	0.05 mg/L	97.6	70.0	130	----
Anions and Nutrients (QCLot: 741364)										
VA22C7312-002	TC-05	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Cyanides (QCLot: 741776)										
VA22C7373-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.617 mg/L	0.625 mg/L	98.7	75.0	125	----
Cyanides (QCLot: 741777)										
VA22C7373-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.19 mg/L	1.25 mg/L	94.9	75.0	125	----
Cyanides (QCLot: 746109)										
EO2209946-001	Anonymous	thiocyanate	302-04-5	E344	9.00 mg/L	10 mg/L	90.0	75.0	125	----
Organic / Inorganic Carbon (QCLot: 741361)										
VA22C7312-002	TC-05	carbon, dissolved organic [DOC]	----	E358-L	4.64 mg/L	5 mg/L	92.9	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
Organic / Inorganic Carbon (QCLot: 741362)										
VA22C7312-002	TC-05	carbon, total organic [TOC]	----	E355-L	5.12 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 741292)										
KS2204289-002	Anonymous	mercury, total	7439-97-6	E508	0.0000975 mg/L	0.0001 mg/L	97.5	70.0	130	----
Total Metals (QCLot: 742556)										
VA22C7312-002	TC-05	aluminum, total	7429-90-5	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.087 mg/L	0.1 mg/L	86.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	102	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.0956 mg/L	0.1 mg/L	95.6	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	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		potassium, total	7440-09-7	E420	4.11 mg/L	4 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		silicon, total	7440-21-3	E420	9.69 mg/L	10 mg/L	96.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00409 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	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	0.00411 mg/L	0.004 mg/L	103	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: 742556) - continued										
VA22C7312-002	TC-05	vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
Total Metals (QCLot: 746594)										
VA22C7312-002	TC-05	mercury, total	7439-97-6	E508	0.0000982 mg/L	0.0001 mg/L	98.2	70.0	130	----
Dissolved Metals (QCLot: 741305)										
VA22C7300-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000818 mg/L	0.0001 mg/L	81.8	70.0	130	----
Dissolved Metals (QCLot: 742331)										
YL2201926-002	Anonymous	aluminum, dissolved	7429-90-5	E421	3.73 mg/L	4 mg/L	93.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.383 mg/L	0.4 mg/L	95.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.764 mg/L	0.8 mg/L	95.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.180 mg/L	0.2 mg/L	90.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.85 mg/L	2 mg/L	92.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0786 mg/L	0.08 mg/L	98.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	80 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.774 mg/L	0.8 mg/L	96.7	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.382 mg/L	0.4 mg/L	95.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	38.2 mg/L	40 mg/L	95.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.394 mg/L	0.4 mg/L	98.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.771 mg/L	0.8 mg/L	96.3	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	199 mg/L	200 mg/L	99.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	80.1 mg/L	80 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.798 mg/L	0.8 mg/L	99.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	199 mg/L	200 mg/L	99.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0778 mg/L	0.08 mg/L	97.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	415 mg/L	400 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: 742331) - continued										
YL2201926-002	Anonymous	thallium, dissolved	7440-28-0	E421	0.0758 mg/L	0.08 mg/L	94.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.390 mg/L	0.4 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.768 mg/L	0.8 mg/L	96.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	8.42 mg/L	8 mg/L	105	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Project Information	
ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

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

ALS Lab Work Order # (lab use only):

ALS Contact: A. Springer

Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	TC-01	9-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-05	9-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-10	9-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
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				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C7312

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			3.9	(Avg	A)

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov. 9-22	Time: 0300	Received by:	Date:	Time:	Rec<Original signed by>	Date: 11/10/22	Time: 9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY OCTOBER 2015 FRONT

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C7317**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 10-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 10-Nov-2022
C-O-C number	:	Issue Date	: 21-Nov-2022 11:03
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Benjamin Oke	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	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 unit
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	705-05	FC-01	WQ 4	----	----
					Client sampling date / time	08-Nov-2022	08-Nov-2022	08-Nov-2022	----	----
						VA22C7317-001	VA22C7317-002	VA22C7317-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		29.2	40.2	24.8	----	----
conductivity	----	E100	2.0	µS/cm		59.8	87.1	160	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		25.4	36.4	61.2	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		27.3	39.6	69.6	----	----
pH	----	E108	0.10	pH units		7.59	7.78	7.53	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		50	59	115	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU		1.03	<0.10	0.54	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0053	<0.0050	0.0068	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	0.91	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.026	0.022	0.060	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.146	<0.050	0.094	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	0.0181	0.0203	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0013	0.0039	0.0013	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0074	0.0047	0.0070	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.75	2.65	47.9	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		5.24	1.71	2.24	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		5.45	1.53	2.80	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0449	0.0189	0.151	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	0.00018	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	705-05	FC-01	WQ 4	----	----
					Client sampling date / time	08-Nov-2022	08-Nov-2022	08-Nov-2022	----	----
						VA22C7317-001	VA22C7317-002	VA22C7317-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00029	0.00079	0.00183	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00783	0.00478	0.00526	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	0.0000071	0.0000759	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		8.38	13.4	21.3	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00083	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.290	<0.010	0.105	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	0.000121	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		1.56	1.50	3.98	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0113	0.00036	0.0452	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000617	0.000804	0.000451	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.342	0.436	0.750	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.28	5.82	5.36	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	0.000016	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		2.72	2.77	4.88	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0638	0.0590	0.131	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	16.9	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00109	0.00058	0.00237	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000106	0.000072	0.000036	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	705-05	FC-01	WQ 4	----	----
					Client sampling date / time	08-Nov-2022	08-Nov-2022	08-Nov-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C7317-001	VA22C7317-002	VA22C7317-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0357	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0252	0.0069	0.0093	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	0.00015	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00024	0.00070	0.00092	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00690	0.00409	0.00401	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000308	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		7.82	12.4	18.8	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00039	<0.00020	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.209	<0.010	<0.010	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		1.43	1.33	3.46	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00920	0.00015	0.0215	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000561	0.000768	0.000402	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.318	0.396	0.687	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.98	5.54	4.73	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.40	2.33	4.02	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0570	0.0529	0.118	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	705-05	FC-01	WQ 4	----	----
					Client sampling date / time	08-Nov-2022	08-Nov-2022	08-Nov-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C7317-001	VA22C7317-002	VA22C7317-003	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	0.56	16.1	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00073 DTMF	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00050	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000099	0.000069	0.000013	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0012	<0.0010	0.0218	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C7317**	Page	: 1 of 19
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 10-Nov-2022 09:00
PO	: 10857	Issue Date	: 21-Nov-2022 11:02
C-O-C number	:		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-05	E298	08-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) FC-01	E298	08-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WQ 4	E298	08-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 705-05	E235.Br-L	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE FC-01	E235.Br-L	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WQ 4	E235.Br-L	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-05	E235.Cl	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE FC-01	E235.Cl	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WQ 4	E235.Cl	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-05	E378-U	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE FC-01	E378-U	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE WQ 4	E378-U	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-05	E235.F	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FC-01	E235.F	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WQ 4	E235.F	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
705-05	E235.NO3-L	08-Nov-2022	10-Nov-2022	3 days	3 days	✓	10-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
FC-01	E235.NO3-L	08-Nov-2022	10-Nov-2022	3 days	3 days	✓	10-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
WQ 4	E235.NO3-L	08-Nov-2022	10-Nov-2022	3 days	3 days	✓	10-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
705-05	E235.NO2-L	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
FC-01	E235.NO2-L	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WQ 4	E235.NO2-L	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
705-05	E235.SO4	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
FC-01	E235.SO4	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
WQ 4	E235.SO4	08-Nov-2022	10-Nov-2022	----	----		10-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 705-05	E318	08-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) FC-01	E318	08-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) WQ 4	E318	08-Nov-2022	13-Nov-2022	----	----		16-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 705-05	E372-U	08-Nov-2022	13-Nov-2022	----	----		14-Nov-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) FC-01	E372-U	08-Nov-2022	13-Nov-2022	----	----		14-Nov-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) WQ 4	E372-U	08-Nov-2022	13-Nov-2022	----	----		14-Nov-2022	28 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 705-05	E344	08-Nov-2022	----	----	----		15-Nov-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) FC-01	E344	08-Nov-2022	----	----	----		15-Nov-2022	14 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) WQ 4	E344	08-Nov-2022	----	----	----		15-Nov-2022	14 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-05	E333	08-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FC-01	E333	08-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
WQ 4	E333	08-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
705-05	E336	08-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FC-01	E336	08-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
WQ 4	E336	08-Nov-2022	14-Nov-2022	----	----		15-Nov-2022	14 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
705-05	E509	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
FC-01	E509	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
WQ 4	E509	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
705-05	E421	08-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
FC-01	E421	08-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
WQ 4	E421	08-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	9 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
705-05	E358-L	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
FC-01	E358-L	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WQ 4	E358-L	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
705-05	E355-L	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
FC-01	E355-L	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
WQ 4	E355-L	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE										
705-05	E283	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE										
FC-01	E283	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE										
WQ 4	E283	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
705-05	E290	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
FC-01	E290	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
WQ 4	E290	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
705-05	E100	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
FC-01	E100	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
WQ 4	E100	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 705-05	E108	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	0.25 hrs	44.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE FC-01	E108	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	0.25 hrs	44.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE WQ 4	E108	08-Nov-2022	10-Nov-2022	----	----		12-Nov-2022	0.25 hrs	44.25 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 705-05	E162	08-Nov-2022	----	----	----		10-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE FC-01	E162	08-Nov-2022	----	----	----		10-Nov-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE WQ 4	E162	08-Nov-2022	----	----	----		10-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-05	E160	08-Nov-2022	----	----	----		10-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE FC-01	E160	08-Nov-2022	----	----	----		10-Nov-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE WQ 4	E160	08-Nov-2022	----	----	----		10-Nov-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE										
705-05	E121	08-Nov-2022	----	----	----		10-Nov-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
FC-01	E121	08-Nov-2022	----	----	----		10-Nov-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
WQ 4	E121	08-Nov-2022	----	----	----		10-Nov-2022	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
705-05	E508	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
FC-01	E508	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
WQ 4	E508	08-Nov-2022	13-Nov-2022	----	----		13-Nov-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
705-05	E420	08-Nov-2022	16-Nov-2022	----	----		17-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
FC-01	E420	08-Nov-2022	16-Nov-2022	----	----		17-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
WQ 4	E420	08-Nov-2022	16-Nov-2022	----	----		17-Nov-2022	180 days	9 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)							
Acidity by Titration	E283	739426	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	739410	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Conductivity in Water	E100	739412	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
pH by Meter	E108	739411	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	739496	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	739488	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	738983	1	6	16.6	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	739426	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	739410	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Conductivity in Water	E100	739412	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
pH by Meter	E108	739411	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	739496	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	739488	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	738983	1	6	16.6	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	739426	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	739410	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Conductivity in Water	E100	739412	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	739496	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	739488	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	738983	1	6	16.6	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	741364	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	739415	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	739414	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	741305	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	742331	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	741361	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	739425	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	739413	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	739416	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	739417	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	739418	1	9	11.1	5.0	✓
Thiocyanate by Colourimetry	E344	746109	1	20	5.0	5.0	✓
Total Cyanide	E333	741777	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	741360	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	741292	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	742556	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	741362	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	741363	1	14	7.1	5.0	✓
WAD Cyanide	E336	741776	1	17	5.8	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C7317**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 10-Nov-2022 09:00
PO	: 10857	Date Analysis Commenced	: 10-Nov-2022
C-O-C number	:	Issue Date	: 21-Nov-2022 11:02
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Benjamin Oke	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 738983)											
VA22C7298-003	Anonymous	turbidity	----	E121	0.10	NTU	1.77	1.76	0.453%	15%	----
Physical Tests (QC Lot: 739410)											
VA22C7312-002	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	121	107	13.0%	20%	----
Physical Tests (QC Lot: 739411)											
VA22C7312-002	Anonymous	pH	----	E108	0.10	pH units	8.24	8.23	0.121%	4%	----
Physical Tests (QC Lot: 739412)											
VA22C7312-002	Anonymous	conductivity	----	E100	2.0	µS/cm	214	210	1.89%	10%	----
Physical Tests (QC Lot: 739426)											
VA22C7312-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 739488)											
FJ2203156-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	7.8	7.8	0	Diff <2x LOR	----
Physical Tests (QC Lot: 739496)											
FJ2203156-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	3940	3820	3.05%	20%	----
Anions and Nutrients (QC Lot: 739413)											
KS2204292-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.174	0.174	0.0010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739414)											
KS2204292-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	0.59	0.58	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739415)											
KS2204292-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739416)											
KS2204292-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.650	0.649	0.146%	20%	----
Anions and Nutrients (QC Lot: 739417)											
KS2204292-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 739418)											
KS2204292-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.08	3.08	0.00643%	20%	----
Anions and Nutrients (QC Lot: 739425)											
VA22C7312-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0010	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 741360)											
VA22C7312-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.050	0.056	0.006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 741363)											

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*
Anions and Nutrients (QC Lot: 741363) - continued											
VA22C7312-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0056	0.0052	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 741364)											
VA22C7312-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0073	0.0072	0.0001	Diff <2x LOR	----
Cyanides (QC Lot: 741776)											
VA22C7373-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
Cyanides (QC Lot: 741777)											
VA22C7373-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0100	mg/L	0.0191	0.0134	0.0057	Diff <2x LOR	----
Cyanides (QC Lot: 746109)											
EO2209944-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 741361)											
VA22C7312-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.59	1.66	0.07	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 741362)											
VA22C7312-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.43	1.46	0.03	Diff <2x LOR	----
Total Metals (QC Lot: 741292)											
KS2204289-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 742556)											
VA22C7312-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0070	0.0064	0.0006	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00061	0.00057	0.00004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0108	0.0108	0.0174%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	37.5	37.4	0.201%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.059	0.058	0.0010	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	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	4.71	4.60	2.29%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00829	0.00836	0.842%	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: 742556) - continued											
VA22C7312-001	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000611	0.000602	1.47%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.821	0.805	0.016	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000092	0.000060	0.000032	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.46	7.25	2.86%	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	3.27	3.21	1.94%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.137	0.138	1.16%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.54	0.51	0.03	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000311	0.000314	0.941%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00060	0.00062	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 741305)											
VA22C7300-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 742331)											
YL2201926-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0023	0.0009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00221	0.00211	4.84%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0233	0.0228	2.11%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0147	0.0141	3.89%	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	0.080	0.078	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000054	0.0000058	0.0000004	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	183	181	1.02%	20%	----
		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	0.00175	0.00180	3.12%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00360	0.00352	1.95%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.218	0.218	0.294%	20%	----
		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	0.0520	0.0500	3.90%	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*
Dissolved Metals (QC Lot: 742331) - continued											
YL2201926-001	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	75.6	72.4	4.31%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0701	0.0688	1.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00326	0.00314	3.78%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00123	0.00130	0.00007	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.370	0.345	0.025	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	8.22	8.06	1.96%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000439	0.000406	0.000033	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.35	5.24	1.96%	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	24.4	24.4	0.104%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.726	0.697	4.10%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	202	198	1.79%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0537	0.0527	1.97%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00079	0.00078	0.000009	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0028	0.00003	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: 738983)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 739410)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 739412)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 739426)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Physical Tests (QCLot: 739488)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 739496)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 739413)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 739414)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 739415)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 739416)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 739417)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 739418)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 739425)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 741360)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 741363)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 741364)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 741776)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 741776) - continued						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 741777)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 746109)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 741361)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 741362)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 741292)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 742556)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 742556) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 741305)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 742331)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 742331) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 738983)									
turbidity	----	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
Physical Tests (QCLot: 739410)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 739411)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 739412)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.6	90.0	110	----
Physical Tests (QCLot: 739426)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	100	85.0	115	----
Physical Tests (QCLot: 739488)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	107	85.0	115	----
Physical Tests (QCLot: 739496)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.4	85.0	115	----
Anions and Nutrients (QCLot: 739413)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.1	90.0	110	----
Anions and Nutrients (QCLot: 739414)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 739415)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.0	85.0	115	----
Anions and Nutrients (QCLot: 739416)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 739417)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.6	90.0	110	----
Anions and Nutrients (QCLot: 739418)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 739425)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	99.8	80.0	120	----
Anions and Nutrients (QCLot: 741360)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.0	75.0	125	----
Anions and Nutrients (QCLot: 741363)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	88.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 741364)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.1	85.0	115	----
Cyanides (QCLot: 741776)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	96.8	80.0	120	----
Cyanides (QCLot: 741777)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	93.2	80.0	120	----
Cyanides (QCLot: 746109)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Organic / Inorganic Carbon (QCLot: 741361)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 741362)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	109	80.0	120	----
Total Metals (QCLot: 741292)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.7	80.0	120	----
Total Metals (QCLot: 742556)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	110	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 742556) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	117	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	115	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.6	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	113	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	86.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.4	80.0	120	----
Dissolved Metals (QCLot: 742331)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.5	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	98.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 742331) - continued									
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.5	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	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: 739413)										
VA22C7312-001	Anonymous	fluoride	16984-48-8	E235.F	0.968 mg/L	1 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 739414)										
VA22C7312-001	Anonymous	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 739415)										
VA22C7312-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.491 mg/L	0.5 mg/L	98.2	75.0	125	----
Anions and Nutrients (QCLot: 739416)										
VA22C7312-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 739417)										
VA22C7312-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.482 mg/L	0.5 mg/L	96.4	75.0	125	----
Anions and Nutrients (QCLot: 739418)										
VA22C7312-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 739425)										
VA22C7312-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0310 mg/L	0.03 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 741360)										
VA22C7312-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 741363)										
VA22C7312-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0488 mg/L	0.05 mg/L	97.6	70.0	130	----
Anions and Nutrients (QCLot: 741364)										
VA22C7312-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Cyanides (QCLot: 741776)										
VA22C7373-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.617 mg/L	0.625 mg/L	98.7	75.0	125	----
Cyanides (QCLot: 741777)										
VA22C7373-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.19 mg/L	1.25 mg/L	94.9	75.0	125	----
Cyanides (QCLot: 746109)										
EO2209946-001	Anonymous	thiocyanate	302-04-5	E344	9.00 mg/L	10 mg/L	90.0	75.0	125	----
Organic / Inorganic Carbon (QCLot: 741361)										
VA22C7312-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.64 mg/L	5 mg/L	92.9	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
Organic / Inorganic Carbon (QCLot: 741362)										
VA22C7312-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.12 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 741292)										
KS2204289-002	Anonymous	mercury, total	7439-97-6	E508	0.0000975 mg/L	0.0001 mg/L	97.5	70.0	130	----
Total Metals (QCLot: 742556)										
VA22C7312-002	Anonymous	aluminum, total	7429-90-5	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.087 mg/L	0.1 mg/L	86.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	102	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.0956 mg/L	0.1 mg/L	95.6	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	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		potassium, total	7440-09-7	E420	4.11 mg/L	4 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		silicon, total	7440-21-3	E420	9.69 mg/L	10 mg/L	96.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00409 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	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	0.00411 mg/L	0.004 mg/L	103	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: 742556) - continued										
VA22C7312-002	Anonymous	vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
Dissolved Metals (QCLot: 741305)										
VA22C7300-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000818 mg/L	0.0001 mg/L	81.8	70.0	130	----
Dissolved Metals (QCLot: 742331)										
YL2201926-002	Anonymous	aluminum, dissolved	7429-90-5	E421	3.73 mg/L	4 mg/L	93.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.383 mg/L	0.4 mg/L	95.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.764 mg/L	0.8 mg/L	95.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.180 mg/L	0.2 mg/L	90.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.85 mg/L	2 mg/L	92.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0786 mg/L	0.08 mg/L	98.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	80 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.774 mg/L	0.8 mg/L	96.7	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.382 mg/L	0.4 mg/L	95.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	38.2 mg/L	40 mg/L	95.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.394 mg/L	0.4 mg/L	98.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.771 mg/L	0.8 mg/L	96.3	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	199 mg/L	200 mg/L	99.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	80.1 mg/L	80 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.798 mg/L	0.8 mg/L	99.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	199 mg/L	200 mg/L	99.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0778 mg/L	0.08 mg/L	97.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	415 mg/L	400 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0758 mg/L	0.08 mg/L	94.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.390 mg/L	0.4 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.768 mg/L	0.8 mg/L	96.0	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: 742331) - continued										
YL2201926-002	Anonymous	uranium, dissolved	7440-61-1	E421	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	8.42 mg/L	8 mg/L	105	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

Affix ALS barcode label here
(lab use only)

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	7317	ALS Contact: A. Springer	Sampler:

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate				Number of Containers
					P	F/P	P		F		F	P					
	705-05	8-Nov-22		Water	R	R	R	R	R	R	R	R	R				9
	FC-01	8-Nov-22		Water	R	R	R	R	R	R	R	R	R				9
	WQ 4	8-Nov-22		Water	R	R	R	R	R	R	R	R	R				9
				Water													
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Environmental Division
Vancouver
Work Order Reference
VA22C7317

Telephone : +1 604 253 4188

Drinking Water (DW) Samples (client use)

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

Are samples for human drinking water use?
☐ YES ☑ NO

...fy Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C	
				1.-0.5

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov.9-22	Time: 0930	Received by:	Date:	Time:	Re <Original signed by>	Date: 11/10/22	Time: 9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C8454**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 23-Nov-2022 09:10
PO	: 10857	Date Analysis Commenced	: 23-Nov-2022
C-O-C number	: ----	Issue Date	: 01-Dec-2022 14:34
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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*
Ann Joby	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-20	661-05	DC-15	WQ10	DC-10
					Client sampling date / time	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022
						VA22C8454-001	VA22C8454-002	VA22C8454-003	VA22C8454-004	VA22C8454-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	2.3	<2.0	2.2
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		74.3	50.3	61.9	52.1	52.7
conductivity	----	E100	2.0	µS/cm		152	104	131	114	116
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		70.6	43.5	56.7	48.3	49.2
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		65.2	42.8	54.8	46.5	47.9
pH	----	E108	0.10	pH units		8.06	7.88	7.94	7.92	7.90
solids, total dissolved [TDS]	----	E162	10	mg/L		94	69	81	70	72
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		0.74	1.72	0.18	0.18	0.17
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.058	0.059	0.050	0.044	0.044
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.069	0.055	<0.050	<0.050	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0286 HTD	0.0544	0.0216 HTD	0.0235 HTD	0.0271 HTD
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0188	0.0401 RRV	0.0046	0.0069	0.0058
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0217	0.0498	0.0044	0.0062	0.0052
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.29	1.29	3.14	3.26	3.32
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		2.58	1.81	1.82	1.55	1.83
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		2.77	1.88	2.19	1.67	1.56
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0257	0.0391	0.0116	0.0131	0.0136
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-20	661-05	DC-15	WQ10	DC-10
					Client sampling date / time	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022
						VA22C8454-001	VA22C8454-002	VA22C8454-003	VA22C8454-004	VA22C8454-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00089	0.00125	0.00049	0.00056	0.00053
barium, total	7440-39-3	E420	0.00010	mg/L		0.00675	0.00450	0.00884	0.00785	0.00836
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		17.8	12.4	15.9	14.1	14.5
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.178	0.151	0.028	0.045	0.034
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		5.04	2.88	3.67	2.75	2.84
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00898	0.0100	0.00528	0.00328	0.00341
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000910	0.000819	0.000866	0.000926	0.000910
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	0.00059	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	0.059	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.734	0.542	0.544	0.459	0.460
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000056	0.000078	<0.000050	0.000083	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		8.06	8.68	6.70	6.48	6.41
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		4.40	3.66	3.63	3.30	3.36
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0961	0.0816	0.102	0.0907	0.0972
sulfur, total	7704-34-9	E420	0.50	mg/L		0.67	<0.50	0.94	0.98	0.85
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00083	0.00105	0.00032	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000284	0.000200	0.000240	0.000290	0.000286
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00064	0.00178	<0.00050	<0.00050	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-20	661-05	DC-15	WQ10	DC-10
					Client sampling date / time	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022
						VA22C8454-001	VA22C8454-002	VA22C8454-003	VA22C8454-004	VA22C8454-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	0.00093	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0080	0.0091	0.0059	0.0081	0.0074
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00084	0.00124	0.00048	0.00057	0.00051
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00647	0.00425	0.00876	0.00756	0.00793
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		19.3	12.6	17.0	14.6	14.9
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	0.00072	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.103	0.050	0.015	0.026	0.019
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.44	2.93	3.47	2.87	2.92
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00489	0.00572	0.00392	0.00239	0.00230
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000875	0.000805	0.000827	0.000867	0.000886
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.739	0.565	0.543	0.484	0.480
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000068	0.000072	<0.000050	0.000078	0.000053
silicon, dissolved	7440-21-3	E421	0.050	mg/L		8.11	8.87	6.57	6.56	6.38
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.73	3.99	3.89	3.76	3.68
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.102	0.0888	0.111	0.102	0.104

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-20	661-05	DC-15	WQ10	DC-10
					Client sampling date / time	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022	21-Nov-2022
						VA22C8454-001	VA22C8454-002	VA22C8454-003	VA22C8454-004	VA22C8454-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.57	<0.50	1.02	0.94	0.78
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000249	0.000169	0.000205	0.000272	0.000238
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00051	0.00162	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-10-DUP	661-04	----	----	----
					Client sampling date / time	21-Nov-2022	21-Nov-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C8454-006	VA22C8454-007	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.1	2.2	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		53.0	37.5	----	----	----
conductivity	----	E100	2.0	µS/cm		116	82.6	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		49.4	33.1	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		48.7	33.4	----	----	----
pH	----	E108	0.10	pH units		7.89	7.72	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		73	58	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	----	----	----
turbidity	----	E121	0.10	NTU		0.19	0.32	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.045	0.047	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		<0.050	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0272 HTD	<0.0050	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0058	0.0106	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0048	0.0114	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.33	2.29	----	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.89	2.16	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.75	2.28	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0126	0.0306	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-10-DUP	661-04	----	----	----
					Client sampling date / time	21-Nov-2022	21-Nov-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C8454-006	VA22C8454-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00051	0.00112	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00803	0.00413	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	0.0000159	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		14.9	9.52	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.034	0.051	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		2.80	2.35	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00320	0.00627	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000901	0.000599	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.449	0.465	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.35	7.88	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.28	3.22	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0912	0.0566	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.10	0.58	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00050	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000286	0.000058	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-10-DUP	661-04	----	----	----
					Client sampling date / time	21-Nov-2022	21-Nov-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C8454-006	VA22C8454-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0048	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0078	0.0164	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00048	0.00107	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00817	0.00407	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000142	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		14.9	9.24	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.019	0.028	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.95	2.44	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00251	0.00428	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000880	0.000599	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.474	0.492	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.43	7.76	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.64	3.65	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.105	0.0636	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DC-10-DUP	661-04	----	----	----
					Client sampling date / time	21-Nov-2022	21-Nov-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C8454-006	VA22C8454-007	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.89	0.54	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000241	0.000044	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0042	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C8454**	Page	: 1 of 31
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 23-Nov-2022 09:10
PO	: 10857	Issue Date	: 01-Dec-2022 14:34
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-MRG7-7553540 01	----	nitrate (as N)	14797-55-8	E235.NO3-L	0.0072 B mg/L	0.005 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-04	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-05	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-20	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-10	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-10-DUP	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-15	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WQ10	E298	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-04	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-05	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-20	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-10	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-10-DUP	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-15	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WQ10	E235.Br-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-04	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-05	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-20	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-10	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-10-DUP	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-15	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WQ10	E235.Cl	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-04	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-05	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-20	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-10	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-10-DUP	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-15	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE WQ10	E378-U	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-04	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-05	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-20	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-10	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-10-DUP	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-15	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WQ10	E235.F	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-04	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-05	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-20	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-10	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-10-DUP	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-15	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WQ10	E235.NO3-L	21-Nov-2022	23-Nov-2022	3 days	3 days	✓	23-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-04	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-05	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-20	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-10	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-10-DUP	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-15	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE WQ10	E235.NO2-L	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-04	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-05	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-20	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-10	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-10-DUP	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-15	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE WQ10	E235.SO4	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-04	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-05	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-20	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-10	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-10-DUP	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-15	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) WQ10	E318	21-Nov-2022	28-Nov-2022	----	----		01-Dec-2022	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-04	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-05	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-20	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-10	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-10-DUP	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
DC-15	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WQ10	E372-U	21-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-04	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-05	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-20	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-10	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-10-DUP	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
DC-15	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
WQ10	E344	21-Nov-2022	----	----	----		23-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-05	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-20	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-10	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-10-DUP	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-15	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) WQ10	E333	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-05	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-20	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-10	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-10-DUP	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-15	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
WQ10	E336	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
661-04	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
661-05	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
661-20	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
DC-10	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) DC-10-DUP	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) DC-15	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) WQ10	E509	21-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 661-04	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 661-05	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 661-20	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DC-10	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DC-10-DUP	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DC-15	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) WQ10	E421	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-04	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-05	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-20	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-10	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-10-DUP	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-15	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) WQ10	E358-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-04	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-05	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-20	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-10	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-10-DUP	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-15	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) WQ10	E355-L	21-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-04	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-05	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-20	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE DC-10	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-10-DUP	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-15	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE WQ10	E283	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-04	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-05	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-20	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-10	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-10-DUP	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE DC-15	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE WQ10	E290	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-04	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-05	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-20	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-10	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-10-DUP	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-15	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE WQ10	E100	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 661-04	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-05	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-20	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-10	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-10-DUP	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-15	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE WQ10	E108	21-Nov-2022	23-Nov-2022	----	----		23-Nov-2022	0.25 hrs	0.88 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-04	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-05	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE 661-20	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-10	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-10-DUP	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-15	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE WQ10	E162	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-04	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-05	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-20	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-10	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE DC-10-DUP	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-15	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE WQ10	E160	21-Nov-2022	----	----	----		25-Nov-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-04	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-05	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-20	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-10	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-10-DUP	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-15	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE WQ10	E121	21-Nov-2022	----	----	----		24-Nov-2022	3 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 661-04	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 661-05	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 661-20	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) DC-10	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) DC-10-DUP	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) DC-15	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) WQ10	E508	21-Nov-2022	26-Nov-2022	----	----		26-Nov-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 661-04	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 661-05	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 661-20	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) DC-10	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) DC-10-DUP	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) DC-15	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) WQ10	E420	21-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	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)							
Acidity by Titration	E283	755353	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	755352	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	759998	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	755359	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	755354	1	17	5.8	5.0	✓
Conductivity in Water	E100	755350	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	758216	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	755460	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760000	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	755361	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	755358	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	755360	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	755355	1	17	5.8	5.0	✓
pH by Meter	E108	755351	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	755357	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	755504	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	755235	1	10	10.0	5.0	✓
Total Cyanide	E333	760126	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	759999	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	758625	2	24	8.3	5.0	✓
Total metals in Water by CRC ICPMS	E420	756188	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760001	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	759995	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	755503	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	756449	2	37	5.4	5.0	✓
WAD Cyanide	E336	760125	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	755353	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	755352	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	759998	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	755359	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	755354	1	17	5.8	5.0	✓
Conductivity in Water	E100	755350	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	758216	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	755460	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760000	1	7	14.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	755361	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	755358	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	755360	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	755355	1	17	5.8	5.0	✓
pH by Meter	E108	755351	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	755357	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	755504	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	755235	1	10	10.0	5.0	✓
Total Cyanide	E333	760126	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	759999	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	758625	2	24	8.3	5.0	✓
Total metals in Water by CRC ICPMS	E420	756188	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760001	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	759995	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	755503	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	756449	2	37	5.4	5.0	✓
WAD Cyanide	E336	760125	1	7	14.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	755353	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	755352	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	759998	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	755359	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	755354	1	17	5.8	5.0	✓
Conductivity in Water	E100	755350	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	758216	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	755460	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760000	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	755361	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	755358	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	755360	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	755355	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	755357	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	755504	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	755235	1	10	10.0	5.0	✓
Total Cyanide	E333	760126	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	759999	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	758625	2	24	8.3	5.0	✓
Total metals in Water by CRC ICPMS	E420	756188	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760001	1	7	14.2	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	759995	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	755503	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	756449	2	37	5.4	5.0	✓
WAD Cyanide	E336	760125	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	759998	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	755359	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	755354	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	758216	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	755460	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760000	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	755361	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	755358	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	755360	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	755355	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	755357	1	17	5.8	5.0	✓
Thiocyanate by Colourimetry	E344	755235	1	10	10.0	5.0	✓
Total Cyanide	E333	760126	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	759999	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	758625	2	24	8.3	5.0	✓
Total metals in Water by CRC ICPMS	E420	756188	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760001	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	759995	1	20	5.0	5.0	✓
WAD Cyanide	E336	760125	1	7	14.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C8454**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 23-Nov-2022 09:10
PO	: 10857	Date Analysis Commenced	: 23-Nov-2022
C-O-C number	: ----	Issue Date	: 01-Dec-2022 14:34
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
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
- 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*
Ann Joby	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 755350)											
VA22C8454-003	DC-15	conductivity	----	E100	2.0	µS/cm	131	131	0.229%	10%	----
Physical Tests (QC Lot: 755351)											
VA22C8454-003	DC-15	pH	----	E108	0.10	pH units	7.94	7.94	0.0252%	4%	----
Physical Tests (QC Lot: 755352)											
VA22C8454-003	DC-15	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	61.9	62.3	0.644%	20%	----
Physical Tests (QC Lot: 755353)											
VA22C8454-002	661-05	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 755503)											
VA22C8389-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	16.9	16.5	0.4	Diff <2x LOR	----
Physical Tests (QC Lot: 755504)											
VA22C8389-001	Anonymous	solids, total dissolved [TDS]	----	E162	80	mg/L	14700	14200	3.26%	20%	----
Physical Tests (QC Lot: 756449)											
FJ2203291-009	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 756450)											
VA22C8454-004	WQ10	turbidity	----	E121	0.10	NTU	0.18	0.17	0.006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 755354)											
VA22C8451-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	5.69	5.71	0.354%	20%	----
Anions and Nutrients (QC Lot: 755355)											
VA22C8451-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0015	0.0012	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 755357)											
VA22C8451-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	46.3	46.2	0.182%	20%	----
Anions and Nutrients (QC Lot: 755358)											
VA22C8451-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	0.194	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 755359)											
VA22C8454-001	661-20	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 755360)											
VA22C8454-001	661-20	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0286	0.0285	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 755361)											
VA22C8442-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0029	0.000001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 759995)											

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*
Anions and Nutrients (QC Lot: 759995) - continued											
KS2204448-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	2.75	3.16	13.8%	20%	----
Anions and Nutrients (QC Lot: 759998)											
KS2204448-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	0.877	0.831	5.36%	20%	----
Anions and Nutrients (QC Lot: 759999)											
VA22C8454-001	661-20	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.069	0.070	0.001	Diff <2x LOR	----
Cyanides (QC Lot: 755235)											
VA22C8439-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 760125)											
VA22C8454-001	661-20	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 760126)											
VA22C8454-001	661-20	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 760000)											
VA22C8454-001	661-20	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.58	2.75	0.17	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 760001)											
VA22C8454-001	661-20	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.77	2.74	0.03	Diff <2x LOR	----
Total Metals (QC Lot: 756188)											
VA22C8273-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0564	0.0538	4.81%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00333	0.00331	0.581%	20%	----
		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	0.044	0.046	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	10.6	11.2	5.52%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00054	0.00054	0.000008	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.109	0.110	0.570%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.047	0.047	0.0002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000973	0.000995	2.22%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0056	0.0058	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.93	1.92	0.306%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00555	0.00560	0.850%	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: 756188) - continued											
VA22C8273-001	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000103	0.000110	0.000007	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00081	0.00080	0.00001	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.061	0.056	0.005	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.67	1.66	0.472%	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	9.09	8.98	1.19%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0107	0.0115	7.36%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00094	0.00084	0.00011	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000028	0.000030	0.000002	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0044	0.0042	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 758625)											
VA22C8365-023	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 758626)											
VA22C8454-004	WQ10	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 755460)											
VA22C8416-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0037	0.0034	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00019	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.114	0.116	2.09%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	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	0.0000082	0.0000059	0.0000023	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	43.8	43.7	0.328%	20%	----
		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	0.00032	0.00032	0.000004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	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: 755460) - continued											
VA22C8416-001	Anonymous	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	26.0	26.5	1.63%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00012	0.000001	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000153	0.000156	0.000003	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00084	0.00086	0.00001	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	1.12	1.14	1.74%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000421	0.000461	0.000040	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.36	2.33	1.33%	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	5.11	5.28	3.32%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.217	0.220	1.13%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	49.0	48.5	0.893%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000698	0.000707	1.22%	20%	----
		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	----
Dissolved Metals (QC Lot: 758216)											
VA22C8393-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 755350)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 755352)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 755353)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 755503)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 755504)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 756449)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 756450)						
turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 755354)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 755355)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 755357)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 755358)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 755359)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 755360)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	# 0.0072	B
Anions and Nutrients (QCLot: 755361)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 759995)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 759998)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 759999)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 759999) - continued						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Cyanides (QCLot: 755235)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 760125)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 760126)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 760000)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 760001)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 756188)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 756188) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 758625)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 758626)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 755460)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 755460) - continued						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 758216)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 755350)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	105	90.0	110	----
Physical Tests (QCLot: 755351)									
pH	----	E108	----	pH units	7 pH units	100.0	98.0	102	----
Physical Tests (QCLot: 755352)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 755353)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
Physical Tests (QCLot: 755503)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	95.8	85.0	115	----
Physical Tests (QCLot: 755504)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.6	85.0	115	----
Physical Tests (QCLot: 756449)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 756450)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Anions and Nutrients (QCLot: 755354)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 755355)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 755357)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 755358)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 755359)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 755360)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 755361)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.5	80.0	120	----
Anions and Nutrients (QCLot: 759995)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	90.9	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 759998)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.8	85.0	115	----
Anions and Nutrients (QCLot: 759999)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.0	75.0	125	----
Cyanides (QCLot: 755235)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	104	85.0	115	----
Cyanides (QCLot: 760125)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	87.8	80.0	120	----
Cyanides (QCLot: 760126)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	87.1	80.0	120	----
Organic / Inorganic Carbon (QCLot: 760000)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	114	80.0	120	----
Organic / Inorganic Carbon (QCLot: 760001)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 756188)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.5	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 756188) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	105	80.0	120	----
Total Metals (QCLot: 758625)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	89.6	80.0	120	----
Total Metals (QCLot: 758626)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	88.7	80.0	120	----
Dissolved Metals (QCLot: 755460)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 755460) - continued									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.1	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.7	80.0	120	----
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	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	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: 755354)										
VA22C8442-002	Anonymous	chloride	16887-00-6	E235.Cl	109 mg/L	100 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 755355)										
VA22C8442-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.516 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 755357)										
VA22C8442-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	112 mg/L	100 mg/L	112	75.0	125	----
Anions and Nutrients (QCLot: 755358)										
VA22C8454-002	661-05	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 755359)										
VA22C8454-002	661-05	bromide	24959-67-9	E235.Br-L	0.550 mg/L	0.5 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 755360)										
VA22C8454-002	661-05	nitrate (as N)	14797-55-8	E235.NO3-L	2.75 mg/L	2.5 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 755361)										
VA22C8442-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0320 mg/L	0.03 mg/L	106	70.0	130	----
Anions and Nutrients (QCLot: 759995)										
VA22C7151-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0490 mg/L	0.05 mg/L	98.0	70.0	130	----
Anions and Nutrients (QCLot: 759998)										
VA22C7151-001	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: 759999)										
VA22C8454-002	661-05	Kjeldahl nitrogen, total [TKN]	----	E318	2.39 mg/L	2.5 mg/L	95.4	70.0	130	----
Cyanides (QCLot: 755235)										
VA22C8439-002	Anonymous	thiocyanate	302-04-5	E344	9.79 mg/L	10 mg/L	97.9	75.0	125	----
Cyanides (QCLot: 760125)										
VA22C8454-002	661-05	cyanide, weak acid dissociable	----	E336	0.114 mg/L	0.125 mg/L	91.4	75.0	125	----
Cyanides (QCLot: 760126)										
VA22C8454-002	661-05	cyanide, strong acid dissociable (total)	----	E333	0.220 mg/L	0.25 mg/L	87.9	75.0	125	----
Organic / Inorganic Carbon (QCLot: 760000)										
VA22C8454-002	661-05	carbon, dissolved organic [DOC]	----	E358-L	4.80 mg/L	5 mg/L	96.0	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
Organic / Inorganic Carbon (QCLot: 760001)										
VA22C8454-002	661-05	carbon, total organic [TOC]	----	E355-L	5.22 mg/L	5 mg/L	104	70.0	130	----
Total Metals (QCLot: 756188)										
VA22C8273-002	Anonymous	aluminum, total	7429-90-5	E420	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		barium, total	7440-39-3	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0347 mg/L	0.04 mg/L	86.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		boron, total	7440-42-8	E420	0.086 mg/L	0.1 mg/L	86.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0875 mg/L	0.1 mg/L	87.5	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	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		nickel, total	7440-02-0	E420	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.74 mg/L	10 mg/L	97.4	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	97.9	70.0	130	----
		selenium, total	7782-49-2	E420	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		silicon, total	7440-21-3	E420	9.44 mg/L	10 mg/L	94.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00391 mg/L	0.004 mg/L	97.7	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	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		sulfur, total	7704-34-9	E420	20.9 mg/L	20 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0373 mg/L	0.04 mg/L	93.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.400 mg/L	0.4 mg/L	100	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: 758625)										
VA22C8365-027	Anonymous	mercury, total	7439-97-6	E508	0.0000847 mg/L	0.0001 mg/L	84.7	70.0	130	----
Total Metals (QCLot: 758626)										
VA22C8454-005	DC-10	mercury, total	7439-97-6	E508	0.0000856 mg/L	0.0001 mg/L	85.6	70.0	130	----
Dissolved Metals (QCLot: 755460)										
VA22C8416-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00873 mg/L	0.01 mg/L	87.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	97.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0982 mg/L	0.1 mg/L	98.2	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	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.1 mg/L	10 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.40 mg/L	10 mg/L	94.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 755460) - continued										
VA22C8416-002	Anonymous	vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.387 mg/L	0.4 mg/L	96.8	70.0	130	----
Dissolved Metals (QCLot: 758216)										
VA22C8393-007	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000981 mg/L	0.0001 mg/L	98.1	70.0	130	----

Qualifiers

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

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

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

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

Project Information	
ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

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

ALS Lab Work Order # (lab use only)		ALS Contact: A. Springer	Sampler: Avison

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	661-20	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	661-05	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-15	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	WQ10	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-10	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-10-DUP	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	661-04	21-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C8454

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			4	4	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov.22-22	Time: 0700	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 23/11/22	Time: 8:10am

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

OCTOBER 2015 FRONT

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

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

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C8575**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 24-Nov-2022 09:10
PO	: 10857	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: 15-	Issue Date	: 02-Dec-2022 12:42
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Ann Joby	Lab Assistant	Metals, Burnaby, British Columbia
Anshim Anshim	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Qammar Almas	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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	Field Blank	TC-15	TC-15-DUP
					Client sampling date / time	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
						VA22C8575-001	VA22C8575-002	VA22C8575-003	VA22C8575-004	VA22C8575-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		4.8	4.8	<2.0	10.1	9.1
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		81.4	84.5	<1.0	112	112
conductivity	----	E100	2.0	µS/cm		160	167	<2.0	214	214
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		77.2	80.1	<0.60	104	102
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		78.8	84.0	<0.60	109	96.5
pH	----	E108	0.10	pH units		7.61	7.66	5.43	7.41	7.43
solids, total dissolved [TDS]	----	E162	10	mg/L		107	105	<31	126	136
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<11.6	<3.0	<3.0
turbidity	----	E121	0.10	NTU		1.27	1.17	<0.10	2.20	2.26
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0375	0.0220	<0.0050	0.0059	0.0068
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	0.57	1.21
fluoride	16984-48-8	E235.F	0.020	mg/L		0.059	0.063	<0.020	0.057	0.056
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.393	0.250	<0.050	0.188	0.264
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0496	0.0653	<0.0050	<0.0050	0.125
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	0.0010	<0.0010	<0.0010	0.0234
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0045	0.0047	<0.0010	0.0086	0.0088
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0194	0.0148	<0.0020	0.0227	0.0231
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.22	3.72	<0.30	3.21	3.57
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.85	7.00	<0.50	5.09	5.67
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.83	7.17	<0.50	4.77	5.39
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0273	0.0224	<0.0030	0.0055	0.0057
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	Field Blank	TC-15	TC-15-DUP
					Client sampling date / time	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
						VA22C8575-001	VA22C8575-002	VA22C8575-003	VA22C8575-004	VA22C8575-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00059	0.00070	<0.00010	0.00036	0.00033
barium, total	7440-39-3	E420	0.00010	mg/L		0.00960	0.0102	<0.00010	0.0145	0.0135
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		21.8	23.0	<0.050	31.1	27.3
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		0.00067	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.342	0.305	<0.010	0.500	0.487
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		5.92	6.44	<0.100	7.61	6.88
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0508	0.0444	<0.00010	0.0524	0.0493
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000908	0.000899	<0.000050	0.000448	0.000397
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.975	0.940	<0.100	1.68	1.64
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000062	0.000075	<0.000050	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		6.12	6.14	<0.10	8.27	7.65
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		4.83	5.19	<0.050	5.84	5.12
strontium, total	7440-24-6	E420	0.00020	mg/L		0.122	0.126	<0.00020	0.171	0.136
sulfur, total	7704-34-9	E420	0.50	mg/L		1.03	1.34	<0.50	1.06	1.02
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00112	0.00081	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000191	0.000221	<0.000010	0.000175	0.000164
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00052	<0.00050	<0.00050	<0.00050	<0.00050

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	Field Blank	TC-15	TC-15-DUP
					Client sampling date / time	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
						VA22C8575-001	VA22C8575-002	VA22C8575-003	VA22C8575-004	VA22C8575-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0034	0.0034	<0.0010	0.0027	0.0127 DTC
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00051	0.00060	<0.00010	0.00026	0.00027
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00859	0.00870	<0.00010	0.0136	0.0143
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		22.1	22.3	<0.050	30.3	29.1
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00063	0.00056	<0.00020	<0.00020	0.00090 DTC
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.199	0.192	<0.010	0.213	0.191
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.34	5.92	<0.100	6.87	7.14
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0376	0.0352	<0.00010	0.0462	0.0513
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000882	0.000908	<0.000050	0.000384	0.000415
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.987	0.923	<0.100	1.55	1.85
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.46	5.49	<0.050	7.43	8.13
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		4.49	4.82	<0.050	4.93	5.47
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.113	0.114	<0.00020	0.146	0.143

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	Field Blank	TC-15	TC-15-DUP
					Client sampling date / time	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
						VA22C8575-001	VA22C8575-002	VA22C8575-003	VA22C8575-004	VA22C8575-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.04	0.99	<0.50	0.79	1.12
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00060 DLM
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000180	0.000196	<0.000010	0.000157	0.000152
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0019	<0.0010	<0.0010	0.0020	0.0049 DTC
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C8575**	Page	: 1 of 24
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 24-Nov-2022 09:10
PO	: 10857	Issue Date	: 02-Dec-2022 12:42
C-O-C number	: 15-		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-30	E298	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-40	E298	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-15	E298	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-15-DUP	E298	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-30	E235.Br-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-40	E235.Br-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-15	E235.Br-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE TC-15-DUP	E235.Br-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-30	E235.Cl	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-40	E235.Cl	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-15	E235.Cl	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-15-DUP	E235.Cl	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-30	E378-U	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-40	E378-U	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Field Blank	E378-U	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-15	E378-U	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-15-DUP	E378-U	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-30	E235.F	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-40	E235.F	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-15	E235.F	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
TC-15-DUP	E235.F	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
CC-30	E235.NO3-L	22-Nov-2022	24-Nov-2022	3 days	3 days	✓	25-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
CC-40	E235.NO3-L	22-Nov-2022	24-Nov-2022	3 days	3 days	✓	25-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	22-Nov-2022	24-Nov-2022	3 days	3 days	✓	25-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
TC-15	E235.NO3-L	22-Nov-2022	24-Nov-2022	3 days	3 days	✓	25-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
TC-15-DUP	E235.NO3-L	22-Nov-2022	24-Nov-2022	3 days	3 days	✓	25-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
CC-30	E235.NO2-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
CC-40	E235.NO2-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO2-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-15	E235.NO2-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-15-DUP	E235.NO2-L	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-30	E235.SO4	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-40	E235.SO4	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Field Blank	E235.SO4	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-15	E235.SO4	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-15-DUP	E235.SO4	22-Nov-2022	24-Nov-2022	----	----		25-Nov-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-30	E318	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-40	E318	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Field Blank	E318	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
TC-15	E318	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
TC-15-DUP	E318	22-Nov-2022	28-Nov-2022	----	----		30-Nov-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-30	E372-U	22-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-40	E372-U	22-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Field Blank	E372-U	22-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-15	E372-U	22-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-15-DUP	E372-U	22-Nov-2022	28-Nov-2022	----	----		29-Nov-2022	28 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-30	E344	22-Nov-2022	----	----	----		27-Nov-2022	14 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-40	E344	22-Nov-2022	----	----	----		27-Nov-2022	14 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) Field Blank	E344	22-Nov-2022	----	----	----		27-Nov-2022	14 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-15	E344	22-Nov-2022	----	----	----		27-Nov-2022	14 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-15-DUP	E344	22-Nov-2022	----	----	----		27-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E333	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E333	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Field Blank	E333	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-15	E333	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-15-DUP	E333	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-30	E336	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-40	E336	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Field Blank	E336	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-15	E336	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TC-15-DUP	E336	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	14 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-30	E509	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-40	E509	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
Field Blank	E509	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
TC-15	E509	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-15-DUP	E509	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-30	E421	22-Nov-2022	26-Nov-2022	----	----		28-Nov-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-40	E421	22-Nov-2022	26-Nov-2022	----	----		28-Nov-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	22-Nov-2022	26-Nov-2022	----	----		28-Nov-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-15	E421	22-Nov-2022	26-Nov-2022	----	----		28-Nov-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-15-DUP	E421	22-Nov-2022	26-Nov-2022	----	----		28-Nov-2022	180 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-30	E358-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-40	E358-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-15	E358-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-15-DUP	E358-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-30	E355-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-40	E355-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-15	E355-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-15-DUP	E355-L	22-Nov-2022	28-Nov-2022	----	----		28-Nov-2022	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-30	E283	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-40	E283	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE										
Field Blank	E283	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
TC-15	E283	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
TC-15-DUP	E283	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
CC-30	E290	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
CC-40	E290	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Field Blank	E290	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
TC-15	E290	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
TC-15-DUP	E290	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
CC-30	E100	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE CC-40	E100	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-15	E100	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-15-DUP	E100	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE CC-30	E108	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-40	E108	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-15	E108	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-15-DUP	E108	22-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	0.25 hrs	0.35 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-30	E162	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-40	E162	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-15	E162	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-15-DUP	E162	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-30	E160	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-40	E160	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-15	E160	22-Nov-2022	----	----	----		29-Nov-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE TC-15-DUP	E160	22-Nov-2022	----	----	----		29-Nov-2022	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-30	E121	22-Nov-2022	----	----	----		25-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-40	E121	22-Nov-2022	----	----	----		25-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	22-Nov-2022	----	----	----		25-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-15	E121	22-Nov-2022	----	----	----		25-Nov-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-15-DUP	E121	22-Nov-2022	----	----	----		25-Nov-2022	3 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-30	E508	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-40	E508	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Field Blank	E508	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-15	E508	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-15-DUP	E508	22-Nov-2022	27-Nov-2022	----	----		27-Nov-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-30	E420	22-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-40	E420	22-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	22-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-15	E420	22-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-15-DUP	E420	22-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	9 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)							
Acidity by Titration	E283	757133	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	757130	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	760248	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	757127	1	11	9.0	5.0	✓
Chloride in Water by IC	E235.Cl	757126	1	12	8.3	5.0	✓
Conductivity in Water	E100	757131	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	759546	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757812	2	18	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760244	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	757122	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	757125	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	757123	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	757124	1	17	5.8	5.0	✓
pH by Meter	E108	757129	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	757128	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	759973	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	759519	1	12	8.3	5.0	✓
Total Cyanide	E333	760168	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	760243	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	759393	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	759367	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760245	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	760246	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	759971	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	757894	1	20	5.0	5.0	✓
WAD Cyanide	E336	760169	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	757133	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	757130	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	760248	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	757127	1	11	9.0	5.0	✓
Chloride in Water by IC	E235.Cl	757126	1	12	8.3	5.0	✓
Conductivity in Water	E100	757131	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	759546	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757812	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760244	1	16	6.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	757122	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	757125	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	757123	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	757124	1	17	5.8	5.0	✓
pH by Meter	E108	757129	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	757128	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	759973	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	759519	1	12	8.3	5.0	✓
Total Cyanide	E333	760168	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	760243	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	759393	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	759367	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760245	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	760246	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	759971	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	757894	1	20	5.0	5.0	✓
WAD Cyanide	E336	760169	1	7	14.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	757133	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	757130	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	760248	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	757127	1	11	9.0	5.0	✓
Chloride in Water by IC	E235.Cl	757126	1	12	8.3	5.0	✓
Conductivity in Water	E100	757131	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	759546	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757812	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760244	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	757122	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	757125	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	757123	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	757124	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	757128	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	759973	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	759519	1	12	8.3	5.0	✓
Total Cyanide	E333	760168	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	760243	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	759393	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	759367	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760245	1	16	6.2	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	760246	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	759971	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	757894	1	20	5.0	5.0	✓
WAD Cyanide	E336	760169	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	760248	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	757127	1	11	9.0	5.0	✓
Chloride in Water by IC	E235.Cl	757126	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	759546	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757812	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	760244	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	757122	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	757125	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	757123	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	757124	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	757128	1	12	8.3	5.0	✓
Thiocyanate by Colourimetry	E344	759519	1	12	8.3	5.0	✓
Total Cyanide	E333	760168	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	760243	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	759393	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	759367	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	760245	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	760246	1	16	6.2	5.0	✓
WAD Cyanide	E336	760169	1	7	14.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca /Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C8575**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 24-Nov-2022 09:10
PO	: 10857	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: 15-	Issue Date	: 02-Dec-2022 12:42
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Ann Joby	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Anshim Anshim	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 757129)											
KS2204435-001	Anonymous	pH	----	E108	0.10	pH units	8.38	8.40	0.238%	4%	----
Physical Tests (QC Lot: 757130)											
KS2204435-001	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	193	194	0.258%	20%	----
Physical Tests (QC Lot: 757131)											
KS2204435-001	Anonymous	conductivity	----	E100	2.0	µS/cm	427	426	0.234%	10%	----
Physical Tests (QC Lot: 757133)											
VA22C8575-002	CC-40	acidity (as CaCO3)	----	E283	2.0	mg/L	4.8	4.7	0.1	Diff <2x LOR	----
Physical Tests (QC Lot: 757894)											
KS2204452-015	Anonymous	turbidity	----	E121	0.10	NTU	0.37	0.34	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 759971)											
VA22C8434-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 759973)											
VA22C8434-001	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 757122)											
KS2204425-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0100	mg/L	0.128	0.126	1.24%	20%	----
Anions and Nutrients (QC Lot: 757123)											
KS2204432-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0524	0.0523	0.157%	20%	----
Anions and Nutrients (QC Lot: 757124)											
KS2204432-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 757125)											
KS2204432-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.049	0.050	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 757126)											
KS2204432-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	2.63	2.63	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 757127)											
KS2204432-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 757128)											
KS2204432-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	7.62	7.62	0.0393%	20%	----
Anions and Nutrients (QC Lot: 760243)											
KS2204472-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.400	0.432	0.032	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 760246)											

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*
Anions and Nutrients (QC Lot: 760246) - continued											
KS2204472-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0133	0.0130	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 760248)											
KS2204472-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0183	0.0192	0.0009	Diff <2x LOR	----
Cyanides (QC Lot: 759519)											
EO2210301-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 760168)											
VA22C8551-012	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 760169)											
VA22C8551-012	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 760244)											
KS2204472-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.10	3.28	0.19	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 760245)											
KS2204472-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.05	4.36	0.30	Diff <2x LOR	----
Total Metals (QC Lot: 759367)											
KS2204413-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00051	0.00047	0.00004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0582	0.0571	2.00%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000100	mg/L	<0.0000100	<0.0000100	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	99.1	98.8	0.358%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	0.00095	0.00100	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	0.00082	0.00084	0.00002	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	0.0022	0.0022	0.00003	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	27.7	26.7	3.64%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00924	0.00903	2.28%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	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: 759367) - continued											
KS2204413-001	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.11	2.10	0.109%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00204	0.00192	6.00%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	8.74	8.57	1.99%	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	13.2	12.9	2.64%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.382	0.366	4.43%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	47.5	46.4	2.42%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0258	0.0252	2.56%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00355	0.00349	0.00006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 759393)											
KS2204469-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 757812)											
VA22C8706-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0678	0.0656	3.41%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0214	0.0208	2.96%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0547	0.0558	1.87%	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	0.376	0.372	1.01%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000400	mg/L	<0.0000400	<0.0000400	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00075	0.00069	0.00006	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	0.303	0.295	2.62%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	7.96	7.98	0.210%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0405	0.0400	1.43%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00117	0.00113	0.00004	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	0.100	mg/L	90.6	88.4	2.51%	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*
Dissolved Metals (QC Lot: 757812) - continued											
VA22C8706-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0213	0.0208	2.65%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.49	2.46	1.12%	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	216	210	2.83%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.01	1.06	4.74%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000116	0.000110	5.53%	20%	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00149	0.00148	1.08%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
VA22C8706-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0292	0.0302	3.55%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.8	27.4	1.20%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00015	0.00014	0.000007	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.153	0.154	0.742%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	152	156	3.06%	20%	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	0.0016	0.00005	Diff <2x LOR	----
Dissolved Metals (QC Lot: 759546)											
VA22C8574-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	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: 757130)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.2	----
Physical Tests (QCLot: 757131)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 757133)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 757894)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 759971)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 759973)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 757122)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 757123)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 757124)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 757125)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 757126)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 757127)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 757128)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 760243)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 760246)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 760248)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 759519)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 759519) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 760168)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 760169)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 760244)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 760245)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 759367)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 759367) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 759393)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 757812)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 757812) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 759546)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 757129)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 757130)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 757131)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	----
Physical Tests (QCLot: 757133)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	100	85.0	115	----
Physical Tests (QCLot: 757894)									
turbidity	----	E121	0.1	NTU	200 NTU	99.3	85.0	115	----
Physical Tests (QCLot: 759971)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	88.7	85.0	115	----
Physical Tests (QCLot: 759973)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.6	85.0	115	----
Anions and Nutrients (QCLot: 757122)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	99.2	80.0	120	----
Anions and Nutrients (QCLot: 757123)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 757124)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 757125)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 757126)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.8	90.0	110	----
Anions and Nutrients (QCLot: 757127)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 757128)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 760243)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.6	75.0	125	----
Anions and Nutrients (QCLot: 760246)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 760248)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	90.8	85.0	115	----
Cyanides (QCLot: 759519)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	100	85.0	115	----
Cyanides (QCLot: 760168)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	86.7	80.0	120	----
Cyanides (QCLot: 760169)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	88.0	80.0	120	----
Organic / Inorganic Carbon (QCLot: 760244)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	115	80.0	120	----
Organic / Inorganic Carbon (QCLot: 760245)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Total Metals (QCLot: 759367)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	107	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.1	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 759367) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	115	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	113	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.1	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	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.3	80.0	120	----
Total Metals (QCLot: 759393)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
Dissolved Metals (QCLot: 757812)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.9	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.3	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	95.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 757812) - continued									
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.0	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	95.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	103	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	85.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.3	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
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	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	106	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: 757122)										
KS2204425-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0310 mg/L	0.03 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 757123)										
KS2204432-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 757124)										
KS2204432-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.503 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 757125)										
KS2204432-002	Anonymous	fluoride	16984-48-8	E235.F	0.996 mg/L	1 mg/L	99.6	75.0	125	----
Anions and Nutrients (QCLot: 757126)										
KS2204432-002	Anonymous	chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 757127)										
KS2204432-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.523 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 757128)										
KS2204432-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 760243)										
KS2204472-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.47 mg/L	2.5 mg/L	98.7	70.0	130	----
Anions and Nutrients (QCLot: 760246)										
KS2204472-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
Anions and Nutrients (QCLot: 760248)										
KS2204472-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0916 mg/L	0.1 mg/L	91.6	75.0	125	----
Cyanides (QCLot: 759519)										
EO2210389-001	Anonymous	thiocyanate	302-04-5	E344	8.19 mg/L	10 mg/L	81.9	75.0	125	----
Cyanides (QCLot: 760168)										
VA22C8575-001	CC-30	cyanide, strong acid dissociable (total)	----	E333	0.224 mg/L	0.25 mg/L	89.5	75.0	125	----
Cyanides (QCLot: 760169)										
VA22C8575-001	CC-30	cyanide, weak acid dissociable	----	E336	0.117 mg/L	0.125 mg/L	93.5	75.0	125	----
Organic / Inorganic Carbon (QCLot: 760244)										
KS2204472-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.36 mg/L	5 mg/L	87.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 760245)										
KS2204472-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.84 mg/L	5 mg/L	96.8	70.0	130	----
Total Metals (QCLot: 759367)										
KS2204413-003	Anonymous	aluminum, total	7429-90-5	E420	0.394 mg/L	0.4 mg/L	98.6	70.0	130	----
		antimony, total	7440-36-0	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0728 mg/L	0.08 mg/L	91.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	0.168 mg/L	0.2 mg/L	84.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00772 mg/L	0.008 mg/L	96.5	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0792 mg/L	0.08 mg/L	99.0	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.1	70.0	130	----
		iron, total	7439-89-6	E420	3.84 mg/L	4 mg/L	95.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0362 mg/L	0.04 mg/L	90.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.192 mg/L	0.2 mg/L	96.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0742 mg/L	0.08 mg/L	92.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	21.3 mg/L	20 mg/L	107	70.0	130	----
		potassium, total	7440-09-7	E420	8.08 mg/L	8 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	0.0886 mg/L	0.08 mg/L	111	70.0	130	----
		silicon, total	7440-21-3	E420	19.7 mg/L	20 mg/L	98.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00777 mg/L	0.008 mg/L	97.1	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00718 mg/L	0.008 mg/L	89.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0788 mg/L	0.08 mg/L	98.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00804 mg/L	0.008 mg/L	100	70.0	130	----
		vanadium, total	7440-62-2	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.695 mg/L	0.8 mg/L	86.9	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: 759393)										
KS2204470-001	Anonymous	mercury, total	7439-97-6	E508	0.0000912 mg/L	0.0001 mg/L	91.2	70.0	130	----
Dissolved Metals (QCLot: 757812)										
YL2202025-001	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	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00819 mg/L	0.01 mg/L	81.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0991 mg/L	0.1 mg/L	99.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.73 mg/L	4 mg/L	93.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0353 mg/L	0.04 mg/L	88.3	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.23 mg/L	10 mg/L	92.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00290 mg/L	0.004 mg/L	72.4	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.375 mg/L	0.4 mg/L	93.8	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: 759546)										
VA22C8574-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): 8575 **ALS Contact:** A. Springer **Sampler:** Avison

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	CC-30	22-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-40	22-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	Field Blank	22-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-15	22-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	TC-15-DUP	22-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C8575

Telephone : +1 604 253 4188

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

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

Are samples for human drinking water use?
☐ YES ☑ NO

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

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					5.6

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Nov. 23-2022	Time: 1000	Received by:	Date:	Time:	F<Original signed by>	Date: 11/24/22	Time: 9:10

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

OCTOBER 2015 FRONT

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9179**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 01-Dec-2022 09:30
PO	: 10857	Date Analysis Commenced	: 01-Dec-2022
C-O-C number	:	Issue Date	: 08-Dec-2022 12:57
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Benjamin Oke	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	KL-01 Upper	KL-01 Mid	KL -01 Bottom	----	----
					Client sampling date / time	28-Nov-2022	28-Nov-2022	28-Nov-2022	----	----
						VA22C9179-001	VA22C9179-002	VA22C9179-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.4	2.3	4.4	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		72.6	70.5	80.4	----	----
conductivity	----	E100	2.0	µS/cm		141	135	153	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		65.5	63.2	69.4	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		74.7	71.4	77.0	----	----
pH	----	E108	0.10	pH units		7.60	7.64	7.55	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		96	84	101	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU		0.66	0.50	2.44	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0679	0.0489	0.597	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.061	0.058	0.059	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.540	0.380	0.920	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	0.0052	<0.0050	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0015	<0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0019	0.0029	0.0992	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0159	0.0130	0.129	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.32	1.24	0.51	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.60	8.56	8.45	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		8.44	8.69	8.66	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	KL-01 Upper	KL-01 Mid	KL -01 Bottom	----	----
					Client sampling date / time	28-Nov-2022	28-Nov-2022	28-Nov-2022	----	----
						VA22C9179-001	VA22C9179-002	VA22C9179-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00041	0.00038	0.00050	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00962	0.00962	0.0230	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		20.9	19.8	21.9	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.019	0.019	1.01	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		5.47	5.33	5.41	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0135	0.0200	0.942	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000662	0.000604	0.000387	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.158	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.883	0.859	0.952	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000056	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		5.74	5.91	9.73	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.29	3.15	3.15	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.109	0.105	0.113	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.60	<0.50	<0.50	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000017	0.000016	0.000011	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	KL-01 Upper	KL-01 Mid	KL -01 Bottom	----	----
					Client sampling date / time	28-Nov-2022	28-Nov-2022	28-Nov-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9179-001	VA22C9179-002	VA22C9179-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0012	0.0011	0.0011	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00011	<0.00010	<0.00010	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00036	0.00035	0.00040	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00828	0.00837	0.0209	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		18.0	17.5	19.2	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.010	<0.010	0.785	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.00	4.74	5.22	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00674	0.00505	0.844	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000558	0.000548	0.000331	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	0.113	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.736	0.686	0.780	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.11	5.05	8.38	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.91	2.86	2.86	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0910	0.0925	0.0976	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	KL-01 Upper	KL-01 Mid	KL -01 Bottom	----	----
					Client sampling date / time	28-Nov-2022	28-Nov-2022	28-Nov-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9179-001	VA22C9179-002	VA22C9179-003	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000023	0.000016	0.000010	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0018	0.0012	0.0019	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----

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

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9179**	Page	: 1 of 19
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 01-Dec-2022 09:30
PO	: 10857	Issue Date	: 08-Dec-2022 13:00
C-O-C number	:		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) KL -01 Bottom	E298	28-Nov-2022	04-Dec-2022	----	----		06-Dec-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) KL-01 Mid	E298	28-Nov-2022	04-Dec-2022	----	----		06-Dec-2022	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) KL-01 Upper	E298	28-Nov-2022	04-Dec-2022	----	----		06-Dec-2022	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE KL -01 Bottom	E235.Br-L	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE KL-01 Mid	E235.Br-L	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE KL-01 Upper	E235.Br-L	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE KL -01 Bottom	E235.Cl	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE KL-01 Mid	E235.Cl	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE KL-01 Upper	E235.Cl	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE KL -01 Bottom	E378-U	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	3 days	4 days	× EHTL
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE KL-01 Mid	E378-U	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	3 days	4 days	× EHTL
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE KL-01 Upper	E378-U	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	3 days	4 days	× EHTL
Anions and Nutrients : Fluoride in Water by IC										
HDPE KL -01 Bottom	E235.F	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE KL-01 Mid	E235.F	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE KL-01 Upper	E235.F	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE KL -01 Bottom	E235.NO3-L	28-Nov-2022	01-Dec-2022	3 days	4 days	✖ EHTL	02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE KL-01 Mid	E235.NO3-L	28-Nov-2022	01-Dec-2022	3 days	4 days	✖ EHTL	02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE KL-01 Upper	E235.NO3-L	28-Nov-2022	01-Dec-2022	3 days	4 days	✖ EHTL	02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE KL -01 Bottom	E235.NO2-L	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	3 days	4 days	✖ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE KL-01 Mid	E235.NO2-L	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	3 days	4 days	✖ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE KL-01 Upper	E235.NO2-L	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	3 days	4 days	✖ EHTL
Anions and Nutrients : Sulfate in Water by IC										
HDPE KL -01 Bottom	E235.SO4	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE KL-01 Mid	E235.SO4	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE KL-01 Upper	E235.SO4	28-Nov-2022	01-Dec-2022	----	----		02-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) KL -01 Bottom	E318	28-Nov-2022	04-Dec-2022	----	----		07-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) KL-01 Mid	E318	28-Nov-2022	04-Dec-2022	----	----		07-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) KL-01 Upper	E318	28-Nov-2022	04-Dec-2022	----	----		07-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) KL -01 Bottom	E372-U	28-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) KL-01 Mid	E372-U	28-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) KL-01 Upper	E372-U	28-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	28 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) KL -01 Bottom	E344	28-Nov-2022	----	----	----		01-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) KL-01 Mid	E344	28-Nov-2022	----	----	----		01-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) KL-01 Upper	E344	28-Nov-2022	----	----	----		01-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) KL -01 Bottom	E333	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) KL-01 Mid	E333	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) KL-01 Upper	E333	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) KL -01 Bottom	E336	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) KL-01 Mid	E336	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) KL-01 Upper	E336	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) KL -01 Bottom	E509	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) KL-01 Mid	E509	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) KL-01 Upper	E509	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) KL -01 Bottom	E421	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) KL-01 Mid	E421	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) KL-01 Upper	E421	28-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) KL -01 Bottom	E358-L	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) KL-01 Mid	E358-L	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) KL-01 Upper	E358-L	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) KL -01 Bottom	E355-L	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) KL-01 Mid	E355-L	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) KL-01 Upper	E355-L	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE KL -01 Bottom	E283	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE KL-01 Mid	E283	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE KL-01 Upper	E283	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE KL -01 Bottom	E290	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE KL-01 Mid	E290	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE KL-01 Upper	E290	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE KL -01 Bottom	E100	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE KL-01 Mid	E100	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE KL-01 Upper	E100	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE KL -01 Bottom	E108	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	0.25 hrs	2.12 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE KL-01 Mid	E108	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	0.25 hrs	2.12 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE KL-01 Upper	E108	28-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	0.25 hrs	2.12 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE KL -01 Bottom	E162	28-Nov-2022	----	----	----		02-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE KL-01 Mid	E162	28-Nov-2022	----	----	----		02-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE KL-01 Upper	E162	28-Nov-2022	----	----	----		02-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE KL -01 Bottom	E160	28-Nov-2022	----	----	----		02-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE KL-01 Mid	E160	28-Nov-2022	----	----	----		02-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE KL-01 Upper	E160	28-Nov-2022	----	----	----		02-Dec-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE KL -01 Bottom	E121	28-Nov-2022	----	----	----		01-Dec-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE KL-01 Mid	E121	28-Nov-2022	----	----	----		01-Dec-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE KL-01 Upper	E121	28-Nov-2022	----	----	----		01-Dec-2022	3 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) KL -01 Bottom	E508	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) KL-01 Mid	E508	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) KL-01 Upper	E508	28-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) KL -01 Bottom	E420	28-Nov-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) KL-01 Mid	E420	28-Nov-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) KL-01 Upper	E420	28-Nov-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	7 days	✓

Legend & Qualifier Definitions

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

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

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	764799	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	764797	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	766999	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	764802	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	764801	1	10	10.0	5.0	✓
Conductivity in Water	E100	764798	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	766967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	764613	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	764807	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	764800	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	764803	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	764804	1	14	7.1	5.0	✓
pH by Meter	E108	764796	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	764805	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	764406	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	764890	1	13	7.6	5.0	✓
Total Cyanide	E333	765237	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	766899	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	764616	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	764400	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	764465	1	17	5.8	5.0	✓
WAD Cyanide	E336	765236	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	764799	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	764797	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	766999	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	764802	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	764801	1	10	10.0	5.0	✓
Conductivity in Water	E100	764798	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	766967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	764613	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	764807	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	764800	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	764803	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	764804	1	14	7.1	5.0	✓
pH by Meter	E108	764796	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	764805	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	764406	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	764890	1	13	7.6	5.0	✓
Total Cyanide	E333	765237	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	766899	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	764616	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	764400	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	764465	1	17	5.8	5.0	✓
WAD Cyanide	E336	765236	1	16	6.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	764799	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	764797	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	766999	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	764802	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	764801	1	10	10.0	5.0	✓
Conductivity in Water	E100	764798	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	766967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	764613	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	764807	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	764800	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	764803	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	764804	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	764805	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	764406	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	764890	1	13	7.6	5.0	✓
Total Cyanide	E333	765237	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	766899	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	764616	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	1	20	5.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	764400	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	764465	1	17	5.8	5.0	✓
WAD Cyanide	E336	765236	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	766999	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	764802	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	764801	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	766967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	764613	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	764807	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	764800	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	764803	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	764804	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	764805	1	10	10.0	5.0	✓
Thiocyanate by Colourimetry	E344	764890	1	13	7.6	5.0	✓
Total Cyanide	E333	765237	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	766899	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	764616	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	1	20	5.0	5.0	✓
WAD Cyanide	E336	765236	1	16	6.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **VA22C9179**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 01-Dec-2022 09:30
PO	: 10857	Date Analysis Commenced	: 01-Dec-2022
C-O-C number	:	Issue Date	: 08-Dec-2022 12:56
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Benjamin Oke	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 764400)											
VA22C9064-003	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 764406)											
VA22C9061-007	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	316	312	1.12%	20%	----
Physical Tests (QC Lot: 764465)											
VA22C9160-003	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 764796)											
VA22C9179-003	KL -01 Bottom	pH	----	E108	0.10	pH units	7.55	7.51	0.531%	4%	----
Physical Tests (QC Lot: 764797)											
VA22C9179-003	KL -01 Bottom	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	80.4	81.1	0.867%	20%	----
Physical Tests (QC Lot: 764798)											
VA22C9179-003	KL -01 Bottom	conductivity	----	E100	2.0	µS/cm	153	155	0.844%	10%	----
Physical Tests (QC Lot: 764799)											
VA22C9179-002	KL-01 Mid	acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	2.3	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 764800)											
VA22C9179-001	KL-01 Upper	fluoride	16984-48-8	E235.F	0.020	mg/L	0.061	0.060	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 764801)											
VA22C9179-001	KL-01 Upper	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 764802)											
VA22C9179-001	KL-01 Upper	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 764803)											
VA22C9179-001	KL-01 Upper	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: 764804)											
VA22C9179-001	KL-01 Upper	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0015	<0.0010	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 764805)											
VA22C9179-001	KL-01 Upper	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.32	1.30	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 764807)											
VA22C9179-001	KL-01 Upper	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0019	0.0019	0.000004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766997)											
KS2204561-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.239	0.220	0.019	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766998)											

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*
Anions and Nutrients (QC Lot: 766998) - continued											
KS2204561-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0322	0.0324	0.589%	20%	----
Anions and Nutrients (QC Lot: 766999)											
KS2204561-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0137	0.0134	0.0003	Diff <2x LOR	----
Cyanides (QC Lot: 764890)											
VA22C9179-001	KL-01 Upper	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 765236)											
VA22C9181-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 765237)											
VA22C9181-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 767000)											
KS2204561-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.77	6.57	13.1%	20%	----
Organic / Inorganic Carbon (QC Lot: 767001)											
KS2204561-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.74	6.28	8.97%	20%	----
Total Metals (QC Lot: 764616)											
VA22C9172-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00050	0.00049	0.000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00025	0.00024	0.000007	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0223	0.0227	1.80%	20%	----
		beryllium, total	7440-41-7	E420	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000100	mg/L	0.000493	0.000500	1.45%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	275	294	6.87%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0379	0.0386	1.68%	20%	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	205	211	2.92%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00514	0.00512	0.518%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0190	0.0194	2.47%	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: 764616) - continued											
VA22C9172-001	Anonymous	phosphorus, total	7723-14-0	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	2.52	2.52	0.00663%	20%	----
		selenium, total	7782-49-2	E420	0.000100	mg/L	451 µg/L	0.468	3.63%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.14	2.22	3.90%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.100	mg/L	2.26	2.32	2.56%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.199	0.200	0.706%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	416	420	0.780%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000025	0.000030	0.000005	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0220	0.0226	2.96%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0134	0.0133	0.00008	Diff <2x LOR	----
Total Metals (QC Lot: 766899)											
KS2204534-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 764613)											
FJ2203339-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0015	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	0.00067	0.00063	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.261	0.247	5.43%	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	0.021	0.021	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000161	0.0000214	0.0000053	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	135	1.26%	20%	----
		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	0.00068	0.00065	0.00003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00038	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	1.90	2.10	10.1%	20%	----
		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	0.0180	0.0175	2.60%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	42.0	42.1	0.247%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.633	0.626	1.16%	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*
Dissolved Metals (QC Lot: 764613) - continued											
FJ2203339-003	Anonymous	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00164	0.00160	2.62%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00328	0.00312	0.00017	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	1.03	1.00	3.01%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	0.000066	0.000016	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.88	3.26	12.6%	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	12.9	12.5	3.42%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.612	0.612	0.145%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	74.2	86.3	15.1%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000045	0.000043	0.000002	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00102	0.000964	5.36%	20%	----
		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	0.0026	0.0024	0.0002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 766967)											
KS2204537-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000500	mg/L	<0.0000500	<0.0000500	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: 764400)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 764406)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 764465)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 764797)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 764798)						
conductivity	----	E100	1	µS/cm	1.4	----
Physical Tests (QCLot: 764799)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 764800)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 764801)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 764802)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 764803)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 764804)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 764805)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 764807)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 766997)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 766998)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 766999)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 764890)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 764890) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 765236)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 765237)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 767000)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767001)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 764616)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 764616) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 766899)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 764613)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 764613) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 766967)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 764400)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	92.8	85.0	115	----
Physical Tests (QCLot: 764406)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.5	85.0	115	----
Physical Tests (QCLot: 764465)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 764796)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 764797)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 764798)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.1	90.0	110	----
Physical Tests (QCLot: 764799)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 764800)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.6	90.0	110	----
Anions and Nutrients (QCLot: 764801)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 764802)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.4	85.0	115	----
Anions and Nutrients (QCLot: 764803)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 764804)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 764805)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 764807)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	97.9	80.0	120	----
Anions and Nutrients (QCLot: 766997)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.3	75.0	125	----
Anions and Nutrients (QCLot: 766998)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 766999)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
Cyanides (QCLot: 764890)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	104	85.0	115	----
Cyanides (QCLot: 765236)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	85.4	80.0	120	----
Cyanides (QCLot: 765237)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	83.4	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767000)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	98.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767001)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	----
Total Metals (QCLot: 764616)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.1	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	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	99.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.6	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 764616) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.7	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Total Metals (QCLot: 766899)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 764613)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	95.1	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.7	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	92.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	93.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	92.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	93.1	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	98.2	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 764613) - continued									
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	91.1	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	92.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	92.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	91.6	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	94.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	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: 764800)										
VA22C9179-002	KL-01 Mid	fluoride	16984-48-8	E235.F	0.996 mg/L	1 mg/L	99.6	75.0	125	----
Anions and Nutrients (QCLot: 764801)										
VA22C9179-002	KL-01 Mid	chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 764802)										
VA22C9179-002	KL-01 Mid	bromide	24959-67-9	E235.Br-L	0.498 mg/L	0.5 mg/L	99.7	75.0	125	----
Anions and Nutrients (QCLot: 764803)										
VA22C9179-002	KL-01 Mid	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 764804)										
VA22C9179-002	KL-01 Mid	nitrite (as N)	14797-65-0	E235.NO2-L	0.493 mg/L	0.5 mg/L	98.6	75.0	125	----
Anions and Nutrients (QCLot: 764805)										
VA22C9179-002	KL-01 Mid	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 764807)										
VA22C9179-002	KL-01 Mid	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0298 mg/L	0.03 mg/L	99.3	70.0	130	----
Anions and Nutrients (QCLot: 766997)										
KS2204561-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.55 mg/L	2.5 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 766998)										
KS2204561-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 766999)										
KS2204561-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Cyanides (QCLot: 764890)										
VA22C9179-002	KL-01 Mid	thiocyanate	302-04-5	E344	8.78 mg/L	10 mg/L	87.8	75.0	125	----
Cyanides (QCLot: 765236)										
VA22C9181-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.113 mg/L	0.125 mg/L	90.8	75.0	125	----
Cyanides (QCLot: 765237)										
VA22C9181-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.218 mg/L	0.25 mg/L	87.3	75.0	125	----
Organic / Inorganic Carbon (QCLot: 767000)										
KS2204561-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	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
Organic / Inorganic Carbon (QCLot: 767001)										
KS2204561-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.44 mg/L	5 mg/L	88.9	70.0	130	----
Total Metals (QCLot: 764616)										
VA22C9172-002	Anonymous	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	95.9	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	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00905 mg/L	0.01 mg/L	90.5	70.0	130	----
		boron, total	7440-42-8	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00384 mg/L	0.004 mg/L	96.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0175 mg/L	0.02 mg/L	87.7	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	94.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0873 mg/L	0.1 mg/L	87.3	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	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0356 mg/L	0.04 mg/L	89.1	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.61 mg/L	10 mg/L	96.1	70.0	130	----
		potassium, total	7440-09-7	E420	3.74 mg/L	4 mg/L	93.6	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.54 mg/L	10 mg/L	95.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00401 mg/L	0.004 mg/L	100	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	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0367 mg/L	0.04 mg/L	91.8	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	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.372 mg/L	0.4 mg/L	92.9	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: 766899)										
KS2204537-001	Anonymous	mercury, total	7439-97-6	E508	0.0000928 mg/L	0.0001 mg/L	92.8	70.0	130	----
Dissolved Metals (QCLot: 764613)										
KS2204537-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.175 mg/L	0.2 mg/L	87.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00943 mg/L	0.01 mg/L	94.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	92.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0362 mg/L	0.04 mg/L	90.4	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.84 mg/L	2 mg/L	92.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0863 mg/L	0.1 mg/L	86.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.48 mg/L	10 mg/L	94.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.45 mg/L	4 mg/L	86.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.97 mg/L	10 mg/L	89.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	97.9	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00365 mg/L	0.004 mg/L	91.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0353 mg/L	0.04 mg/L	88.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0930 mg/L	0.1 mg/L	93.0	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.357 mg/L	0.4 mg/L	89.3	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: 766967)										
VA22C8895-025	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000780 mg/L	0.0001 mg/L	78.0	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

Affix ALS barcode label here (lab use only)

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

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

Quality Control (QC) Report with Report ☑ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Tonia.Robb@erm.com

Email 2: tdesormeaux@artemisgoldinc.com

Email 3: ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: tdesormeaux@artemisgoldinc.com

Email 2: accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): 9179

ALS Contact: A. Springer **Sampler:** Avison

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	KL-01 Upper	28-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	KL-01 Mid	28-Nov-22		Water	R	R	R	R	R	R	R	R	R					9
	KL-01 Bottom	28-Nov-22		Water	R	R	R	R	R	R	R	R	R					9

Environmental Division Vancouver
Work Order Reference
VA22C9179

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☑ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					3

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Fernando Villegas	Date: Nov 29th 2022	Time:	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 12/1/22	Time: 9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9294**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 02-Dec-2022 09:10
PO	: 10857	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: ----	Issue Date	: 08-Dec-2022 15:17
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia
Richard Chong		Inorganics, Burnaby, British Columbia
Sam Silveira	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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ 23	Travel Blank	----	----	----
					Client sampling date / time	30-Nov-2022	30-Nov-2022	----	----	----
						VA22C9294-001	VA22C9294-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.1	<2.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		24.3	<1.0	----	----	----
conductivity	----	E100	2.0	µS/cm		51.5	<2.0	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		20.6	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		20.9	<0.60	----	----	----
pH	----	E108	0.10	pH units		7.45	5.97	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		34	<10	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	----	----	----
turbidity	----	E121	0.10	NTU		0.26	<0.10	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0282	0.0183 RRV	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		<0.020	<0.020	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.250	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0092	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0187	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.40	<0.30	----	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		3.29	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		3.48	<0.50	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0047	<0.0030	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ 23	Travel Blank	----	----	----
					Client sampling date / time	30-Nov-2022	30-Nov-2022	----	----	----
						VA22C9294-001	VA22C9294-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00094	<0.00010	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00290	<0.00010	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		6.59	<0.050	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.073	<0.010	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		1.07	<0.100	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00310	<0.00010	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000175	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000760	<0.000050	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.341	<0.100	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.70	<0.10	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		2.20	<0.050	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0439	<0.00020	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000112	<0.000010	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	WQ 23	Travel Blank	----	----	----
					Client sampling date / time	30-Nov-2022	30-Nov-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9294-001	VA22C9294-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0035	<0.0030	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0026	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00081	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00274	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		6.49	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.025	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		1.07	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00159	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000755	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.349	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.64	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.28	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0456	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	WQ 23	Travel Blank	----	----	----
					Client sampling date / time	30-Nov-2022	30-Nov-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9294-001	VA22C9294-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000107	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9294**	Page	: 1 of 15
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 02-Dec-2022 09:10
PO	: 10857	Issue Date	: 08-Dec-2022 15:17
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	30-Nov-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
WQ 23	E298	30-Nov-2022	04-Dec-2022	----	----		06-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.Br-L	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
WQ 23	E235.Br-L	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Travel Blank	E235.Cl	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
WQ 23	E235.Cl	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Travel Blank	E378-U	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE WQ 23	E378-U	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Travel Blank	E235.F	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WQ 23	E235.F	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	30-Nov-2022	03-Dec-2022	3 days	3 days	✓	03-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WQ 23	E235.NO3-L	30-Nov-2022	03-Dec-2022	3 days	3 days	✓	03-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE WQ 23	E235.NO2-L	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Travel Blank	E235.SO4	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
WQ 23	E235.SO4	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Travel Blank	E318	30-Nov-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
WQ 23	E318	30-Nov-2022	04-Dec-2022	----	----		07-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Travel Blank	E372-U	30-Nov-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WQ 23	E372-U	30-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	28 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Travel Blank	E344	30-Nov-2022	----	----	----		05-Dec-2022	14 days	6 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
WQ 23	E344	30-Nov-2022	----	----	----		05-Dec-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Travel Blank	E333	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	2 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
WQ 23	E333	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Travel Blank	E336	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	2 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
WQ 23	E336	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	14 days	2 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
WQ 23	E509	30-Nov-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
WQ 23	E421	30-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WQ 23	E358-L	30-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
Travel Blank	E355-L	30-Nov-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
WQ 23	E355-L	30-Nov-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE										
Travel Blank	E283	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE										
WQ 23	E283	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE WQ 23	E290	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Travel Blank	E100	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE WQ 23	E100	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	0.25 hrs	6.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE WQ 23	E108	30-Nov-2022	03-Dec-2022	----	----		03-Dec-2022	0.25 hrs	6.25 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	30-Nov-2022	----	----	----		05-Dec-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE WQ 23	E162	30-Nov-2022	----	----	----		05-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160	30-Nov-2022	----	----	----		03-Dec-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE										
WQ 23	E160	30-Nov-2022	----	----	----		03-Dec-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Travel Blank	E121	30-Nov-2022	----	----	----		02-Dec-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
WQ 23	E121	30-Nov-2022	----	----	----		02-Dec-2022	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
WQ 23	E508	30-Nov-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Travel Blank	E508	30-Nov-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Travel Blank	E420	30-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
WQ 23	E420	30-Nov-2022	04-Dec-2022	----	----		05-Dec-2022	180 days	6 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)							
Acidity by Titration	E283	766280	0	14	0.0	5.0	✗
Alkalinity Species by Titration	E290	766277	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766283	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766282	1	20	5.0	5.0	✓
Conductivity in Water	E100	766279	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	768012	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	766311	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766288	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	766281	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766284	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766285	1	20	5.0	5.0	✓
pH by Meter	E108	766278	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	766286	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	765915	1	14	7.1	5.0	✓
Thiocyanate by Colourimetry	E344	768103	1	20	5.0	5.0	✓
Total Cyanide	E333	765666	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	2	32	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	766298	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
TSS by Gravimetry	E160	765913	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	765652	1	10	10.0	5.0	✓
WAD Cyanide	E336	765667	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	766280	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	766277	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766283	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766282	1	20	5.0	5.0	✓
Conductivity in Water	E100	766279	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	768012	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	766311	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766288	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	766281	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766284	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766285	1	20	5.0	5.0	✓
pH by Meter	E108	766278	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	766286	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	765915	1	14	7.1	5.0	✓
Thiocyanate by Colourimetry	E344	768103	1	20	5.0	5.0	✓
Total Cyanide	E333	765666	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	2	32	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	766298	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
TSS by Gravimetry	E160	765913	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	765652	1	10	10.0	5.0	✓
WAD Cyanide	E336	765667	1	4	25.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	766280	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	766277	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766283	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766282	1	20	5.0	5.0	✓
Conductivity in Water	E100	766279	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	768012	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	766311	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766288	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	766281	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766284	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766285	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	766286	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	765915	1	14	7.1	5.0	✓
Thiocyanate by Colourimetry	E344	768103	1	20	5.0	5.0	✓
Total Cyanide	E333	765666	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	2	32	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	766298	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
TSS by Gravimetry	E160	765913	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	765652	1	10	10.0	5.0	✓
WAD Cyanide	E336	765667	1	4	25.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766283	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766282	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	768012	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	766311	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766288	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	766281	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766284	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766285	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	766286	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	768103	1	20	5.0	5.0	✓
Total Cyanide	E333	765666	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	2	32	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	766298	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
WAD Cyanide	E336	765667	1	4	25.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C9294**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 02-Dec-2022 09:10
PO	: 10857	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: ----	Issue Date	: 08-Dec-2022 15:16
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Richard Chong		Vancouver Inorganics, Burnaby, British Columbia
Sam Silveira	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **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: 765652)											
VA22C9287-001	Anonymous	turbidity	----	E121	0.10	NTU	2.61	2.43	7.07%	15%	----
Physical Tests (QC Lot: 765913)											
VA22C9247-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	4.7	4.7	0	Diff <2x LOR	----
Physical Tests (QC Lot: 765915)											
KS2204559-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	391	424	8.10%	20%	----
Physical Tests (QC Lot: 766277)											
VA22C9294-001	WQ 23	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	24.3	24.4	0.414%	20%	----
Physical Tests (QC Lot: 766278)											
VA22C9294-001	WQ 23	pH	----	E108	0.10	pH units	7.45	7.49	0.535%	4%	----
Physical Tests (QC Lot: 766279)											
VA22C9294-001	WQ 23	conductivity	----	E100	2.0	µS/cm	51.5	51.6	0.194%	10%	----
Anions and Nutrients (QC Lot: 766281)											
VA22C9197-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766282)											
VA22C9197-001	Anonymous	chloride	16887-00-6	E235.Cl	2.50	mg/L	71.6	69.8	2.55%	20%	----
Anions and Nutrients (QC Lot: 766283)											
VA22C9197-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766284)											
VA22C9197-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0734	0.0718	0.0015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766285)											
VA22C9197-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0206	0.0219	0.0013	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766286)											
VA22C9197-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	35.3	34.3	2.76%	20%	----
Anions and Nutrients (QC Lot: 766288)											
VA22C9294-001	WQ 23	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0092	0.0090	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766997)											
KS2204561-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.239	0.220	0.019	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766998)											
KS2204561-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0322	0.0324	0.589%	20%	----
Anions and Nutrients (QC Lot: 766999)											

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*
Anions and Nutrients (QC Lot: 766999) - continued											
KS2204561-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0137	0.0134	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 767423)											
KS2204557-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.120	0.105	0.015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 767425)											
KS2204557-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0081	0.0087	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 767426)											
KS2204557-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 765666)											
VA22C9232-012	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 765667)											
VA22C9232-012	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 768103)											
VA22C9228-001	Anonymous	thiocyanate	302-04-5	E344	2.50	mg/L	<2.50	<2.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 767000)											
KS2204561-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.77	6.57	13.1%	20%	----
Organic / Inorganic Carbon (QC Lot: 767001)											
KS2204561-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.74	6.28	8.97%	20%	----
Organic / Inorganic Carbon (QC Lot: 767424)											
KS2204557-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.47	1.42	0.05	Diff <2x LOR	----
Total Metals (QC Lot: 766298)											
FJ2203336-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0039	0.0071	0.0032	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	0.00010	0.00000004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	0.00012	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.144	0.147	1.89%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000226	0.0000235	0.0000009	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	74.6	74.3	0.399%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.105	0.106	1.14%	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: 766298) - continued											
FJ2203336-001	Anonymous	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	0.0120	0.0121	0.875%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	26.3	26.5	0.760%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00706	0.00717	1.46%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00206	0.00204	1.15%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00056	0.00057	0.0000009	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.740	0.742	0.226%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00218	0.00217	0.275%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.98	1.98	0.212%	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	11.9	12.0	0.906%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.331	0.325	1.89%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	46.3	46.2	0.231%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000880	0.000847	3.79%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 768014)											
FJ2203361-004	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 771272)											
VA22C9294-002	Travel Blank	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 766311)											
VA22C9287-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0130	0.0124	5.20%	20%	----
		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	0.00023	0.00023	0.000001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00861	0.00896	3.99%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	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	10.4	10.6	1.80%	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*
Dissolved Metals (QC Lot: 766311) - continued											
VA22C9287-001	Anonymous	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	0.00026	0.00027	0.000007	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	0.0015	0.0015	0.00002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.40	1.42	1.04%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00107	0.00109	2.33%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000764	0.000794	3.79%	20%	----
		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	1.12	1.13	1.41%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	8.25	8.20	0.658%	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	2.36	2.42	2.61%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.108	0.106	1.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.77	2.51	0.26	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000055	0.000055	0.00000008	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00632	0.00634	0.238%	20%	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 768012)											
FJ2203361-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 765652)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 765913)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 765915)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 766277)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 766279)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 766280)						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
Anions and Nutrients (QCLot: 766281)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 766282)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 766283)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 766284)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 766285)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 766286)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 766288)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 766997)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 766998)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 766999)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 767423)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 767423) - continued						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 767425)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 767426)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 765666)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 765667)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 768103)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767000)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767001)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767424)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 766298)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 766298) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 768014)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 771272)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 766311)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 766311) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 768012)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 765652)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 765913)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	105	85.0	115	----
Physical Tests (QCLot: 765915)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.4	85.0	115	----
Physical Tests (QCLot: 766277)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	100	85.0	115	----
Physical Tests (QCLot: 766278)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 766279)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.3	90.0	110	----
Physical Tests (QCLot: 766280)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	98.6	85.0	115	----
Anions and Nutrients (QCLot: 766281)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.5	90.0	110	----
Anions and Nutrients (QCLot: 766282)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 766283)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 766284)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 766285)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 766286)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 766288)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	96.9	80.0	120	----
Anions and Nutrients (QCLot: 766997)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.3	75.0	125	----
Anions and Nutrients (QCLot: 766998)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 766999)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
Anions and Nutrients (QCLot: 767423)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 767425)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.2	80.0	120	----
Anions and Nutrients (QCLot: 767426)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.2	85.0	115	----
Cyanides (QCLot: 765666)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	86.1	80.0	120	----
Cyanides (QCLot: 765667)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	95.9	80.0	120	----
Cyanides (QCLot: 768103)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Organic / Inorganic Carbon (QCLot: 767000)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	98.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767001)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767424)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 766298)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.3	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100.0	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.7	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 766298) - continued									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.9	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.1	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	95.5	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	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	91.5	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.6	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	86.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	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	93.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.6	80.0	120	----
Total Metals (QCLot: 768014)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----
Total Metals (QCLot: 771272)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.0	80.0	120	----
Dissolved Metals (QCLot: 766311)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	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	99.5	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.3	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	97.6	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 766311) - continued									
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.7	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	81.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	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: 766281)										
VA22C9236-001	Anonymous	fluoride	16984-48-8	E235.F	0.976 mg/L	1 mg/L	97.6	75.0	125	----
Anions and Nutrients (QCLot: 766282)										
VA22C9236-001	Anonymous	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 766283)										
VA22C9236-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 766284)										
VA22C9236-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 766285)										
VA22C9236-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.490 mg/L	0.5 mg/L	98.0	75.0	125	----
Anions and Nutrients (QCLot: 766286)										
VA22C9236-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 766288)										
VA22C9294-002	Travel Blank	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0342 mg/L	0.03 mg/L	114	70.0	130	----
Anions and Nutrients (QCLot: 766997)										
KS2204561-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.55 mg/L	2.5 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 766998)										
KS2204561-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 766999)										
KS2204561-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 767423)										
KS2204557-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	99.9	70.0	130	----
Anions and Nutrients (QCLot: 767425)										
KS2204557-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0470 mg/L	0.05 mg/L	94.0	70.0	130	----
Anions and Nutrients (QCLot: 767426)										
KS2204557-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
Cyanides (QCLot: 765666)										
VA22C9232-013	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.999 mg/L	1.25 mg/L	79.9	75.0	125	----

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
Cyanides (QCLot: 765667)										
VA22C9232-013	Anonymous	cyanide, weak acid dissociable	----	E336	0.605 mg/L	0.625 mg/L	96.7	75.0	125	----
Cyanides (QCLot: 768103)										
VA22C9228-002	Anonymous	thiocyanate	302-04-5	E344	ND mg/L	10 mg/L	ND	75.0	125	----
Organic / Inorganic Carbon (QCLot: 767000)										
KS2204561-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 767001)										
KS2204561-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.44 mg/L	5 mg/L	88.9	70.0	130	----
Organic / Inorganic Carbon (QCLot: 767424)										
KS2204557-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.00 mg/L	5 mg/L	99.9	70.0	130	----
Total Metals (QCLot: 766298)										
FJ2203336-002	Anonymous	aluminum, total	7429-90-5	E420	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.0	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	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00875 mg/L	0.01 mg/L	87.5	70.0	130	----
		boron, total	7440-42-8	E420	0.091 mg/L	0.1 mg/L	91.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		iron, total	7439-89-6	E420	1.86 mg/L	2 mg/L	93.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0171 mg/L	0.02 mg/L	85.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0921 mg/L	0.1 mg/L	92.1	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	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0359 mg/L	0.04 mg/L	89.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.64 mg/L	10 mg/L	96.4	70.0	130	----
		potassium, total	7440-09-7	E420	3.62 mg/L	4 mg/L	90.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		silicon, total	7440-21-3	E420	9.60 mg/L	10 mg/L	96.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00362 mg/L	0.004 mg/L	90.4	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: 766298) - continued										
FJ2203336-002	Anonymous	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	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00339 mg/L	0.004 mg/L	84.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0380 mg/L	0.04 mg/L	94.9	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	0.0963 mg/L	0.1 mg/L	96.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.352 mg/L	0.4 mg/L	87.9	70.0	130	----
Total Metals (QCLot: 768014)										
KS2204563-001	Anonymous	mercury, total	7439-97-6	E508	0.000112 mg/L	0.0001 mg/L	112	70.0	130	----
Total Metals (QCLot: 771272)										
VA22C9303-015	Anonymous	mercury, total	7439-97-6	E508	0.0000962 mg/L	0.0001 mg/L	96.2	70.0	130	----
Dissolved Metals (QCLot: 766311)										
VA22C9294-001	WQ 23	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	97.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00879 mg/L	0.01 mg/L	87.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0979 mg/L	0.1 mg/L	97.9	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	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.92 mg/L	10 mg/L	99.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 766311) - continued										
VA22C9294-001	WQ 23	potassium, dissolved	7440-09-7	E421	4.15 mg/L	4 mg/L	104	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	18.6 mg/L	20 mg/L	93.1	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00363 mg/L	0.004 mg/L	90.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0977 mg/L	0.1 mg/L	97.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.392 mg/L	0.4 mg/L	98.0	70.0	130	----
Dissolved Metals (QCLot: 768012)										
VA22C9247-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000940 mg/L	0.0001 mg/L	94.0	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Tonia.Robb@erm.com

Email 2: tdesormeaux@artemisgoldinc.com

Email 3: ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: tdesormeaux@artemisgoldinc.com

Email 2: accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): 9294

ALS Contact: A. Springer **Sampler:** Avison

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate	Number of Containers
					P	F/P	P		F		F	P		
	WQ 23	30-Nov-22		Water	R	R	R	R	R	R	R	R	R	9
	Travel Blank	30-Nov-22		Water	R	R		R	R		R		R	6
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										

Environmental Division Vancouver

Work Order Reference

VA22C9294

Telephone : + 1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					0.5

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Dec. 1, 2022	Time: 1000	Received by:	Date:	Time:	<Original signed by>:	Date: 12/2/22	Time: 9:10AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9417**	Page	: 1 of 11
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 03-Dec-2022 10:00
PO	: 10857	Date Analysis Commenced	: 03-Dec-2022
C-O-C number	:	Issue Date	: 12-Dec-2022 12:52
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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*
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Qammar Almas	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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	*Comment*
VA22C9417-001	FC-01	Samples 1,4,7: Water samples for mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
VA22C9417-003	705-05	Sample 3: Water sample for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
VA22C9417-004	705-10	Samples 1,4,7: Water samples for mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
VA22C9417-007	TC-10	Samples 1,4,7: Water samples for mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FC-01	FC-01 DUP	705-05	705-10	TC-05
					Client sampling date / time	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022
						VA22C9417-001	VA22C9417-002	VA22C9417-003	VA22C9417-004	VA22C9417-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.2	2.2	2.8	3.1	3.5
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		40.3	40.1	25.4	36.4	106
conductivity	----	E100	2.0	µS/cm		86.0	86.8	53.9	77.5	211
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		35.4	37.2	22.0	32.8	101
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		39.5	37.8	23.6	34.6	99.6
pH	----	E108	0.10	pH units		7.71	7.72	7.38	7.52	7.92
solids, total dissolved [TDS]	----	E162	10	mg/L		57	58	40	56	139
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		<0.10	<0.10	0.55	0.20	0.91
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	<0.0050	0.0258	0.0258
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.021	0.020	<0.020	0.026	0.056
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		<0.050	<0.050	0.152	0.126	0.843
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0547	0.0503	0.0180	0.0572	0.0150
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0041	0.0054	<0.0010	<0.0010	0.0020
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0060	0.0069	0.0070	0.0049	0.0265
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.55	2.42	0.76	1.28	3.48
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.04	1.29	6.59	5.97	3.87
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.59	1.38	6.36	5.61	5.74
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0099	0.0088	0.0404	0.0292	0.0291
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00017

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FC-01	FC-01 DUP	705-05	705-10	TC-05
					Client sampling date / time	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022
						VA22C9417-001	VA22C9417-002	VA22C9417-003	VA22C9417-004	VA22C9417-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00080	0.00077	0.00028	0.00019	0.00041
barium, total	7440-39-3	E420	0.00010	mg/L		0.00440	0.00424	0.00639	0.0100	0.0127
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000125
calcium, total	7440-70-2	E420	0.050	mg/L		13.4	12.8	7.33	10.4	30.3
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00179
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	0.170	0.042	0.315
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000078
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		1.46	1.43	1.30	2.11	5.82
manganese, total	7439-96-5	E420	0.00010	mg/L		<0.00010	<0.00010	0.00772	0.00194	0.0225
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000905	0.000817	0.000648	0.000524	0.000704
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.427	0.414	0.339	0.344	1.13
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000053
silicon, total	7440-21-3	E420	0.10	mg/L		5.95	5.66	3.65	4.89	8.12
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		2.80	2.72	2.36	3.02	4.79
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0594	0.0544	0.0545	0.0673	0.139
sulfur, total	7704-34-9	E420	0.50	mg/L		1.00	1.14	0.59	0.71	1.46
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	0.00012	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	0.00066	0.00046	0.00084
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000070	0.000073	0.000163	0.000117	0.000309
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00054	0.00052	<0.00050	<0.00050	<0.00050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FC-01	FC-01 DUP	705-05	705-10	TC-05
					Client sampling date / time	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022
						VA22C9417-001	VA22C9417-002	VA22C9417-003	VA22C9417-004	VA22C9417-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	0.0062
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0063	0.0065	0.0241	0.0282	0.0055
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00068	0.00074	0.00027	0.00018	0.00034
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00417	0.00421	0.00611	0.00960	0.0124
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		12.0	12.6	6.79	9.86	31.0
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	0.00024	0.00032	0.00057
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	0.118	0.032	0.180
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		1.32	1.40	1.22	1.98	5.68
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		<0.00010	<0.00010	0.00557	0.00128	0.0204
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000814	0.000818	0.000637	0.000552	0.000719
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.381	0.393	0.308	0.315	1.07
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000083
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.33	5.47	3.36	4.50	7.59
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.49	2.59	2.34	2.94	4.42
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0581	0.0583	0.0556	0.0682	0.151

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FC-01	FC-01 DUP	705-05	705-10	TC-05
					Client sampling date / time	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022
Analyte	CAS Number	Method	LOR	Unit		VA22C9417-001	VA22C9417-002	VA22C9417-003	VA22C9417-004	VA22C9417-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.82	0.74	<0.50	<0.50	1.29
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	0.00040	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000065	0.000061	0.000148	0.000104	0.000280
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	0.0028
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	TC-01	TC-10	TC-10 DUP	----	----
				Client sampling date / time	02-Dec-2022	02-Dec-2022	02-Dec-2022	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C9417-006	VA22C9417-007	VA22C9417-008	--------	--------
					Result	Result	Result	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	3.6	5.1	4.8	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	100	113	113	----	----
conductivity	----	E100	2.0	µS/cm	201	224	223	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	97.6	108	106	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	100	107	109	----	----
pH	----	E108	0.10	pH units	7.92	7.84	7.81	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	120	149	135	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	5.6	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU	1.53	1.22	1.16	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0101	0.0070	0.0154	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	<0.50	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.041	0.063	0.061	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.289	0.114	0.184	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0658	0.0104 HTD	0.0121 HTD	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010 HTD	0.0011 HTD	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0035	0.0035	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0240	0.0112	0.0113	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.56	3.66	3.67	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.28	3.48	3.61	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.72	3.40	3.81	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0116	0.0098	0.0114	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TC-01	TC-10	TC-10 DUP	----	----
					Client sampling date / time	02-Dec-2022	02-Dec-2022	02-Dec-2022	----	----
						VA22C9417-006	VA22C9417-007	VA22C9417-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00061	0.00041	0.00042	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00997	0.0139	0.0143	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		32.8	31.9	32.8	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.182	0.344	0.348	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		4.40	6.60	6.65	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0152	0.0600	0.0605	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000528	0.000623	0.000647	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.705	1.09	1.11	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000098	<0.000050	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		7.37	8.51	8.51	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.03	4.76	4.93	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.121	0.157	0.158	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.88	1.60	1.58	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00044	<0.00030	0.00034	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000264	0.000253	0.000254	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00070	<0.00050	<0.00050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TC-01	TC-10	TC-10 DUP	----	----
					Client sampling date / time	02-Dec-2022	02-Dec-2022	02-Dec-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9417-006	VA22C9417-007	VA22C9417-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0016	0.0037	0.0039	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00052	0.00031	0.00032	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00959	0.0138	0.0137	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		31.6	32.0	31.7	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.097	0.190	0.196	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.54	6.81	6.50	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0108	0.0501	0.0511	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000556	0.000606	0.000604	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.674	1.03	1.03	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000052	<0.000050	0.000053	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.59	7.74	8.05	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.97	4.89	4.75	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.127	0.160	0.160	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TC-01	TC-10	TC-10 DUP	----	----
					Client sampling date / time	02-Dec-2022	02-Dec-2022	02-Dec-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9417-006	VA22C9417-007	VA22C9417-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.58	1.22	1.27	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000234	0.000232	0.000238	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9417**	Page	: 1 of 33
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 03-Dec-2022 10:00
PO	: 10857	Issue Date	: 12-Dec-2022 12:52
C-O-C number	:		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-01	E298	02-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-10	E298	02-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) TC-10 DUP	E298	02-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-05	E298	01-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 705-10	E298	01-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) FC-01	E298	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) FC-01 DUP	E298	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
TC-05	E298	01-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
TC-01	E235.Br-L	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
TC-10	E235.Br-L	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
TC-10 DUP	E235.Br-L	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
705-05	E235.Br-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
705-10	E235.Br-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
FC-01	E235.Br-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
FC-01 DUP	E235.Br-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
TC-05	E235.Br-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-01	E235.Cl	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-10	E235.Cl	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-10 DUP	E235.Cl	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-05	E235.Cl	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 705-10	E235.Cl	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE FC-01	E235.Cl	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE FC-01 DUP	E235.Cl	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TC-05	E235.Cl	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-01	E378-U	02-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-10	E378-U	02-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-10 DUP	E378-U	02-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-05	E378-U	01-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 705-10	E378-U	01-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE FC-01	E378-U	01-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE FC-01 DUP	E378-U	01-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE TC-05	E378-U	01-Dec-2022	03-Dec-2022	----	----		03-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-01	E235.F	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-10	E235.F	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-10 DUP	E235.F	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-05	E235.F	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 705-10	E235.F	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FC-01	E235.F	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FC-01 DUP	E235.F	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TC-05	E235.F	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-01	E235.NO3-L	02-Dec-2022	03-Dec-2022	3 days	2 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-10	E235.NO3-L	02-Dec-2022	03-Dec-2022	3 days	2 days	✓	04-Dec-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-10 DUP	E235.NO3-L	02-Dec-2022	03-Dec-2022	3 days	2 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-05	E235.NO3-L	01-Dec-2022	03-Dec-2022	3 days	3 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 705-10	E235.NO3-L	01-Dec-2022	03-Dec-2022	3 days	3 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE FC-01	E235.NO3-L	01-Dec-2022	03-Dec-2022	3 days	3 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE FC-01 DUP	E235.NO3-L	01-Dec-2022	03-Dec-2022	3 days	3 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TC-05	E235.NO3-L	01-Dec-2022	03-Dec-2022	3 days	3 days	✓	04-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-01	E235.NO2-L	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-10	E235.NO2-L	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-10 DUP	E235.NO2-L	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-05	E235.NO2-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 705-10	E235.NO2-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FC-01	E235.NO2-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FC-01 DUP	E235.NO2-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TC-05	E235.NO2-L	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-01	E235.SO4	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-10	E235.SO4	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TC-10 DUP	E235.SO4	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 705-05	E235.SO4	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
705-10	E235.SO4	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
FC-01	E235.SO4	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
FC-01 DUP	E235.SO4	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
TC-05	E235.SO4	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
TC-01	E318	02-Dec-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
TC-10	E318	02-Dec-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
TC-10 DUP	E318	02-Dec-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
705-05	E318	01-Dec-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
705-10	E318	01-Dec-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
TC-05	E318	01-Dec-2022	05-Dec-2022	----	----		07-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
FC-01	E318	01-Dec-2022	04-Dec-2022	----	----		07-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
FC-01 DUP	E318	01-Dec-2022	04-Dec-2022	----	----		07-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-01	E372-U	02-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-10	E372-U	02-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-10 DUP	E372-U	02-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
705-05	E372-U	01-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
705-10	E372-U	01-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
FC-01	E372-U	01-Dec-2022	04-Dec-2022	----	----		05-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
FC-01 DUP	E372-U	01-Dec-2022	04-Dec-2022	----	----		05-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
TC-05	E372-U	01-Dec-2022	05-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
TC-01	E344	02-Dec-2022	----	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
TC-10	E344	02-Dec-2022	----	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
TC-10 DUP	E344	02-Dec-2022	----	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
705-05	E344	01-Dec-2022	----	----	----		05-Dec-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
705-10	E344	01-Dec-2022	----	----	----		05-Dec-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
FC-01	E344	01-Dec-2022	----	----	----		05-Dec-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
FC-01 DUP	E344	01-Dec-2022	----	----	----		05-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) TC-05	E344	01-Dec-2022	----	----	----		05-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-01	E333	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-05	E333	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-10	E333	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) FC-01	E333	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) FC-01 DUP	E333	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-05	E333	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-10	E333	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-10 DUP	E333	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-01	E336	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-05	E336	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 705-10	E336	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) FC-01	E336	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) FC-01 DUP	E336	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-05	E336	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	4 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-10	E336	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	6 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TC-10 DUP	E336	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) TC-10	E509	02-Dec-2022	09-Dec-2022	0.03 hrs	15 hrs	× EHTR-FM	09-Dec-2022	-175.90 hrs	0.03 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) 705-05	E509	01-Dec-2022	09-Dec-2022	0.03 hrs	15 hrs	✖ EHTR-FM	09-Dec-2022	-199.90 hrs	0.03 hrs	✖ EHTR-FM
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) 705-10	E509	01-Dec-2022	09-Dec-2022	0.03 hrs	15 hrs	✖ EHTR-FM	09-Dec-2022	-199.90 hrs	0.03 hrs	✖ EHTR-FM
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) FC-01	E509	01-Dec-2022	09-Dec-2022	0.03 hrs	15 hrs	✖ EHTR-FM	09-Dec-2022	-199.90 hrs	0.03 hrs	✖ EHTR-FM
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-01	E509	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-10 DUP	E509	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) FC-01 DUP	E509	01-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) TC-05	E509	01-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-01	E421	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-10	E421	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-10 DUP	E421	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-05	E421	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 705-10	E421	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) FC-01	E421	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) FC-01 DUP	E421	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) TC-05	E421	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-01	E358-L	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-10	E358-L	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-10 DUP	E358-L	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-05	E358-L	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 705-10	E358-L	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FC-01	E358-L	01-Dec-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FC-01 DUP	E358-L	01-Dec-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TC-05	E358-L	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-01	E355-L	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-10	E355-L	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-10 DUP	E355-L	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-05	E355-L	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 705-10	E355-L	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) FC-01	E355-L	01-Dec-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) FC-01 DUP	E355-L	01-Dec-2022	04-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TC-05	E355-L	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-01	E283	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-10	E283	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-10 DUP	E283	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-05	E283	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE 705-10	E283	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE FC-01	E283	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE FC-01 DUP	E283	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE TC-05	E283	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-01	E290	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-10	E290	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-10 DUP	E290	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-05	E290	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 705-10	E290	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE FC-01	E290	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE FC-01 DUP	E290	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TC-05	E290	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-01	E100	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-10	E100	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE TC-10 DUP	E100	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-05	E100	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE 705-10	E100	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE FC-01	E100	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE FC-01 DUP	E100	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE TC-05	E100	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE 705-05	E108	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 705-10	E108	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FC-01	E108	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FC-01 DUP	E108	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-01	E108	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-05	E108	01-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-10	E108	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE TC-10 DUP	E108	02-Dec-2022	03-Dec-2022	----	----		04-Dec-2022	0.25 hrs	17.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE TC-01	E162	02-Dec-2022	----	----	----		06-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-10	E162	02-Dec-2022	----	----	----		06-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-10 DUP	E162	02-Dec-2022	----	----	----		06-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-05	E162	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 705-10	E162	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE FC-01	E162	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE FC-01 DUP	E162	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE TC-05	E162	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-01	E160	02-Dec-2022	----	----	----		06-Dec-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE TC-10	E160	02-Dec-2022	----	----	----		06-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-10 DUP	E160	02-Dec-2022	----	----	----		06-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-05	E160	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 705-10	E160	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE FC-01	E160	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE FC-01 DUP	E160	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE TC-05	E160	01-Dec-2022	----	----	----		06-Dec-2022	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-01	E121	02-Dec-2022	----	----	----		04-Dec-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-10	E121	02-Dec-2022	----	----	----		04-Dec-2022	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE TC-10 DUP	E121	02-Dec-2022	----	----	----		04-Dec-2022	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 705-05	E121	01-Dec-2022	----	----	----		04-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 705-10	E121	01-Dec-2022	----	----	----		04-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE FC-01	E121	01-Dec-2022	----	----	----		04-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE FC-01 DUP	E121	01-Dec-2022	----	----	----		04-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TC-05	E121	01-Dec-2022	----	----	----		04-Dec-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) TC-10	E508	02-Dec-2022	10-Dec-2022	0.02 hrs	15 hrs	× EHTR-FM	10-Dec-2022	-176.64 hrs	0.02 hrs	× EHTR-FM
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) 705-10	E508	01-Dec-2022	10-Dec-2022	0.02 hrs	15 hrs	× EHTR-FM	10-Dec-2022	-200.64 hrs	0.02 hrs	× EHTR-FM
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) FC-01	E508	01-Dec-2022	10-Dec-2022	0.02 hrs	15 hrs	× EHTR-FM	10-Dec-2022	-200.64 hrs	0.02 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-01	E508	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-10 DUP	E508	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 705-05	E508	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) FC-01 DUP	E508	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) TC-05	E508	01-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-01	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-10	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-10 DUP	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-05	E420	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 705-10	E420	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) FC-01	E420	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) FC-01 DUP	E420	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) TC-05	E420	01-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	6 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)							
Acidity by Titration	E283	766780	1	16	6.2	5.0	✓
Alkalinity Species by Titration	E290	766772	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766776	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766775	1	20	5.0	5.0	✓
Conductivity in Water	E100	766773	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	769067	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	767103	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	2	26	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766782	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	766774	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766777	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766778	1	20	5.0	5.0	✓
pH by Meter	E108	766771	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	766779	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	767916	1	13	7.6	5.0	✓
Thiocyanate by Colourimetry	E344	768104	1	14	7.1	5.0	✓
Total Cyanide	E333	767682	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	3	43	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	766762	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
TSS by Gravimetry	E160	767913	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	766891	1	13	7.6	5.0	✓
WAD Cyanide	E336	767683	2	25	8.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	766780	1	16	6.2	5.0	✓
Alkalinity Species by Titration	E290	766772	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766776	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766775	1	20	5.0	5.0	✓
Conductivity in Water	E100	766773	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	769067	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	767103	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	2	26	7.6	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766782	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	766774	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766777	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766778	1	20	5.0	5.0	✓
pH by Meter	E108	766771	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	766779	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	767916	1	13	7.6	5.0	✓
Thiocyanate by Colourimetry	E344	768104	1	14	7.1	5.0	✓
Total Cyanide	E333	767682	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	3	43	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	766762	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
TSS by Gravimetry	E160	767913	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	766891	1	13	7.6	5.0	✓
WAD Cyanide	E336	767683	2	25	8.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	766780	1	16	6.2	5.0	✓
Alkalinity Species by Titration	E290	766772	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766776	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766775	1	20	5.0	5.0	✓
Conductivity in Water	E100	766773	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	769067	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	767103	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	2	26	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766782	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	766774	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766777	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766778	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	766779	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	767916	1	13	7.6	5.0	✓
Thiocyanate by Colourimetry	E344	768104	1	14	7.1	5.0	✓
Total Cyanide	E333	767682	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	766997	2	38	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	768014	3	43	6.9	5.0	✓
Total metals in Water by CRC ICPMS	E420	766762	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	767001	2	38	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
TSS by Gravimetry	E160	767913	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	766891	1	13	7.6	5.0	✓
WAD Cyanide	E336	767683	2	25	8.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	766999	2	38	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	766776	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	766775	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	769067	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	767103	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	767000	2	26	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	766782	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	766774	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	766777	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	766778	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	766779	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	768104	1	14	7.1	5.0	✓
Total Cyanide	E333	767682	2	40	5.0	5.0	✓
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Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	766998	2	38	5.2	5.0	✓
WAD Cyanide	E336	767683	2	25	8.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C9417**	Page	: 1 of 19
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 03-Dec-2022 10:00
PO	: 10857	Date Analysis Commenced	: 03-Dec-2022
C-O-C number	:	Issue Date	: 12-Dec-2022 12:52
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **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: 766771)											
KS2204563-003	Anonymous	pH	----	E108	0.10	pH units	8.00	8.01	0.125%	4%	----
Physical Tests (QC Lot: 766772)											
KS2204563-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	241	243	1.04%	20%	----
Physical Tests (QC Lot: 766773)											
KS2204563-003	Anonymous	conductivity	----	E100	2.0	µS/cm	480	488	1.65%	10%	----
Physical Tests (QC Lot: 766780)											
KS2204563-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	14.5	15.7	1.2	Diff <2x LOR	----
Physical Tests (QC Lot: 766891)											
VA22C9400-001	Anonymous	turbidity	----	E121	0.10	NTU	0.55	0.55	0.004	Diff <2x LOR	----
Physical Tests (QC Lot: 767913)											
VA22C9416-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	3.6	4.0	0.4	Diff <2x LOR	----
Physical Tests (QC Lot: 767916)											
VA22C9416-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	163	146	17	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766774)											
KS2204563-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.175	0.167	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766775)											
KS2204563-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	5.57	5.54	0.553%	20%	----
Anions and Nutrients (QC Lot: 766776)											
KS2204563-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766777)											
KS2204563-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0078	<0.0050	0.0028	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766778)											
KS2204563-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0046	0.0037	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766779)											
KS2204563-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	29.0	29.0	0.0677%	20%	----
Anions and Nutrients (QC Lot: 766782)											
KS2204563-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0377	0.0376	0.186%	20%	----
Anions and Nutrients (QC Lot: 766997)											
KS2204561-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.239	0.220	0.019	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 766998)											

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*
Anions and Nutrients (QC Lot: 766998) - continued											
KS2204561-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0322	0.0324	0.589%	20%	----
Anions and Nutrients (QC Lot: 766999)											
KS2204561-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0137	0.0134	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 767423)											
KS2204557-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.120	0.105	0.015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 767425)											
KS2204557-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0081	0.0087	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 767426)											
KS2204557-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 767682)											
VA22C9416-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 767683)											
VA22C9416-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 768104)											
VA22C9416-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 771021)											
VA22C9417-007	TC-10	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 771022)											
VA22C9417-007	TC-10	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 767000)											
KS2204561-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.77	6.57	13.1%	20%	----
Organic / Inorganic Carbon (QC Lot: 767001)											
KS2204561-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.74	6.28	8.97%	20%	----
Organic / Inorganic Carbon (QC Lot: 767424)											
KS2204557-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.47	1.42	0.05	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 767427)											
VA22C9417-003	705-05	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	6.59	6.78	2.88%	20%	----
Total Metals (QC Lot: 766762)											
VA22C9396-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.326	0.311	4.60%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00052	0.00050	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00238	0.00236	0.595%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0530	0.0537	1.33%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	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: 766762) - continued											
VA22C9396-001	Anonymous	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	0.014	0.013	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000149	0.000179	18.2%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	28.5	27.2	4.73%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	0.00178	0.00162	0.00016	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00030	0.00029	0.000006	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00179	0.00173	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.494	0.480	2.76%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000659	0.000640	2.94%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0026	0.0024	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	6.30	6.29	0.212%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.250	0.249	0.380%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00644	0.00622	3.45%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00158	0.00151	0.00007	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.075	0.066	0.010	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	1.80	1.80	0.0980%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000052	0.000062	0.000010	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.00	6.94	0.920%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000093	0.000106	0.000012	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	41.1	40.9	0.413%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.462	0.447	3.30%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	25.0	24.1	3.29%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00051	0.00050	0.00001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0133	0.0138	4.14%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000329	0.000315	4.35%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00083	0.00085	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	3.55	3.55	0.186%	20%	----
Total Metals (QC Lot: 768014)											
FJ2203361-004	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 768015)											
VA22C9417-005	TC-05	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 774173)											
VA22C9417-001	FC-01	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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: 767103)											
VA22C9416-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0034	0.0037	0.0003	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	0.00669	0.00693	3.50%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.114	0.116	2.51%	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	0.0000085	0.0000035	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	31.1	31.0	0.346%	20%	----
		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	0.00018	0.00019	0.000004	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	1.75	1.78	1.32%	20%	----
		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	0.0034	0.0034	0.00004	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	9.60	9.96	3.74%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.03	1.06	2.76%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0161	0.0157	2.26%	20%	----
		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	0.094	0.117	0.022	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	1.28	1.30	1.12%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.38	6.39	0.110%	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	11.7	11.8	0.304%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.565	0.555	1.78%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000338	0.000353	4.35%	20%	----
		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	0.0442	0.0438	0.943%	20%	----
Dissolved Metals (QC Lot: 769067)											

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: 769067) - continued											
VA22C9416-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 774145)											
VA22C9417-001	FC-01	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 766772)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 766773)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 766780)						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
Physical Tests (QCLot: 766891)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 767913)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 767916)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 766774)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 766775)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 766776)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 766777)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 766778)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 766779)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 766782)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 766997)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 766998)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 766999)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 767423)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 767423) - continued						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 767425)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 767426)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 767682)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 767683)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 768104)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 771021)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 771022)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 767000)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767001)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767424)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 767427)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 766762)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 766762) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 768014)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 768015)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 774173)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 767103)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 767103) - continued						
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	----
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 769067)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 774145)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 766771)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 766772)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 766773)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	----
Physical Tests (QCLot: 766780)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	97.6	85.0	115	----
Physical Tests (QCLot: 766891)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 767913)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	92.7	85.0	115	----
Physical Tests (QCLot: 767916)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 766774)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 766775)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 766776)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 766777)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 766778)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 766779)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 766782)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	95.4	80.0	120	----
Anions and Nutrients (QCLot: 766997)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.3	75.0	125	----
Anions and Nutrients (QCLot: 766998)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 766999)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
Anions and Nutrients (QCLot: 767423)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 767425)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.2	80.0	120	----
Anions and Nutrients (QCLot: 767426)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.2	85.0	115	----
Cyanides (QCLot: 767682)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	88.9	80.0	120	----
Cyanides (QCLot: 767683)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	96.7	80.0	120	----
Cyanides (QCLot: 768104)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Cyanides (QCLot: 771021)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	94.8	80.0	120	----
Cyanides (QCLot: 771022)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	91.7	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767000)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	98.8	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767001)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767424)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Organic / Inorganic Carbon (QCLot: 767427)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Total Metals (QCLot: 766762)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	95.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 766762) - continued									
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.1	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	98.7	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	108	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	109	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.1	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	105	80.0	120	----
Total Metals (QCLot: 768014)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----
Total Metals (QCLot: 768015)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	107	80.0	120	----
Total Metals (QCLot: 774173)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.8	80.0	120	----
Dissolved Metals (QCLot: 767103)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	95.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 767103) - continued									
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	88.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	92.3	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	94.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.3	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	94.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.6	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	89.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.2	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: 766774)										
KS2204563-002	Anonymous	fluoride	16984-48-8	E235.F	0.974 mg/L	1 mg/L	97.4	75.0	125	----
Anions and Nutrients (QCLot: 766775)										
KS2204563-002	Anonymous	chloride	16887-00-6	E235.Cl	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 766776)										
KS2204563-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.538 mg/L	0.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 766777)										
KS2204563-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 766778)										
KS2204563-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.495 mg/L	0.5 mg/L	99.0	75.0	125	----
Anions and Nutrients (QCLot: 766779)										
KS2204563-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 766782)										
KS2204563-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	1.5 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 766997)										
KS2204561-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.55 mg/L	2.5 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 766998)										
KS2204561-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 766999)										
KS2204561-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 767423)										
KS2204557-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	99.9	70.0	130	----
Anions and Nutrients (QCLot: 767425)										
KS2204557-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0470 mg/L	0.05 mg/L	94.0	70.0	130	----
Anions and Nutrients (QCLot: 767426)										
KS2204557-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
Cyanides (QCLot: 767682)										
VA22C9416-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.222 mg/L	0.25 mg/L	88.7	75.0	125	----

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
Cyanides (QCLot: 767683)										
VA22C9416-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.122 mg/L	0.125 mg/L	97.6	75.0	125	----
Cyanides (QCLot: 768104)										
VA22C9416-002	Anonymous	thiocyanate	302-04-5	E344	8.23 mg/L	10 mg/L	82.3	75.0	125	----
Cyanides (QCLot: 771021)										
VA22C9417-008	TC-10 DUP	cyanide, weak acid dissociable	----	E336	0.124 mg/L	0.125 mg/L	99.2	75.0	125	----
Cyanides (QCLot: 771022)										
VA22C9417-008	TC-10 DUP	cyanide, strong acid dissociable (total)	----	E333	0.225 mg/L	0.25 mg/L	90.2	75.0	125	----
Organic / Inorganic Carbon (QCLot: 767000)										
KS2204561-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 767001)										
KS2204561-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.44 mg/L	5 mg/L	88.9	70.0	130	----
Organic / Inorganic Carbon (QCLot: 767424)										
KS2204557-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.00 mg/L	5 mg/L	99.9	70.0	130	----
Organic / Inorganic Carbon (QCLot: 767427)										
VA22C9417-004	705-10	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 766762)										
VA22C9396-002	Anonymous	aluminum, total	7429-90-5	E420	0.219 mg/L	0.2 mg/L	110	70.0	130	----
		antimony, total	7440-36-0	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		barium, total	7440-39-3	E420	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0386 mg/L	0.04 mg/L	96.6	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	0.099 mg/L	0.1 mg/L	99.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	97.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0953 mg/L	0.1 mg/L	95.3	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	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 766762) - continued										
VA22C9396-002	Anonymous	molybdenum, total	7439-98-7	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		nickel, total	7440-02-0	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.30 mg/L	10 mg/L	93.0	70.0	130	----
		potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, total	7440-21-3	E420	9.60 mg/L	10 mg/L	96.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.4	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	19.2 mg/L	20 mg/L	96.0	70.0	130	----
		thallium, total	7440-28-0	E420	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		uranium, total	7440-61-1	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.402 mg/L	0.4 mg/L	100	70.0	130	----
Total Metals (QCLot: 768014)										
KS2204563-001	Anonymous	mercury, total	7439-97-6	E508	0.000112 mg/L	0.0001 mg/L	112	70.0	130	----
Total Metals (QCLot: 768015)										
VA22C9417-006	TC-01	mercury, total	7439-97-6	E508	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----
Total Metals (QCLot: 774173)										
VA22C9417-004	705-10	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 767103)										
VA22C9416-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.178 mg/L	0.2 mg/L	88.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00933 mg/L	0.01 mg/L	93.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.7	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: 767103) - continued										
VA22C9416-002	Anonymous	copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.81 mg/L	2 mg/L	90.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0918 mg/L	0.1 mg/L	91.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.79 mg/L	10 mg/L	97.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.72 mg/L	4 mg/L	93.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.07 mg/L	10 mg/L	90.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.8 mg/L	20 mg/L	98.8	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.392 mg/L	0.4 mg/L	97.9	70.0	130	----
Dissolved Metals (QCLot: 769067)										
VA22C9417-002	FC-01 DUP	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 774145)										
VA22C9417-003	705-05	mercury, dissolved	7439-97-6	E509	0.0000997 mg/L	0.0001 mg/L	99.7	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number: 15 -

Affix ALS barcode label here (lab use only)

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information	
ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): 9417

ALS Contact: A. Springer Sampler: Avison

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
1	FC-01	1-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
2	FC-01 DUP	1-Dec-22		Water	R	R	R	R	R	R	R	R	R					6
3	705-05	1-Dec-22		Water	R	R	R	R	R	R	R	R	R					
4	705-10	1-Dec-22		Water	R	R	R	R	R	R	R	R	R					
5	TC-05	1-Dec-22		Water	R	R	R	R	R	R	R	R	R					
6	TC-01	2-Dec-22		Water	R	R	R	R	R	R	R	R	R					
7	TC-10	2-Dec-22		Water	R	R	R	R	R	R	R	R	R					
8	TC-10 DUP	2-Dec-22		Water	R	R	R	R	R	R	R	R	R					

Environmental Division
Vancouver
Work Order Reference
VA22C9417

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			-0.4	-2.1	-0.4

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: F. Villegas	Date: Dec 2nd 2022	Time:	Received by:	Date:	Time:	Received by: <Original signature>	Date: 3 Dec 22	Time: 10am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9621**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 07-Dec-2022 09:15
PO	: 10857	Date Analysis Commenced	: 07-Dec-2022
C-O-C number	:	Issue Date	: 15-Dec-2022 15:53
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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*
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	*Comment*
VA22C9621-004	661-10	Sample 4: Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-20	661-10	----
					Client sampling date / time	05-Dec-2022	05-Dec-2022	05-Dec-2022	05-Dec-2022	----
						VA22C9621-001	VA22C9621-002	VA22C9621-003	VA22C9621-004	--------
						Result	Result	Result	Result	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	2.6	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		126	109	76.2	45.1	----
conductivity	----	E100	2.0	µS/cm		249	214	153	91.5	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		118	99.4	67.6	37.7	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		121	103	70.8	40.8	----
pH	----	E108	0.10	pH units		7.79	7.81	7.77	7.41	----
solids, total dissolved [TDS]	----	E162	10	mg/L		162	138	99	67	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	3.6	<3.0	----
turbidity	----	E121	0.10	NTU		1.11	1.71	3.45	0.53	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.110	0.0631	0.0093	0.0084	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.078	0.068	0.060	0.049	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.394	0.245	0.056	0.066	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.121	0.103	0.0454	0.0511	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0036	0.0022	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0115	0.0094	0.0166	0.0131	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0221	0.0233	0.0269	0.0234	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		4.17	3.48	2.31	1.60	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	0.71	<0.50	<0.50	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.52	6.41	3.08	2.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		8.54	6.32	2.54	2.73	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0207	0.0273	0.0234	0.0361	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-20	661-10	----
					Client sampling date / time	05-Dec-2022	05-Dec-2022	05-Dec-2022	05-Dec-2022	----
						VA22C9621-001	VA22C9621-002	VA22C9621-003	VA22C9621-004	--------
						Result	Result	Result	Result	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00070	0.00068	0.00084	0.00085	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0132	0.0104	0.00728	0.00507	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	0.0000130	----
calcium, total	7440-70-2	E420	0.050	mg/L		33.5	28.7	19.1	11.8	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L		0.125	0.132	0.131	0.112	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	----
magnesium, total	7439-95-4	E420	0.100	mg/L		9.07	7.62	5.60	2.75	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0384	0.0208	0.00924	0.0161	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000834	0.000872	0.000964	0.000715	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	0.00052	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.066	0.056	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.51	1.21	0.790	0.539	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000066	<0.000050	0.000060	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L		8.73	8.57	8.52	8.63	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		5.12	5.04	4.62	3.49	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.154	0.136	0.102	0.0763	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.51	1.12	0.67	<0.50	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00074	0.00089	0.00076	0.00090	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000191	0.000254	0.000348	0.000104	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	0.00065	0.00091	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-03	CC-05	661-20	661-10	----
					Client sampling date / time	05-Dec-2022	05-Dec-2022	05-Dec-2022	05-Dec-2022	----
						VA22C9621-001	VA22C9621-002	VA22C9621-003	VA22C9621-004	--------
						Result	Result	Result	Result	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0030	0.0046	0.0063	0.0147	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00062	0.00070	0.00081	0.00082	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0136	0.0105	0.00696	0.00497	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	0.0000062	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		32.9	27.3	18.5	10.9	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.060	0.068	0.083	0.068	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		8.76	7.59	5.21	2.55	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0227	0.00918	0.00472	0.0111	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000757	0.000800	0.000901	0.000627	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.41	1.17	0.720	0.505	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000055	<0.000050	<0.000050	0.000053	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		8.14	8.22	8.34	8.32	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.23	5.16	4.60	3.63	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.144	0.128	0.0958	0.0712	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-03	CC-05	661-20	661-10	----
					Client sampling date / time	05-Dec-2022	05-Dec-2022	05-Dec-2022	05-Dec-2022	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9621-001	VA22C9621-002	VA22C9621-003	VA22C9621-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.60	1.19	0.73	<0.50	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	0.00041	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000196	0.000243	0.000320	0.000103	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	0.00052	0.00082	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0021	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9621**	Page	: 1 of 22
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 07-Dec-2022 09:15
PO	: 10857	Issue Date	: 15-Dec-2022 15:53
C-O-C number	:		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-MRG7-7708840 01	----	nitrate (as N)	14797-55-8	E235.NO3-L	0.0071 B mg/L	0.005 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-10	E298	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-20	E298	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-03	E298	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-05	E298	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-10	E235.Br-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-20	E235.Br-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-03	E235.Br-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-05	E235.Br-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-10	E235.Cl	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-20	E235.Cl	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-03	E235.Cl	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-05	E235.Cl	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-10	E378-U	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-20	E378-U	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-03	E378-U	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-05	E378-U	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-10	E235.F	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-20	E235.F	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-03	E235.F	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-05	E235.F	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-10	E235.NO3-L	05-Dec-2022	07-Dec-2022	3 days	3 days	✓	08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-20	E235.NO3-L	05-Dec-2022	07-Dec-2022	3 days	3 days	✓	08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-03	E235.NO3-L	05-Dec-2022	07-Dec-2022	3 days	3 days	✓	08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-05	E235.NO3-L	05-Dec-2022	07-Dec-2022	3 days	3 days	✓	08-Dec-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-10	E235.NO2-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-20	E235.NO2-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-03	E235.NO2-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-05	E235.NO2-L	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-10	E235.SO4	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-20	E235.SO4	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-03	E235.SO4	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-05	E235.SO4	05-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-10	E318	05-Dec-2022	10-Dec-2022	----	----		15-Dec-2022	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-20	E318	05-Dec-2022	10-Dec-2022	----	----		15-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-03	E318	05-Dec-2022	10-Dec-2022	----	----		15-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-05	E318	05-Dec-2022	10-Dec-2022	----	----		15-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-10	E372-U	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-20	E372-U	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-03	E372-U	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-05	E372-U	05-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	28 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-10	E344	05-Dec-2022	----	----	----		08-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-20	E344	05-Dec-2022	----	----	----		08-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-03	E344	05-Dec-2022	----	----	----		08-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-05	E344	05-Dec-2022	----	----	----		08-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E333	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-20	E333	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E333	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-05	E333	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-10	E336	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-20	E336	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-03	E336	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-05	E336	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-10	E509	05-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
661-20	E509	05-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-03	E509	05-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
CC-05	E509	05-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
661-10	E421	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
661-20	E421	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-03	E421	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-05	E421	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-10	E358-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-20	E358-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-03	E358-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-05	E358-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-10	E355-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-20	E355-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-03	E355-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-05	E355-L	05-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-10	E283	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE 661-20	E283	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-03	E283	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-05	E283	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-10	E290	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-20	E290	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-03	E290	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-05	E290	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-10	E100	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-20	E100	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE CC-03	E100	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-05	E100	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 661-10	E108	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	0.25 hrs	1.53 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 661-20	E108	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	0.25 hrs	1.53 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-03	E108	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	0.25 hrs	1.53 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-05	E108	05-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	0.25 hrs	1.53 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-10	E162	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE 661-20	E162	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-03	E162	05-Dec-2022	----	----	----		08-Dec-2022	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-05	E162	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-10	E160	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-20	E160	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-03	E160	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-05	E160	05-Dec-2022	----	----	----		08-Dec-2022	7 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-10	E121	05-Dec-2022	----	----	----		07-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-20	E121	05-Dec-2022	----	----	----		07-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-03	E121	05-Dec-2022	----	----	----		07-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-05	E121	05-Dec-2022	----	----	----		07-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) 661-10	E508	05-Dec-2022	13-Dec-2022	0.05 hrs	15 hrs	× EHTR-FM	13-Dec-2022	-176.48 hrs	0.05 hrs	× EHTR-FM
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-20	E508	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-03	E508	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-05	E508	05-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-10	E420	05-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-20	E420	05-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-03	E420	05-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-05	E420	05-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	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)							
Acidity by Titration	E283	770883	1	4	25.0	5.0	✓
Alkalinity Species by Titration	E290	770881	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	774436	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	770886	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	770885	1	13	7.6	5.0	✓
Conductivity in Water	E100	770882	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	772790	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	771896	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	774432	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	770891	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	770884	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	770887	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	770888	1	16	6.2	5.0	✓
pH by Meter	E108	770880	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	770889	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	771103	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	771028	2	14	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	774438	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774101	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	772010	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	774439	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	774440	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	770961	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	770709	1	15	6.6	5.0	✓
WAD Cyanide	E336	771029	2	7	28.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	770883	1	4	25.0	5.0	✓
Alkalinity Species by Titration	E290	770881	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	774436	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	770886	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	770885	1	13	7.6	5.0	✓
Conductivity in Water	E100	770882	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	772790	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	771896	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	774432	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	770891	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	770884	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	770887	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	770888	1	16	6.2	5.0	✓
pH by Meter	E108	770880	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	770889	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	771103	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	771028	2	14	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	774438	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774101	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	772010	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	774439	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	774440	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	770961	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	770709	1	15	6.6	5.0	✓
WAD Cyanide	E336	771029	2	7	28.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	770883	1	4	25.0	5.0	✓
Alkalinity Species by Titration	E290	770881	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	774436	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	770886	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	770885	1	13	7.6	5.0	✓
Conductivity in Water	E100	770882	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	772790	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	771896	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	774432	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	770891	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	770884	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	770887	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	770888	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	770889	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	771103	1	15	6.6	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	771028	2	14	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	774438	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774101	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	772010	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	774439	1	8	12.5	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	774440	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	770961	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	770709	1	15	6.6	5.0	✓
WAD Cyanide	E336	771029	2	7	28.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	774436	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	770886	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	770885	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	772790	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	771896	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	774432	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	770891	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	770884	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	770887	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	770888	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	770889	1	13	7.6	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	771028	2	14	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	774438	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774101	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	772010	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	774439	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	774440	1	14	7.1	5.0	✓
WAD Cyanide	E336	771029	2	7	28.5	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C9621**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 07-Dec-2022 09:15
PO	: 10857	Date Analysis Commenced	: 07-Dec-2022
C-O-C number	:	Issue Date	: 15-Dec-2022 15:53
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
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Robin Weeks	Team Leader - Metals	Vancouver Inorganics, Burnaby, British Columbia
Sukhman Khosa	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **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: 770709)											
VA22C9593-001	Anonymous	turbidity	----	E121	0.10	NTU	0.48	0.54	0.06	Diff <2x LOR	----
Physical Tests (QC Lot: 770880)											
VA22C9621-003	661-20	pH	----	E108	0.10	pH units	7.77	7.75	0.258%	4%	----
Physical Tests (QC Lot: 770881)											
VA22C9621-003	661-20	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	76.2	76.8	0.784%	20%	----
Physical Tests (QC Lot: 770882)											
VA22C9621-003	661-20	conductivity	----	E100	2.0	µS/cm	153	153	0.131%	10%	----
Physical Tests (QC Lot: 770883)											
VA22C9621-002	CC-05	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.4	0.4	Diff <2x LOR	----
Physical Tests (QC Lot: 770961)											
VA22C9598-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 771103)											
VA22C9598-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	414	390	6.09%	20%	----
Anions and Nutrients (QC Lot: 770884)											
VA22C9621-001	CC-03	fluoride	16984-48-8	E235.F	0.020	mg/L	0.078	0.076	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 770885)											
VA22C9621-001	CC-03	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 770886)											
VA22C9621-001	CC-03	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 770887)											
VA22C9621-001	CC-03	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.121	0.120	0.446%	20%	----
Anions and Nutrients (QC Lot: 770888)											
VA22C9621-001	CC-03	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0036	0.0032	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 770889)											
VA22C9621-001	CC-03	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	4.17	4.15	0.619%	20%	----
Anions and Nutrients (QC Lot: 770891)											
VA22C9621-001	CC-03	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0115	0.0112	3.17%	20%	----
Anions and Nutrients (QC Lot: 774436)											
KS2204642-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774438)											

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*
Anions and Nutrients (QC Lot: 774438) - continued											
VA22C9621-001	CC-03	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.394	0.380	0.014	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774440)											
VA22C9621-001	CC-03	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0221	0.0237	6.90%	20%	----
Cyanides (QC Lot: 771028)											
VA22C9602-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 771029)											
VA22C9602-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 771040)											
VA22C9630-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 771041)											
VA22C9630-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 772477)											
VA22C9460-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 774432)											
VA22C9621-002	CC-05	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	6.41	6.01	6.48%	20%	----
Organic / Inorganic Carbon (QC Lot: 774439)											
VA22C9621-001	CC-03	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	8.54	8.61	0.816%	20%	----
Total Metals (QC Lot: 772010)											
VA22C9705-001	Anonymous	aluminum, total	7429-90-5	E420	0.0150	mg/L	0.0213	0.0204	0.0008	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00050	mg/L	0.00110	0.00108	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00050	mg/L	0.00222	0.00219	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00050	mg/L	0.0145	0.0149	2.92%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.050	mg/L	0.386	0.382	0.004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000250	mg/L	0.000210	0.000206	0.0000043	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.250	mg/L	360	365	1.23%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00250	mg/L	0.0660	0.0656	0.589%	20%	----
		iron, total	7439-89-6	E420	0.050	mg/L	0.063	0.063	0.0005	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0050	mg/L	0.0216	0.0214	0.0002	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: 772010) - continued											
VA22C9705-001	Anonymous	magnesium, total	7439-95-4	E420	0.0250	mg/L	367	364	0.792%	20%	----
		manganese, total	7439-96-5	E420	0.00050	mg/L	0.00301	0.00320	0.00019	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000250	mg/L	0.100	0.0992	1.39%	20%	----
		nickel, total	7440-02-0	E420	0.00250	mg/L	0.00341	0.00337	0.00004	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.250	mg/L	67.0	66.2	1.23%	20%	----
		selenium, total	7782-49-2	E420	0.000250	mg/L	0.0341	0.0329	3.51%	20%	----
		silicon, total	7440-21-3	E420	0.50	mg/L	6.79	6.78	0.138%	20%	----
		silver, total	7440-22-4	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.250	mg/L	1020	1020	0.384%	20%	----
		strontium, total	7440-24-6	E420	0.00100	mg/L	9.88	9.82	0.630%	20%	----
		sulfur, total	7704-34-9	E420	2.50	mg/L	1690	1650	2.41%	20%	----
		thallium, total	7440-28-0	E420	0.000050	mg/L	0.000052	<0.000050	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000050	mg/L	0.0106	0.0102	3.42%	20%	----
		vanadium, total	7440-62-2	E420	0.00250	mg/L	0.00615	0.00621	0.00006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0150	mg/L	<0.0150	<0.0150	0	Diff <2x LOR	----
Total Metals (QC Lot: 774101)											
FJ2203397-002	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 776286)											
KS2204555-002	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 771896)											
KS2204594-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	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	0.00026	0.00027	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0655	0.0670	2.22%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	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	56.9	53.8	5.70%	20%	----
		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	----

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: 771896) - continued											
KS2204594-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0188	0.0187	0.0362%	20%	----
		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	0.0015	0.0015	0.00006	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.1	13.0	0.951%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00148	0.00148	0.102%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00561	0.00552	1.55%	20%	----
		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	2.78	2.83	1.85%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.83	5.73	1.68%	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	8.50	8.40	1.16%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.509	0.496	2.58%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.53	9.12	4.45%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00464	0.00443	4.78%	20%	----
		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	0.0067	0.0066	0.00007	Diff <2x LOR	----
Dissolved Metals (QC Lot: 772790)											
VA22C9599-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 770709)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 770881)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 770882)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 770883)						
acidity (as CaCO3)	----	E283	2	mg/L	2.3	----
Physical Tests (QCLot: 770961)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 771103)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 770884)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 770885)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 770886)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 770887)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	# 0.0071	B
Anions and Nutrients (QCLot: 770888)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 770889)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 770891)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 774436)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 774438)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 774440)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 771028)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 771028) - continued						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 771029)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 771040)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 771041)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 772477)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 774432)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 774439)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 772010)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 772010) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 774101)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 776286)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 771896)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 771896) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 772790)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 770709)									
turbidity	----	E121	0.1	NTU	200 NTU	104	85.0	115	----
Physical Tests (QCLot: 770880)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 770881)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 770882)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.5	90.0	110	----
Physical Tests (QCLot: 770883)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
Physical Tests (QCLot: 770961)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	88.3	85.0	115	----
Physical Tests (QCLot: 771103)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 770884)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 770885)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 770886)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 770887)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 770888)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 770889)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 770891)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	88.3	80.0	120	----
Anions and Nutrients (QCLot: 774436)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.2	85.0	115	----
Anions and Nutrients (QCLot: 774438)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.4	75.0	125	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 774440)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	93.0	80.0	120	----
Cyanides (QCLot: 771028)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	91.7	80.0	120	----
Cyanides (QCLot: 771029)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	100	80.0	120	----
Cyanides (QCLot: 771040)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.8	80.0	120	----
Cyanides (QCLot: 771041)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	98.5	80.0	120	----
Cyanides (QCLot: 772477)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Organic / Inorganic Carbon (QCLot: 774432)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 774439)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	110	80.0	120	----
Total Metals (QCLot: 772010)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.5	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 772010) - continued									
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	95.7	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	91.1	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.2	80.0	120	----
Total Metals (QCLot: 774101)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	96.7	80.0	120	----
Total Metals (QCLot: 776286)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 771896)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.6	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.3	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	97.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 771896) - continued									
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	92.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.2	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	91.5	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: 770884)										
VA22C9621-002	CC-05	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 770885)										
VA22C9621-002	CC-05	chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 770886)										
VA22C9621-002	CC-05	bromide	24959-67-9	E235.Br-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 770887)										
VA22C9621-002	CC-05	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 770888)										
VA22C9621-002	CC-05	nitrite (as N)	14797-65-0	E235.NO2-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 770889)										
VA22C9621-002	CC-05	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 770891)										
VA22C9621-002	CC-05	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0340 mg/L	0.03 mg/L	113	70.0	130	----
Anions and Nutrients (QCLot: 774436)										
VA22C9621-001	CC-03	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: 774438)										
VA22C9621-002	CC-05	Kjeldahl nitrogen, total [TKN]	----	E318	2.44 mg/L	2.5 mg/L	97.6	70.0	130	----
Anions and Nutrients (QCLot: 774440)										
VA22C9621-002	CC-05	phosphorus, total	7723-14-0	E372-U	0.0516 mg/L	0.05 mg/L	103	70.0	130	----
Cyanides (QCLot: 771028)										
VA22C9602-003	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.229 mg/L	0.25 mg/L	91.5	75.0	125	----
Cyanides (QCLot: 771029)										
VA22C9602-003	Anonymous	cyanide, weak acid dissociable	----	E336	0.124 mg/L	0.125 mg/L	99.0	75.0	125	----
Cyanides (QCLot: 771040)										
VA22C9621-003	661-20	cyanide, strong acid dissociable (total)	----	E333	0.231 mg/L	0.25 mg/L	92.3	75.0	125	----
Cyanides (QCLot: 771041)										
VA22C9621-003	661-20	cyanide, weak acid dissociable	----	E336	0.125 mg/L	0.125 mg/L	99.8	75.0	125	----

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
Cyanides (QCLot: 772477)										
VA22C9460-002	Anonymous	thiocyanate	302-04-5	E344	7.87 mg/L	10 mg/L	78.7	75.0	125	----
Organic / Inorganic Carbon (QCLot: 774432)										
VA22C9621-001	CC-03	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 774439)										
VA22C9621-002	CC-05	carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 772010)										
VA22C9705-002	Anonymous	aluminum, total	7429-90-5	E420	1.95 mg/L	2 mg/L	97.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.194 mg/L	0.2 mg/L	97.2	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	0.417 mg/L	0.4 mg/L	104	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0895 mg/L	0.1 mg/L	89.5	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.382 mg/L	0.4 mg/L	95.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.187 mg/L	0.2 mg/L	93.4	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	19.1 mg/L	20 mg/L	95.5	70.0	130	----
		lead, total	7439-92-1	E420	0.183 mg/L	0.2 mg/L	91.3	70.0	130	----
		lithium, total	7439-93-2	E420	1.02 mg/L	1 mg/L	102	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	0.190 mg/L	0.2 mg/L	94.8	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.371 mg/L	0.4 mg/L	92.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	106 mg/L	100 mg/L	106	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
		silicon, total	7440-21-3	E420	99.0 mg/L	100 mg/L	99.0	70.0	130	----
		silver, total	7440-22-4	E420	0.0358 mg/L	0.04 mg/L	89.6	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	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.0359 mg/L	0.04 mg/L	89.8	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: 772010) - continued										
VA22C9705-002	Anonymous	tin, total	7440-31-5	E420	0.195 mg/L	0.2 mg/L	97.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.387 mg/L	0.4 mg/L	96.7	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	0.988 mg/L	1 mg/L	98.8	70.0	130	----
		zinc, total	7440-66-6	E420	3.69 mg/L	4 mg/L	92.2	70.0	130	----
Total Metals (QCLot: 774101)										
FJ2203397-008	Anonymous	mercury, total	7439-97-6	E508	0.0000995 mg/L	0.0001 mg/L	99.5	70.0	130	----
Total Metals (QCLot: 776286)										
VA22C9588-001	Anonymous	mercury, total	7439-97-6	E508	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 771896)										
KS2204594-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.182 mg/L	0.2 mg/L	91.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00896 mg/L	0.01 mg/L	89.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00371 mg/L	0.004 mg/L	92.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0367 mg/L	0.04 mg/L	91.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.56 mg/L	2 mg/L	78.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0872 mg/L	0.1 mg/L	87.2	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	0.0179 mg/L	0.02 mg/L	89.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0175 mg/L	0.02 mg/L	87.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0352 mg/L	0.04 mg/L	88.1	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.69 mg/L	4 mg/L	92.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0330 mg/L	0.04 mg/L	82.5	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.7 mg/L	20 mg/L	98.4	70.0	130	MES
		silver, dissolved	7440-22-4	E421	0.00360 mg/L	0.004 mg/L	90.0	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: 771896) - continued										
KS2204594-002	Anonymous	sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	14.3 mg/L	20 mg/L	71.4	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0934 mg/L	0.1 mg/L	93.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
Dissolved Metals (QCLot: 772790)										
VA22C9599-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000900 mg/L	0.0001 mg/L	90.0	70.0	130	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*
MS-B	*Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.*

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information	
ALS Account # / Quote #:	Q56205
Job #:	VA22-BWGL100-002
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only)	9621

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: A. Springer	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	CC-03	5-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-05	5-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	661-20	5-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	661-10	5-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C9621

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					6 C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Dec. 6 - 2022	Time: 0900	Received by:	Date:	Time:	R<Original signed by>	Date: 12/7/22	Time: 9:45 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9769**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 08-Dec-2022 09:00
PO	: 10857	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: ----	Issue Date	: 19-Dec-2022 10:48
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Qammar Almas	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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

The laboratory control standard (LCS) recovery outside of data quality objectives for total phosphate, E372, is not indicative of an analytical issue with the associated samples. Other positive controls were within data quality objectives and the bias in the LCS was known to be isolated to the LCS itself.

Qualifiers

Qualifier	*Description*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	WQ10	DC-05	DC-10	DC-15	----
					Client sampling date / time	06-Dec-2022	06-Dec-2022	06-Dec-2022	06-Dec-2022	----
						VA22C9769-001	VA22C9769-002	VA22C9769-003	VA22C9769-004	--------
						Result	Result	Result	Result	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.5	2.3	2.4	2.7	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		53.5	54.5	55.1	63.2	----
conductivity	----	E100	2.0	µS/cm		112	115	115	130	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		49.5	49.5	50.3	58.0	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		50.8	53.4	54.2	62.4	----
pH	----	E108	0.10	pH units		7.83	7.82	7.79	7.82	----
solids, total dissolved [TDS]	----	E162	10	mg/L		85	86	91	96	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	3.7	3.7	----
turbidity	----	E121	0.10	NTU		0.19	0.23	0.20	0.18	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	0.0074	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.040	0.043	0.041	0.042	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		<0.050	0.129	<0.050	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0341	0.0346	0.0334	0.0342	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0076	0.0018	0.0058	0.0048	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0090	0.0102	0.0078	0.0067	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.24	3.23	3.28	3.01	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.58	1.67	1.44	1.90	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.56	1.90	1.56	1.81	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0122	0.0144	0.0173	0.0166	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	WQ10	DC-05	DC-10	DC-15	----
					Client sampling date / time	06-Dec-2022	06-Dec-2022	06-Dec-2022	06-Dec-2022	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9769-001	VA22C9769-002	VA22C9769-003	VA22C9769-004	--------
						Result	Result	Result	Result	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00060	0.00060	0.00056	0.00059	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00804	0.00846	0.00904	0.00988	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L		15.3	16.0	16.1	18.2	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L		0.045	0.046	0.037	0.033	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	----
magnesium, total	7439-95-4	E420	0.100	mg/L		3.07	3.27	3.41	4.12	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00329	0.00425	0.00410	0.00681	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000950	0.000977	0.000982	0.000899	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	0.052	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.501	0.738	0.517	0.610	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000084	0.000066	0.000072	0.000058	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.42	6.60	6.71	7.02	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.52	3.73	3.70	4.02	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.103	0.106	0.110	0.116	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.04	1.15	1.16	0.98	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000323	0.000328	0.000343	0.000271	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00055	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	WQ10	DC-05	DC-10	DC-15	----
					Client sampling date / time	06-Dec-2022	06-Dec-2022	06-Dec-2022	06-Dec-2022	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9769-001	VA22C9769-002	VA22C9769-003	VA22C9769-004	--------
						Result	Result	Result	Result	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0086	0.0079	0.0078	0.0050	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00054	0.00049	0.00049	0.00046	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00781	0.00817	0.00842	0.00903	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		15.0	15.0	15.2	17.3	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.031	0.028	0.021	0.014	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.93	2.93	3.00	3.60	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00228	0.00272	0.00242	0.00384	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000950	0.000961	0.000936	0.000819	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.468	0.493	0.459	0.527	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000060	0.000083	<0.000050	0.000055	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.50	6.57	6.46	6.86	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.56	3.62	3.51	3.66	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0991	0.102	0.100	0.106	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	WQ10	DC-05	DC-10	DC-15	----
					Client sampling date / time	06-Dec-2022	06-Dec-2022	06-Dec-2022	06-Dec-2022	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9769-001	VA22C9769-002	VA22C9769-003	VA22C9769-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.96	1.16	0.86	0.87	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00028 DTC	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000330	0.000327	0.000332	0.000256	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9769**	Page	: 1 of 22
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 08-Dec-2022 09:00
PO	: 10857	Issue Date	: 19-Dec-2022 10:46
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Anions and Nutrients	QC-775352-002	----	phosphorus, total	7723-14-0	E372-U	0.494 % RRQC	80.0-120%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
RRQC	Refer to report comments for information regarding this QC result.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-05	E298	06-Dec-2022	12-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-10	E298	06-Dec-2022	12-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-15	E298	06-Dec-2022	12-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WQ10	E298	06-Dec-2022	12-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-05	E235.Br-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-10	E235.Br-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-15	E235.Br-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WQ10	E235.Br-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-05	E235.Cl	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-10	E235.Cl	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-15	E235.Cl	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WQ10	E235.Cl	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-05	E378-U	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-10	E378-U	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-15	E378-U	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE WQ10	E378-U	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-05	E235.F	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-10	E235.F	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-15	E235.F	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WQ10	E235.F	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-05	E235.NO3-L	06-Dec-2022	08-Dec-2022	3 days	3 days	✓	09-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-10	E235.NO3-L	06-Dec-2022	08-Dec-2022	3 days	3 days	✓	09-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-15	E235.NO3-L	06-Dec-2022	08-Dec-2022	3 days	3 days	✓	09-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WQ10	E235.NO3-L	06-Dec-2022	08-Dec-2022	3 days	3 days	✓	09-Dec-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-05	E235.NO2-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-10	E235.NO2-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-15	E235.NO2-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE WQ10	E235.NO2-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-05	E235.SO4	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-10	E235.SO4	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE DC-15	E235.SO4	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE WQ10	E235.SO4	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-05	E318	06-Dec-2022	12-Dec-2022	----	----		18-Dec-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-10	E318	06-Dec-2022	12-Dec-2022	----	----		18-Dec-2022	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-15	E318	06-Dec-2022	12-Dec-2022	----	----		18-Dec-2022	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) WQ10	E318	06-Dec-2022	12-Dec-2022	----	----		18-Dec-2022	28 days	12 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-05	E372-U	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-10	E372-U	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-15	E372-U	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) WQ10	E372-U	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-05	E344	06-Dec-2022	----	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-10	E344	06-Dec-2022	----	----	----		08-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-15	E344	06-Dec-2022	----	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) WQ10	E344	06-Dec-2022	----	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E333	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-10	E333	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-15	E333	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) WQ10	E333	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-05	E336	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-10	E336	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) DC-15	E336	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) WQ10	E336	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-05	E509	06-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-10	E509	06-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-15	E509	06-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) WQ10	E509	06-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-05	E421	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-10	E421	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DC-15	E421	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) WQ10	E421	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-05	E358-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-10	E358-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DC-15	E358-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) WQ10	E358-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-05	E355-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-10	E355-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-15	E355-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) WQ10	E355-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-05	E283	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE DC-10	E283	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-15	E283	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE WQ10	E283	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-05	E290	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-10	E290	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-15	E290	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE WQ10	E290	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-05	E100	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-10	E100	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE DC-15	E100	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE WQ10	E100	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE DC-05	E108	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	0.25 hrs	1.05 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-10	E108	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	0.25 hrs	1.05 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-15	E108	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	0.25 hrs	1.05 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE WQ10	E108	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	0.25 hrs	1.05 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE DC-05	E162	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-10	E162	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TDS by Gravimetry										
HDPE DC-15	E162	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE WQ10	E162	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-05	E160	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-10	E160	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE DC-15	E160	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE WQ10	E160	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-05	E121	06-Dec-2022	----	----	----		08-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-10	E121	06-Dec-2022	----	----	----		08-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE DC-15	E121	06-Dec-2022	----	----	----		08-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE WQ10	E121	06-Dec-2022	----	----	----		08-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-05	E508	06-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-10	E508	06-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) DC-15	E508	06-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) WQ10	E508	06-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-05	E420	06-Dec-2022	09-Dec-2022	----	----		10-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-10	E420	06-Dec-2022	09-Dec-2022	----	----		10-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-15	E420	06-Dec-2022	09-Dec-2022	----	----		10-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) WQ10	E420	06-Dec-2022	09-Dec-2022	----	----		10-Dec-2022	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)							
Acidity by Titration	E283	772566	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	772555	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Conductivity in Water	E100	772556	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
pH by Meter	E108	772554	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	772881	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774909	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773336	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	772883	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	772617	1	15	6.6	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	772566	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	772555	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Conductivity in Water	E100	772556	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
pH by Meter	E108	772554	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	772881	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774909	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773336	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	772883	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	772617	1	15	6.6	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	772566	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	772555	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Conductivity in Water	E100	772556	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	772881	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774909	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773336	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	772883	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	772617	1	15	6.6	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
Thiocyanate by Colourimetry	E344	772477	1	19	5.2	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774909	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773336	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **VA22C9769**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 08-Dec-2022 09:00
PO	: 10857	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: ----	Issue Date	: 19-Dec-2022 10:46
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **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: 772554)											
FJ2203377-003	Anonymous	pH	----	E108	0.10	pH units	8.07	8.07	0.00%	4%	----
Physical Tests (QC Lot: 772555)											
FJ2203377-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	78.2	77.8	0.513%	20%	----
Physical Tests (QC Lot: 772556)											
FJ2203377-003	Anonymous	conductivity	----	E100	2.0	µS/cm	185	182	1.31%	10%	----
Physical Tests (QC Lot: 772566)											
VA22C9769-002	DC-05	acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	2.3	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 772617)											
VA22C9513-003	Anonymous	turbidity	----	E121	0.10	NTU	0.44	0.40	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 772881)											
FJ2203396-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	189	203	14	Diff <2x LOR	----
Physical Tests (QC Lot: 772883)											
FJ2203396-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772557)											
FJ2203377-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.039	0.039	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772558)											
FJ2203377-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772559)											
FJ2203377-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772560)											
FJ2203377-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0692	0.0744	7.38%	20%	----
Anions and Nutrients (QC Lot: 772561)											
FJ2203377-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772562)											
FJ2203377-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	14.0	13.8	1.52%	20%	----
Anions and Nutrients (QC Lot: 772564)											
FJ2203377-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 775352)											
KS2204619-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	2.28	2.27	0.505%	20%	----
Anions and Nutrients (QC Lot: 775353)											

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*
Anions and Nutrients (QC Lot: 775353) - continued											
KS2204619-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.804	0.805	0.179%	20%	----
Anions and Nutrients (QC Lot: 775354)											
KS2204646-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.605	0.614	1.55%	20%	----
Cyanides (QC Lot: 772477)											
VA22C9460-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 772646)											
VA22C9773-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 772647)											
VA22C9773-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 775350)											
KS2204623-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 775351)											
KS2204623-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	0.68	0.008	Diff <2x LOR	----
Total Metals (QC Lot: 773336)											
VA22C9732-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0613	0.0582	5.26%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00017	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0483	0.0476	1.43%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000073	0.0000066	0.0000007	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	22.7	22.7	0.0413%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.00066	0.00060	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.116	0.107	7.63%	20%	----
		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	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.47	1.44	2.02%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0102	0.00998	2.21%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00159	0.00161	0.995%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	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: 773336) - continued											
VA22C9732-001	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.09	2.05	1.92%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000264	0.000313	0.000049	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.95	3.00	1.52%	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	1.03	1.01	2.06%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0833	0.0866	3.93%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	4.04	4.18	0.14	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00429	0.00369	15.2%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000926	0.000929	0.280%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 774909)											
VA22C9571-003	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000054	0.0000052	0.0000001	Diff <2x LOR	----
Total Metals (QC Lot: 774910)											
VA22C9769-003	DC-10	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 774119)											
FJ2203377-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 774600)											
FJ2203417-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.126	0.126	0.673%	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	0.0000261	0.0000334	0.0000072	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	80.0	77.9	2.62%	20%	----
		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	0.069	0.070	0.0008	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: 774600) - continued											
FJ2203417-001	Anonymous	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	0.0133	0.0131	1.99%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	28.4	28.5	0.214%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0227	0.0225	0.933%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00208	0.00210	0.824%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00058	0.00058	0.000002	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	0.694	0.707	1.98%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00252	0.00274	8.59%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.11	0.351%	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	12.7	12.8	0.334%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.322	0.344	6.91%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	51.0	50.4	1.24%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000968	0.000958	1.01%	20%	----
		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	----

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: 772555)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.4	----
Physical Tests (QCLot: 772556)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 772566)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 772617)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 772881)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 772883)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 772557)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 772558)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 772559)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 772560)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 772561)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 772562)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 772564)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 775352)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 775353)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 775354)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Cyanides (QCLot: 772477)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 772477) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 772646)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 772647)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 775350)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 775351)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 773336)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 773336) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 774909)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 774910)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 774119)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 774600)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 774600) - continued						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 772554)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 772555)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 772556)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.5	90.0	110	----
Physical Tests (QCLot: 772566)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	101	85.0	115	----
Physical Tests (QCLot: 772617)									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
Physical Tests (QCLot: 772881)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.3	85.0	115	----
Physical Tests (QCLot: 772883)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.8	85.0	115	----
Anions and Nutrients (QCLot: 772557)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.9	90.0	110	----
Anions and Nutrients (QCLot: 772558)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 772559)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.3	85.0	115	----
Anions and Nutrients (QCLot: 772560)									
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: 772561)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.8	90.0	110	----
Anions and Nutrients (QCLot: 772562)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 772564)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.4	80.0	120	----
Anions and Nutrients (QCLot: 775352)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	# 0.494	80.0	120	RRQC
Anions and Nutrients (QCLot: 775353)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.6	85.0	115	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 775354)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.1	75.0	125	----
Cyanides (QCLot: 772477)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Cyanides (QCLot: 772646)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.5	80.0	120	----
Cyanides (QCLot: 772647)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	104	80.0	120	----
Organic / Inorganic Carbon (QCLot: 775350)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 775351)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 773336)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	97.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 773336) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.7	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.6	80.0	120	----
Total Metals (QCLot: 774909)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
Total Metals (QCLot: 774910)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----
Dissolved Metals (QCLot: 774600)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	92.9	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	89.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.2	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	94.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	93.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	92.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	93.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	93.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 774600) - continued									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	92.2	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	99.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	93.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	91.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	86.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	94.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	91.6	80.0	120	----

Qualifiers

Qualifier	Description
RRQC	*Refer to report comments for information regarding this QC result.*

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: 772557)										
FJ2203377-002	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772558)										
FJ2203377-002	Anonymous	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772559)										
FJ2203377-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772560)										
FJ2203377-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772561)										
FJ2203377-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.496 mg/L	0.5 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 772562)										
FJ2203377-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 772564)										
FJ2203377-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0288 mg/L	0.03 mg/L	96.0	70.0	130	----
Anions and Nutrients (QCLot: 775352)										
KS2204623-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0452 mg/L	0.05 mg/L	90.4	70.0	130	----
Anions and Nutrients (QCLot: 775353)										
KS2204623-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0988 mg/L	0.1 mg/L	98.8	75.0	125	----
Anions and Nutrients (QCLot: 775354)										
KS2204646-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.42 mg/L	2.5 mg/L	96.7	70.0	130	----
Cyanides (QCLot: 772477)										
VA22C9460-002	Anonymous	thiocyanate	302-04-5	E344	7.87 mg/L	10 mg/L	78.7	75.0	125	----
Cyanides (QCLot: 772646)										
VA22C9773-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.234 mg/L	0.25 mg/L	93.8	75.0	125	----
Cyanides (QCLot: 772647)										
VA22C9773-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.127 mg/L	0.125 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 775350)										
KS2204623-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.40 mg/L	5 mg/L	108	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
Organic / Inorganic Carbon (QCLot: 775351)										
KS2204623-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.11 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 773336)										
VA22C9745-012	Anonymous	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	97.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		barium, total	7440-39-3	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		boron, total	7440-42-8	E420	0.099 mg/L	0.1 mg/L	99.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		calcium, total	7440-70-2	E420	3.83 mg/L	4 mg/L	95.7	70.0	130	----
		chromium, total	7440-47-3	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0920 mg/L	0.1 mg/L	92.0	70.0	130	----
		magnesium, total	7439-95-4	E420	0.966 mg/L	1 mg/L	96.6	70.0	130	----
		manganese, total	7439-96-5	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.18 mg/L	10 mg/L	91.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.7	70.0	130	----
		selenium, total	7782-49-2	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, total	7440-21-3	E420	9.22 mg/L	10 mg/L	92.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		sodium, total	7440-23-5	E420	1.98 mg/L	2 mg/L	99.1	70.0	130	----
		strontium, total	7440-24-6	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		sulfur, total	7704-34-9	E420	19.0 mg/L	20 mg/L	94.8	70.0	130	----
		thallium, total	7440-28-0	E420	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0385 mg/L	0.04 mg/L	96.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.403 mg/L	0.4 mg/L	101	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: 774909)										
VA22C9571-004	Anonymous	mercury, total	7439-97-6	E508	0.000908 mg/L	0.001 mg/L	90.8	70.0	130	----
Total Metals (QCLot: 774910)										
VA22C9769-004	DC-15	mercury, total	7439-97-6	E508	0.0000980 mg/L	0.0001 mg/L	98.0	70.0	130	----
Dissolved Metals (QCLot: 774119)										
FJ2203377-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000990 mg/L	0.0001 mg/L	99.0	70.0	130	----
Dissolved Metals (QCLot: 774600)										
FJ2203417-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.942 mg/L	1 mg/L	94.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0931 mg/L	0.1 mg/L	93.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0961 mg/L	0.1 mg/L	96.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0913 mg/L	0.1 mg/L	91.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0439 mg/L	0.05 mg/L	87.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.448 mg/L	0.5 mg/L	89.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.187 mg/L	0.2 mg/L	93.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0918 mg/L	0.1 mg/L	91.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0879 mg/L	0.1 mg/L	87.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0891 mg/L	0.1 mg/L	89.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.494 mg/L	0.5 mg/L	98.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	5 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0930 mg/L	0.1 mg/L	93.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.179 mg/L	0.2 mg/L	89.7	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	48.9 mg/L	50 mg/L	97.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	18.7 mg/L	20 mg/L	93.7	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	48.8 mg/L	50 mg/L	97.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0175 mg/L	0.02 mg/L	87.7	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	100 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0189 mg/L	0.02 mg/L	94.4	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: 774600) - continued										
FJ2203417-002	Anonymous	tin, dissolved	7440-31-5	E421	0.0926 mg/L	0.1 mg/L	92.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.488 mg/L	0.5 mg/L	97.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	1.78 mg/L	2 mg/L	89.0	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

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Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	ERM	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Tonia Robb	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐ / 3 day [P3] ☐ / 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐ / Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	604-689-9460	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	15th Floor, 1111 West Hastings St	Email 1 or Fax: Tonia.Robb@erm.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Vancouver, BC	Email 2: tdesormeaux@artemisgoldinc.com	
Postal Code:	V6E 2J3	Email 3: ktanaka@artemisgoldinc.com	
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Distribution**	**Analysis Request**
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	Artemis Gold Ltd, Blackwater	Email 1 or Fax: tdesormeaux@artemisgoldinc.com	
Contact:	Travis Desormeaux	Email 2: accounts@artemisgoldinc.com	
Project Information		**Oil and Gas Required Fields (client use)**	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	9769	**ALS Contact:** A. Springer	**Sampler:**

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate	Number of Containers
					P	F/P	P		F		F	P		
	WQ10	6-Dec-22		Water	R	R	R	R	R	R	R	R	R	9
	DC-05	6-Dec-22		Water	R	R	R	R	R	R	R	R	R	9
	DC-10	6-Dec-22		Water	R	R	R	R	R	R	R	R	R	9
	DC-15	6-Dec-22		Water	R	R	R	R	R	R	R	R	R	9
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										

Environmental Division
Vancouver
Work Order Reference
VA22C9769

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	SAMPLE CONDITION AS RECEIVED (lab use only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO		Frozen ☐ SIF Observations Yes ☐ No ☐
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.	Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐ Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			3		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: <Original signed by>	Date: Dec 7 22	Time: 0630	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 8 Dec 22	Time: 9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

COC Number: 15 -

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
	☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	9769	ALS Contact: A. Springer	Sampler:

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	WQ10	6-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-05	6-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-10	6-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-15	6-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division Vancouver
Work Order Reference
VA22C9769

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	Please also email reports to Envirogeneral@artemisgoldinc.com Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			3		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: <Original signed by>	Date: Dec 7 22	Time: 0830	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 8 Dec 22	Time: 9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9771**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 08-Dec-2022 09:00
PO	: 10857	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: ----	Issue Date	: 19-Dec-2022 10:49
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Qammar Almas	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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

The laboratory control standard (LCS) recovery outside of data quality objectives for total phosphate, E372, is not indicative of an analytical issue with the associated samples. Other positive controls were within data quality objectives and the bias in the LCS was known to be isolated to the LCS itself.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-04	----	----	----	----
					Client sampling date / time	06-Dec-2022	----	----	----	----
						VA22C9771-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.6	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		38.2	----	----	----	----
conductivity	----	E100	2.0	µS/cm		80.2	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		32.7	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		35.3	----	----	----	----
pH	----	E108	0.10	pH units		7.59	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		70	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU		0.32	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.041	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.058	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0106	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0144	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2.13	----	----	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.94	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		2.10	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0337	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00012	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-04	----	----	----	----
					Client sampling date / time	06-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9771-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00110	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00454	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000163	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		9.94	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.054	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		2.54	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00723	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000605	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.511	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		8.20	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.36	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0622	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		0.74	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00071	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000062	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00066	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-04	----	----	----	----
					Client sampling date / time	06-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9771-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0059	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0178	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00099	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00429	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000137	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		9.17	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.034	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.38	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00500	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000625	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.515	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		8.28	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.46	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0597	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-04	----	----	----	----
					Client sampling date / time	06-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9771-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.60	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000051	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0048	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9771**	Page	: 1 of 14
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
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Project	: 0332945-0102-0001	Date Samples Received	: 08-Dec-2022 09:00
PO	: 10857	Issue Date	: 19-Dec-2022 10:47
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Anions and Nutrients	QC-775352-002	----	phosphorus, total	7723-14-0	E372-U	0.494 % RRQC	80.0-120%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
RRQC	Refer to report comments for information regarding this QC result.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-04	E298	06-Dec-2022	12-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-04	E235.Br-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-04	E235.Cl	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-04	E378-U	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-04	E235.F	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-04	E235.NO3-L	06-Dec-2022	08-Dec-2022	3 days	3 days	✓	09-Dec-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-04	E235.NO2-L	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-04	E235.SO4	06-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 661-04	E318	06-Dec-2022	12-Dec-2022	----	----		18-Dec-2022	28 days	12 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-04	E372-U	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-04	E344	06-Dec-2022	----	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E333	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-04	E336	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-04	E509	06-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-04	E421	06-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-04	E358-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-04	E355-L	06-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	6 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-04	E283	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-04	E290	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-04	E100	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 661-04	E108	06-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	0.25 hrs	1.05 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-04	E162	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-04	E160	06-Dec-2022	----	----	----		13-Dec-2022	7 days	8 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-04	E121	06-Dec-2022	----	----	----		08-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
661-04	E508	06-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
661-04	E420	06-Dec-2022	09-Dec-2022	----	----		10-Dec-2022	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)							
Acidity by Titration	E283	772566	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	772555	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Conductivity in Water	E100	772556	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774601	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
pH by Meter	E108	772554	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	772882	1	10	10.0	5.0	✓
Thiocyanate by Colourimetry	E344	772661	1	5	20.0	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774910	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773709	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	772884	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	772617	1	15	6.6	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	772566	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	772555	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Conductivity in Water	E100	772556	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774601	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
pH by Meter	E108	772554	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	772882	1	10	10.0	5.0	✓
Thiocyanate by Colourimetry	E344	772661	1	5	20.0	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774910	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773709	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	772884	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	772617	1	15	6.6	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	772566	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	772555	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Conductivity in Water	E100	772556	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774601	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	772882	1	10	10.0	5.0	✓
Thiocyanate by Colourimetry	E344	772661	1	5	20.0	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774910	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773709	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	772884	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	772617	1	15	6.6	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	775353	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	772559	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	772558	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	774119	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774601	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	775350	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	772564	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	772557	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	772560	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	772561	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772562	1	16	6.2	5.0	✓
Thiocyanate by Colourimetry	E344	772661	1	5	20.0	5.0	✓
Total Cyanide	E333	772646	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	775354	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	774910	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	773709	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	775351	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	775352	1	17	5.8	5.0	✓
WAD Cyanide	E336	772647	1	7	14.2	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca /Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C9771**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 08-Dec-2022 09:00
PO	: 10857	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: ----	Issue Date	: 19-Dec-2022 10:46
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **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: 772554)											
FJ2203377-003	Anonymous	pH	----	E108	0.10	pH units	8.07	8.07	0.00%	4%	----
Physical Tests (QC Lot: 772555)											
FJ2203377-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	78.2	77.8	0.513%	20%	----
Physical Tests (QC Lot: 772556)											
FJ2203377-003	Anonymous	conductivity	----	E100	2.0	µS/cm	185	182	1.31%	10%	----
Physical Tests (QC Lot: 772566)											
VA22C9769-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	2.3	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 772617)											
VA22C9513-003	Anonymous	turbidity	----	E121	0.10	NTU	0.44	0.40	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 772882)											
VA22C9771-001	661-04	solids, total dissolved [TDS]	----	E162	13	mg/L	70	72	2	Diff <2x LOR	----
Physical Tests (QC Lot: 772884)											
VA22C9771-001	661-04	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772557)											
FJ2203377-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.039	0.039	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772558)											
FJ2203377-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772559)											
FJ2203377-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772560)											
FJ2203377-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0692	0.0744	7.38%	20%	----
Anions and Nutrients (QC Lot: 772561)											
FJ2203377-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772562)											
FJ2203377-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	14.0	13.8	1.52%	20%	----
Anions and Nutrients (QC Lot: 772564)											
FJ2203377-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 775352)											
KS2204619-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	2.28	2.27	0.505%	20%	----
Anions and Nutrients (QC Lot: 775353)											

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*
Anions and Nutrients (QC Lot: 775353) - continued											
KS2204619-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.804	0.805	0.179%	20%	----
Anions and Nutrients (QC Lot: 775354)											
KS2204646-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.605	0.614	1.55%	20%	----
Cyanides (QC Lot: 772646)											
VA22C9773-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 772647)											
VA22C9773-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 772661)											
VA22C9771-001	661-04	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 775350)											
KS2204623-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 775351)											
KS2204623-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	0.68	0.008	Diff <2x LOR	----
Total Metals (QC Lot: 773709)											
FJ2203413-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0072	0.0082	0.0010	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00015	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.146	0.151	3.41%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000166	0.0000218	0.0000052	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	62.4	64.3	3.00%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0098	0.0100	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	28.6	29.4	2.66%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00040	0.00042	0.00002	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000789	0.000820	3.87%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00097	0.00101	0.00004	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: 773709) - continued											
FJ2203413-001	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.830	0.843	1.58%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.0104	0.0104	0.254%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.39	1.43	2.58%	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	9.59	9.62	0.382%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.143	0.141	1.00%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	60.9	62.8	2.97%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00166	0.00170	2.83%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 774910)											
VA22C9769-003	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 774119)											
FJ2203377-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 774601)											
VA22C9771-001	661-04	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0178	0.0175	1.56%	20%	----
		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	0.00099	0.00099	0.0000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00429	0.00416	3.10%	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	0.0000137	0.0000156	0.0000018	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	9.17	9.36	2.10%	20%	----
		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	0.034	0.034	0.00007	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	----

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: 774601) - continued											
VA22C9771-001	661-04	magnesium, dissolved	7439-95-4	E421	0.100	mg/L	2.38	2.32	2.54%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00500	0.00499	0.150%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000625	0.000610	2.38%	20%	----
		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	0.100	mg/L	0.515	0.508	0.006	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	8.28	8.36	0.853%	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	3.46	3.33	3.92%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0597	0.0580	2.98%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.60	0.70	0.10	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000051	0.000053	0.000002	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	0.0048	0.0046	0.0003	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: 772555)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.4	----
Physical Tests (QCLot: 772556)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 772566)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 772617)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 772882)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 772884)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 772557)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 772558)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 772559)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 772560)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 772561)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 772562)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 772564)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 775352)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 775353)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 775354)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Cyanides (QCLot: 772646)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 772646) - continued						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 772647)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 772661)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 775350)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 775351)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 773709)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 773709) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 774910)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 774119)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 774601)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 774601) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 772554)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 772555)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 772556)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.5	90.0	110	----
Physical Tests (QCLot: 772566)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	101	85.0	115	----
Physical Tests (QCLot: 772617)									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
Physical Tests (QCLot: 772882)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.7	85.0	115	----
Physical Tests (QCLot: 772884)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.2	85.0	115	----
Anions and Nutrients (QCLot: 772557)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.9	90.0	110	----
Anions and Nutrients (QCLot: 772558)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 772559)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.3	85.0	115	----
Anions and Nutrients (QCLot: 772560)									
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: 772561)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.8	90.0	110	----
Anions and Nutrients (QCLot: 772562)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 772564)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.4	80.0	120	----
Anions and Nutrients (QCLot: 775352)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	# 0.494	80.0	120	RRQC
Anions and Nutrients (QCLot: 775353)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.6	85.0	115	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 775354)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.1	75.0	125	----
Cyanides (QCLot: 772646)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	92.5	80.0	120	----
Cyanides (QCLot: 772647)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	104	80.0	120	----
Cyanides (QCLot: 772661)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Organic / Inorganic Carbon (QCLot: 775350)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 775351)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 773709)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.8	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100	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	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	90.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.4	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.8	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.4	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	92.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	95.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	98.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 773709) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.3	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.1	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.5	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	96.2	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.1	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	93.7	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.1	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.2	80.0	120	----
Total Metals (QCLot: 774910)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----
Dissolved Metals (QCLot: 774601)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	94.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.7	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	93.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	93.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	92.1	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 774601) - continued									
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.6	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.1	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.2	80.0	120	----

Qualifiers

Qualifier	Description
RRQC	*Refer to report comments for information regarding this QC result.*

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: 772557)										
FJ2203377-002	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772558)										
FJ2203377-002	Anonymous	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772559)										
FJ2203377-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772560)										
FJ2203377-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 772561)										
FJ2203377-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.496 mg/L	0.5 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 772562)										
FJ2203377-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 772564)										
FJ2203377-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0288 mg/L	0.03 mg/L	96.0	70.0	130	----
Anions and Nutrients (QCLot: 775352)										
KS2204623-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0452 mg/L	0.05 mg/L	90.4	70.0	130	----
Anions and Nutrients (QCLot: 775353)										
KS2204623-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0988 mg/L	0.1 mg/L	98.8	75.0	125	----
Anions and Nutrients (QCLot: 775354)										
KS2204646-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.42 mg/L	2.5 mg/L	96.7	70.0	130	----
Cyanides (QCLot: 772646)										
VA22C9773-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.234 mg/L	0.25 mg/L	93.8	75.0	125	----
Cyanides (QCLot: 772647)										
VA22C9773-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.127 mg/L	0.125 mg/L	102	75.0	125	----
Cyanides (QCLot: 772661)										
VA22C9773-001	Anonymous	thiocyanate	302-04-5	E344	7.64 mg/L	10 mg/L	76.4	75.0	125	----
Organic / Inorganic Carbon (QCLot: 775350)										
KS2204623-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.40 mg/L	5 mg/L	108	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
Organic / Inorganic Carbon (QCLot: 775351)										
KS2204623-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.11 mg/L	5 mg/L	102	70.0	130	----
Total Metals (QCLot: 773709)										
FJ2203413-002	Anonymous	aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	99.1	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100.0	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	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00946 mg/L	0.01 mg/L	94.6	70.0	130	----
		boron, total	7440-42-8	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.0930 mg/L	0.1 mg/L	93.0	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	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		nickel, total	7440-02-0	E420	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.48 mg/L	10 mg/L	94.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.0	70.0	130	----
		selenium, total	7782-49-2	E420	0.0414 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, total	7440-21-3	E420	9.49 mg/L	10 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00378 mg/L	0.004 mg/L	94.4	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	20.6 mg/L	20 mg/L	103	70.0	130	----
		thallium, total	7440-28-0	E420	0.00369 mg/L	0.004 mg/L	92.3	70.0	130	----
		tin, total	7440-31-5	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0986 mg/L	0.1 mg/L	98.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.387 mg/L	0.4 mg/L	96.8	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: 774910)										
VA22C9769-004	Anonymous	mercury, total	7439-97-6	E508	0.0000980 mg/L	0.0001 mg/L	98.0	70.0	130	----
Dissolved Metals (QCLot: 774119)										
FJ2203377-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000990 mg/L	0.0001 mg/L	99.0	70.0	130	----
Dissolved Metals (QCLot: 774601)										
VA22C9773-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	95.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00918 mg/L	0.01 mg/L	91.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.84 mg/L	2 mg/L	92.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0942 mg/L	0.1 mg/L	94.2	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	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0355 mg/L	0.04 mg/L	88.7	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.67 mg/L	10 mg/L	96.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.89 mg/L	4 mg/L	97.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.41 mg/L	10 mg/L	94.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00389 mg/L	0.004 mg/L	97.4	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.8 mg/L	20 mg/L	99.3	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.5	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
Dissolved Metals (QCLot: 774601) - continued										
VA22C9773-001	Anonymous	vanadium, dissolved	7440-62-2	E421	0.0928 mg/L	0.1 mg/L	92.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.363 mg/L	0.4 mg/L	90.8	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Tonia.Robb@erm.com

Email 2: tdesormeaux@artemisgoldinc.com

Email 3: ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: tdesormeaux@artemisgoldinc.com

Email 2: accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #: Q56205

Job #: VA22-BWGL100-002

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only) 9771

ALS Contact: A. Springer **Sampler:**

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate	Number of Containers
						P	F/P	P		F		F	P	
	661-04	6-Dec-22		Water	R	R	R	R	R	R	R	R	R	9
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										
				Water										

Environmental Division
Vancouver
Work Order Reference
VA22C9771

Telephone : +1 604 253 4188

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

y Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
				2	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Scott Klassen	Date: 2022-12-07	Time:	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 8/12/12	Time: 9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22C9908**	Page	: 1 of 10
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 09-Dec-2022 09:20
PO	: 10857	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: ----	Issue Date	: 21-Dec-2022 12:32
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*
PHA	*pH adjusted before analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-05	DC-20	CC-10	CC-15	CC-15-DUP
					Client sampling date / time	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022
						VA22C9908-001	VA22C9908-002	VA22C9908-003	VA22C9908-004	VA22C9908-005
						Result	Result	Result	Result	Result
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	2.2	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		51.6	71.2	78.6	71.7	71.5
conductivity	----	E100	2.0	µS/cm		102	149	166	151	151
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		41.5	63.7	73.6	65.5	69.4
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		42.3	68.4	75.1	69.3	70.6
pH	----	E108	0.10	pH units		7.74	7.69	7.86	7.74	7.75
solids, total dissolved [TDS]	----	E162	10	mg/L		74	99	106	108	100
solids, total suspended [TSS]	----	E160	3.0	mg/L		4.5	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU		1.21	0.56	0.46	0.73	0.72
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0051	<0.0050	0.0077	0.0113	0.0085
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L		0.065	0.051	0.064	0.056	0.058
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.095	0.072	0.323	0.229	0.234
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0586	0.0110	0.0725	0.0836	0.0835
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	0.0013	0.0016	0.0016
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0401	0.0042	0.0134	0.0118	0.0121
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0550	0.0103	0.0256	0.0215	0.0220
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.32	3.32	4.17	3.69	3.71
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050 PHA	<0.0050 PHA	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050 PHA	<0.0050 PHA	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.66	2.49	9.14	7.80	7.44
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		2.93	3.05	9.65	8.08	8.12
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0580	0.0111	0.0042	0.0155	0.0166
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-05	DC-20	CC-10	CC-15	CC-15-DUP
					Client sampling date / time	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022
						VA22C9908-001	VA22C9908-002	VA22C9908-003	VA22C9908-004	VA22C9908-005
						Result	Result	Result	Result	Result
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00128	0.00042	0.00056	0.00054	0.00055
barium, total	7440-39-3	E420	0.00010	mg/L		0.00508	0.0109	0.00609	0.00721	0.00735
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L		12.2	19.6	21.5	20.0	20.4
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L		0.170	0.172	0.027	0.115	0.116
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.100	mg/L		2.88	4.72	5.21	4.70	4.77
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0119	0.0453	0.00830	0.0231	0.0233
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000875	0.000857	0.000637	0.000649	0.000652
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.066	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		0.512	0.706	0.850	0.827	0.820
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000072	0.000056	0.000066	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L		8.88	7.60	5.43	5.68	5.70
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		3.75	4.12	3.85	3.59	3.60
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0852	0.119	0.108	0.105	0.106
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	0.95	1.37	1.15	1.20
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00157	0.00032	<0.00030	0.00064	0.00060
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000230	0.000267	0.000098	0.000117	0.000116
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00191	<0.00050	<0.00050	<0.00050	<0.00050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-05	DC-20	CC-10	CC-15	CC-15-DUP
					Client sampling date / time	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022
						VA22C9908-001	VA22C9908-002	VA22C9908-003	VA22C9908-004	VA22C9908-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00089	<0.00050	<0.00050	<0.00050	<0.00050
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0120	0.0059	0.0015	0.0024	0.0021
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00115	0.00035	0.00058	0.00052	0.00050
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00424	0.0105	0.00559	0.00715	0.00694
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000052	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		11.7	17.6	20.8	18.6	19.9
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		0.00072	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	0.00022	0.00032	0.00032	0.00038
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.053	0.116	0.012	0.068	0.066
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		2.98	4.80	5.26	4.62	4.78
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00618	0.0466	0.00286	0.0204	0.0200
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000835	0.000834	0.000592	0.000648	0.000642
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.545	0.762	0.907	0.882	0.878
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000063	<0.000050	0.000060	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		8.50	7.13	5.08	5.44	5.35
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.79	4.39	3.98	3.67	3.67
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0784	0.116	0.103	0.106	0.103

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-05	DC-20	CC-10	CC-15	CC-15-DUP
					Client sampling date / time	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022	07-Dec-2022
						VA22C9908-001	VA22C9908-002	VA22C9908-003	VA22C9908-004	VA22C9908-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	1.05	1.13	1.17	1.14
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00032	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000194	0.000260	0.000097	0.000110	0.000109
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00165	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	07-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9908-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.1	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		<1.0	----	----	----	----
conductivity	----	E100	2.0	µS/cm		<2.0	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		<0.60	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		<0.60	----	----	----	----
pH	----	E108	0.10	pH units		5.34	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		<10	----	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU		<0.10	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		<0.020	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		<0.050	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		<0.0020	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		<0.30	----	----	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		<0.50	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		<0.50	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		<0.0030	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	07-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9908-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		<0.00010	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		<0.00010	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		<0.050	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		<0.100	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		<0.000050	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		<0.100	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		<0.10	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		<0.050	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		<0.00020	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	07-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9908-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		<0.00010	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		<0.00010	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		<0.050	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		<0.100	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		<0.000050	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		<0.100	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		<0.050	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		<0.050	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		<0.00020	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Field Blank	----	----	----	----
					Client sampling date / time	07-Dec-2022	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22C9908-006	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00021 DTMF	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		<0.000010	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22C9908**	Page	: 1 of 27
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 09-Dec-2022 09:20
PO	: 10857	Issue Date	: 21-Dec-2022 12:32
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-05	E298	07-Dec-2022	13-Dec-2022	----	----		16-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-10	E298	07-Dec-2022	13-Dec-2022	----	----		16-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-15	E298	07-Dec-2022	13-Dec-2022	----	----		16-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-15-DUP	E298	07-Dec-2022	13-Dec-2022	----	----		16-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) DC-20	E298	07-Dec-2022	13-Dec-2022	----	----		16-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	07-Dec-2022	13-Dec-2022	----	----		16-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-05	E235.Br-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-10	E235.Br-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-15	E235.Br-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-15-DUP	E235.Br-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE DC-20	E235.Br-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-05	E235.Cl	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-10	E235.Cl	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-15	E235.Cl	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-15-DUP	E235.Cl	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE DC-20	E235.Cl	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-05	E378-U	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-10	E378-U	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-15	E378-U	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-15-DUP	E378-U	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE DC-20	E378-U	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Field Blank	E378-U	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-05	E235.F	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-10	E235.F	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-15	E235.F	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-15-DUP	E235.F	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DC-20	E235.F	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-05	E235.NO3-L	07-Dec-2022	10-Dec-2022	3 days	3 days	✓	10-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-10	E235.NO3-L	07-Dec-2022	10-Dec-2022	3 days	3 days	✓	10-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-15	E235.NO3-L	07-Dec-2022	10-Dec-2022	3 days	3 days	✓	10-Dec-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-15-DUP	E235.NO3-L	07-Dec-2022	10-Dec-2022	3 days	3 days	✓	10-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DC-20	E235.NO3-L	07-Dec-2022	10-Dec-2022	3 days	3 days	✓	10-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	07-Dec-2022	10-Dec-2022	3 days	3 days	✓	10-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-05	E235.NO2-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-10	E235.NO2-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-15	E235.NO2-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-15-DUP	E235.NO2-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DC-20	E235.NO2-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
661-05	E235.SO4	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-10	E235.SO4	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-15	E235.SO4	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-15-DUP	E235.SO4	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
DC-20	E235.SO4	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Field Blank	E235.SO4	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-05	E318	07-Dec-2022	13-Dec-2022	----	----		20-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-10	E318	07-Dec-2022	13-Dec-2022	----	----		20-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-15	E318	07-Dec-2022	13-Dec-2022	----	----		20-Dec-2022	28 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) CC-15-DUP	E318	07-Dec-2022	13-Dec-2022	----	----		20-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) DC-20	E318	07-Dec-2022	13-Dec-2022	----	----		20-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E318	07-Dec-2022	13-Dec-2022	----	----		20-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 661-05	E372-U	07-Dec-2022	13-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-10	E372-U	07-Dec-2022	13-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-15	E372-U	07-Dec-2022	13-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CC-15-DUP	E372-U	07-Dec-2022	13-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) DC-20	E372-U	07-Dec-2022	13-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Field Blank	E372-U	07-Dec-2022	13-Dec-2022	----	----		14-Dec-2022	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) 661-05	E344	07-Dec-2022	----	----	----		11-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-10	E344	07-Dec-2022	----	----	----		11-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-15	E344	07-Dec-2022	----	----	----		11-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) CC-15-DUP	E344	07-Dec-2022	----	----	----		11-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) DC-20	E344	07-Dec-2022	----	----	----		11-Dec-2022	14 days	4 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid) Field Blank	E344	07-Dec-2022	----	----	----		11-Dec-2022	14 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-05	E333	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-10	E333	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-15	E333	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-15-DUP	E333	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-20	E333	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Field Blank	E333	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-05	E336	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-10	E336	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-15	E336	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-15-DUP	E336	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
DC-20	E336	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
Field Blank	E336	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-05	E509	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-10	E509	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-15	E509	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-15-DUP	E509	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) DC-20	E509	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Field Blank	E509	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-05	E421	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-10	E421	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-15	E421	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
CC-15-DUP	E421	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
DC-20	E421	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Field Blank	E421	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
661-05	E358-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-10	E358-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-15	E358-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
CC-15-DUP	E358-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
DC-20	E358-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
Field Blank	E358-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-05	E355-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-10	E355-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-15	E355-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-15-DUP	E355-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) DC-20	E355-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	07-Dec-2022	13-Dec-2022	----	----		13-Dec-2022	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-05	E283	07-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-10	E283	07-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-15	E283	07-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE CC-15-DUP	E283	07-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE DC-20	E283	07-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE Field Blank	E283	07-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-05	E290	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-10	E290	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-15	E290	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-15-DUP	E290	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DC-20	E290	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 661-05	E100	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-10	E100	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-15	E100	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-15-DUP	E100	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE DC-20	E100	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 661-05	E108	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	0.25 hrs	8.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-10	E108	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	0.25 hrs	8.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-15	E108	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	0.25 hrs	8.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE CC-15-DUP	E108	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	0.25 hrs	8.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DC-20	E108	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	0.25 hrs	8.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	0.25 hrs	8.25 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE 661-05	E162	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE CC-10	E162	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE CC-15	E162	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE CC-15-DUP	E162	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE DC-20	E162	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE 661-05	E160	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE CC-10	E160	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE CC-15	E160	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE CC-15-DUP	E160	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE DC-20	E160	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	07-Dec-2022	----	----	----		16-Dec-2022	7 days	9 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE 661-05	E121	07-Dec-2022	----	----	----		10-Dec-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-10	E121	07-Dec-2022	----	----	----		10-Dec-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-15	E121	07-Dec-2022	----	----	----		10-Dec-2022	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE										
CC-15-DUP	E121	07-Dec-2022	----	----	----		10-Dec-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
DC-20	E121	07-Dec-2022	----	----	----		10-Dec-2022	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Field Blank	E121	07-Dec-2022	----	----	----		10-Dec-2022	3 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
661-05	E508	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-10	E508	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-15	E508	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
CC-15-DUP	E508	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
DC-20	E508	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Field Blank	E508	07-Dec-2022	11-Dec-2022	----	----		11-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-05	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-10	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-15	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-15-DUP	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) DC-20	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	774230	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	774228	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	777205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	774233	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	774232	1	14	7.1	5.0	✓
Conductivity in Water	E100	774229	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	775122	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774618	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	777206	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	774239	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	774231	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	774234	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	774235	1	17	5.8	5.0	✓
pH by Meter	E108	774227	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	774236	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	777646	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	774934	2	30	6.6	5.0	✓
Total Cyanide	E333	775295	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	777203	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	774911	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	774594	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	777207	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	777204	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	777645	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	774368	1	20	5.0	5.0	✓
WAD Cyanide	E336	775296	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	774230	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	774228	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	777205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	774233	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	774232	1	14	7.1	5.0	✓
Conductivity in Water	E100	774229	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	775122	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774618	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	777206	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	774239	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	774231	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	774234	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	774235	1	17	5.8	5.0	✓
pH by Meter	E108	774227	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	774236	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	777646	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	774934	2	30	6.6	5.0	✓
Total Cyanide	E333	775295	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	777203	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	774911	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	774594	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	777207	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	777204	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	777645	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	774368	1	20	5.0	5.0	✓
WAD Cyanide	E336	775296	1	12	8.3	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	774230	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	774228	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	777205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	774233	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	774232	1	14	7.1	5.0	✓
Conductivity in Water	E100	774229	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	775122	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774618	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	777206	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	774239	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	774231	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	774234	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	774235	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	774236	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	777646	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	774934	2	30	6.6	5.0	✓
Total Cyanide	E333	775295	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	777203	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	774911	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	774594	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	777207	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	777204	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	777645	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	774368	1	20	5.0	5.0	✓
WAD Cyanide	E336	775296	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	777205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	774233	1	13	7.6	5.0	✓
Chloride in Water by IC	E235.Cl	774232	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	775122	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	774618	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	777206	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	774239	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	774231	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	774234	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	774235	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	774236	1	17	5.8	5.0	✓
Thiocyanate by Colourimetry	E344	774934	2	30	6.6	5.0	✓
Total Cyanide	E333	775295	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	777203	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	774911	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	774594	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	777207	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	777204	1	20	5.0	5.0	✓
WAD Cyanide	E336	775296	1	12	8.3	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
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22C9908**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 09-Dec-2022 09:20
PO	: 10857	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: ----	Issue Date	: 21-Dec-2022 12:32
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 774227)											
VA22C9908-003	CC-10	pH	----	E108	0.10	pH units	7.86	7.86	0.00%	4%	----
Physical Tests (QC Lot: 774228)											
VA22C9908-003	CC-10	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	78.6	78.5	0.129%	20%	----
Physical Tests (QC Lot: 774229)											
VA22C9908-003	CC-10	conductivity	----	E100	2.0	µS/cm	166	164	0.606%	10%	----
Physical Tests (QC Lot: 774230)											
VA22C9908-002	DC-20	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.1	0.1	Diff <2x LOR	----
Physical Tests (QC Lot: 774368)											
VA22C9897-002	Anonymous	turbidity	----	E121	0.10	NTU	11.8	11.8	0.678%	15%	----
Physical Tests (QC Lot: 777645)											
VA22C9895-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	3.3	3.3	0	Diff <2x LOR	----
Physical Tests (QC Lot: 777646)											
VA22C9895-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1040	1060	2.10%	20%	----
Anions and Nutrients (QC Lot: 774231)											
VA22C9908-001	661-05	fluoride	16984-48-8	E235.F	0.020	mg/L	0.065	0.059	0.006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774232)											
VA22C9908-001	661-05	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774233)											
VA22C9908-001	661-05	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774234)											
VA22C9908-001	661-05	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0586	0.0586	0.0648%	20%	----
Anions and Nutrients (QC Lot: 774235)											
VA22C9908-001	661-05	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774236)											
VA22C9908-001	661-05	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.32	1.26	0.07	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 774239)											
VA22C9908-001	661-05	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0401	0.0396	1.34%	20%	----
Anions and Nutrients (QC Lot: 777203)											
KS2204662-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.070	0.099	0.029	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 777204)											

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*
Anions and Nutrients (QC Lot: 777204) - continued											
KS2204662-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.0998	0.0996	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 777205)											
KS2204662-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 774934)											
VA22C9460-003	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 774935)											
VA22C9908-005	CC-15-DUP	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Cyanides (QC Lot: 775295)											
VA22C9834-018	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 775296)											
VA22C9834-018	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 777206)											
KS2204662-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.03	1.04	0.006	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 777207)											
KS2204662-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.39	1.48	0.09	Diff <2x LOR	----
Total Metals (QC Lot: 774594)											
VA22C9897-002	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.715	0.668	6.77%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	0.00013	0.000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00024	0.00025	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0165	0.0164	1.16%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	9.06	9.23	1.88%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	0.00078	0.00070	0.00008	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00028	0.00028	0.000001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00190	0.00192	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.827	0.842	1.77%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000156	0.000153	0.000003	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.15	1.16	1.60%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0195	0.0196	0.853%	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: 774594) - continued											
VA22C9897-002	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000288	0.000310	0.000022	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00067	0.00071	0.00004	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.51	1.53	1.26%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.82	3.61	5.48%	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	1.54	1.56	1.01%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0430	0.0464	7.55%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.60	0.56	0.05	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.0230	0.0221	3.86%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000136	0.000136	0.369%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00156	0.00160	0.00004	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0040	0.0037	0.0003	Diff <2x LOR	----
Total Metals (QC Lot: 774911)											
VA22C9820-004	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 774618)											
VA22C9897-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0698	0.0685	2.02%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00949	0.00983	3.52%	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	8.48	8.87	4.48%	20%	----
		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	0.00102	0.00102	0.000007	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.148	0.149	0.555%	20%	----
		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	----

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: 774618) - continued											
VA22C9897-002	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.985	0.985	0.0644%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00453	0.00446	1.37%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000269	0.000260	0.000009	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	1.43	1.45	1.21%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.58	2.54	1.85%	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	1.56	1.54	1.13%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0404	0.0400	1.18%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.56	<0.50	0.06	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	0.00106	0.00108	0.00003	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000107	0.000103	4.15%	20%	----
		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	0.0011	0.0011	0.000010	Diff <2x LOR	----
Dissolved Metals (QC Lot: 775122)											
FJ2203416-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 774228)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 774229)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 774230)						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
Physical Tests (QCLot: 774368)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 777645)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 777646)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 774231)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 774232)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 774233)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 774234)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 774235)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 774236)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 774239)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 777203)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 777204)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 777205)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 774934)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 774934) - continued						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 774935)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Cyanides (QCLot: 775295)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 775296)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 777206)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 777207)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 774594)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 774594) - continued						
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 774911)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 774618)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 774618) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 775122)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 774227)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 774228)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 774229)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
Physical Tests (QCLot: 774230)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	98.8	85.0	115	----
Physical Tests (QCLot: 774368)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 777645)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	93.5	85.0	115	----
Physical Tests (QCLot: 777646)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 774231)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.4	90.0	110	----
Anions and Nutrients (QCLot: 774232)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 774233)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.3	85.0	115	----
Anions and Nutrients (QCLot: 774234)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 774235)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.7	90.0	110	----
Anions and Nutrients (QCLot: 774236)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 774239)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	100	80.0	120	----
Anions and Nutrients (QCLot: 777203)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	89.1	75.0	125	----
Anions and Nutrients (QCLot: 777204)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 777205)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.8	85.0	115	----
Cyanides (QCLot: 774934)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Cyanides (QCLot: 774935)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	103	85.0	115	----
Cyanides (QCLot: 775295)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	87.0	80.0	120	----
Cyanides (QCLot: 775296)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	93.4	80.0	120	----
Organic / Inorganic Carbon (QCLot: 777206)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 777207)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 774594)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	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	99.4	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	92.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.9	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.8	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.5	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	94.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.0	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.9	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 774594) - continued									
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	95.4	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.7	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	91.6	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	99.2	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.7	80.0	120	----
Total Metals (QCLot: 774911)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 774618)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	95.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	91.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	90.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	91.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	91.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	91.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 774618) - continued									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	89.3	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	96.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.7	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	98.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	89.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	93.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	88.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	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: 774231)										
VA22C9908-002	DC-20	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 774232)										
VA22C9908-002	DC-20	chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 774233)										
VA22C9908-002	DC-20	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 774234)										
VA22C9908-002	DC-20	nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 774235)										
VA22C9908-002	DC-20	nitrite (as N)	14797-65-0	E235.NO2-L	0.479 mg/L	0.5 mg/L	95.8	75.0	125	----
Anions and Nutrients (QCLot: 774236)										
VA22C9908-002	DC-20	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 774239)										
VA22C9908-002	DC-20	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0346 mg/L	0.03 mg/L	115	70.0	130	----
Anions and Nutrients (QCLot: 777203)										
KS2204662-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 777204)										
KS2204662-003	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 777205)										
KS2204662-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0999 mg/L	0.1 mg/L	99.9	75.0	125	----
Cyanides (QCLot: 774934)										
VA22C9834-001	Anonymous	thiocyanate	302-04-5	E344	10.4 mg/L	10 mg/L	104	75.0	125	----
Cyanides (QCLot: 774935)										
VA22C9908-006	Field Blank	thiocyanate	302-04-5	E344	11.2 mg/L	10 mg/L	112	75.0	125	----
Cyanides (QCLot: 775295)										
VA22C9834-019	Anonymous	cyanide, strong acid dissociable (total)	----	E333	1.01 mg/L	1.25 mg/L	80.5	75.0	125	----
Cyanides (QCLot: 775296)										
VA22C9834-019	Anonymous	cyanide, weak acid dissociable	----	E336	0.610 mg/L	0.625 mg/L	97.7	75.0	125	----

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
Organic / Inorganic Carbon (QCLot: 777206)										
KS2204662-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.30 mg/L	5 mg/L	106	70.0	130	----
Organic / Inorganic Carbon (QCLot: 777207)										
KS2204662-003	Anonymous	carbon, total organic [TOC]	----	E355-L	4.95 mg/L	5 mg/L	99.0	70.0	130	----
Total Metals (QCLot: 774594)										
VA22C9897-003	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		barium, total	7440-39-3	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00923 mg/L	0.01 mg/L	92.3	70.0	130	----
		boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	96.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		iron, total	7439-89-6	E420	1.85 mg/L	2 mg/L	92.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0966 mg/L	0.1 mg/L	96.6	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	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		phosphorus, total	7723-14-0	E420	8.63 mg/L	10 mg/L	86.3	70.0	130	----
		potassium, total	7440-09-7	E420	3.63 mg/L	4 mg/L	90.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		silicon, total	7440-21-3	E420	9.49 mg/L	10 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00380 mg/L	0.004 mg/L	95.1	70.0	130	----
		sodium, total	7440-23-5	E420	1.90 mg/L	2 mg/L	95.0	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	18.9 mg/L	20 mg/L	94.7	70.0	130	----
		thallium, total	7440-28-0	E420	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0367 mg/L	0.04 mg/L	91.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	99.1	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: 774594) - continued										
VA22C9897-003	Anonymous	vanadium, total	7440-62-2	E420	0.0945 mg/L	0.1 mg/L	94.5	70.0	130	----
		zinc, total	7440-66-6	E420	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
Total Metals (QCLot: 774911)										
VA22C9821-001	Anonymous	mercury, total	7439-97-6	E508	0.0000950 mg/L	0.0001 mg/L	95.0	70.0	130	----
Dissolved Metals (QCLot: 774618)										
VA22C9897-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	98.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00967 mg/L	0.01 mg/L	96.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0956 mg/L	0.1 mg/L	95.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.975 mg/L	1 mg/L	97.5	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.80 mg/L	10 mg/L	98.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.86 mg/L	4 mg/L	96.5	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.48 mg/L	10 mg/L	94.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00388 mg/L	0.004 mg/L	97.1	70.0	130	----
		sodium, dissolved	7440-23-5	E421	1.98 mg/L	2 mg/L	99.0	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	19.7 mg/L	20 mg/L	98.3	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0384 mg/L	0.04 mg/L	96.0	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: 774618) - continued										
VA22C9897-003	Anonymous	uranium, dissolved	7440-61-1	E421	0.00387 mg/L	0.004 mg/L	96.9	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0967 mg/L	0.1 mg/L	96.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.374 mg/L	0.4 mg/L	93.6	70.0	130	----
Dissolved Metals (QCLot: 775122)										
FJ2203416-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000106 mg/L	0.0001 mg/L	106	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	9908	ALS Contact: A. Springer	Sampler: Avison

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	661-05	7-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	DC-20	7-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-10	7-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-15	7-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-15-DUP	7-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	Field Blank	7-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Environmental Division
Vancouver
Work Order Reference
VA22C9908

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

...teria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C	
				2/3

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: <Original signed by>	Date: Dec 8 2022	Time:	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 12/9/22	Time: 9:20AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are ~~taken from a Regulated Drinking Water (DW) System~~, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22D0364**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: VA22-BWGL 100-002	Date Samples Received	: 15-Dec-2022 09:00
PO	: 10857	Date Analysis Commenced	: 15-Dec-2022
C-O-C number	: ----	Issue Date	: 28-Dec-2022 10:20
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: 661-01	CC-20	----	----	----
					Client sampling date / time: 13-Dec-2022	13-Dec-2022	----	----	----
					VA22D0364-001	VA22D0364-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	<2.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	10.6	62.1	----	----	----
conductivity	----	E100	2.0	µS/cm	27.6	147	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	9.90	66.4	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	10.0	68.2	----	----	----
pH	----	E108	0.10	pH units	7.01	7.88	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	31	105	----	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	3.3	----	----	----
turbidity	----	E121	0.10	NTU	0.30	1.14	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0094	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.023	0.054	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.155	0.241	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0466	0.0783 HTD	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0068	<0.0010 HTD	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0112	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0057	0.0206	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.50	3.75	----	----	----
Cyanides									
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.78	7.07	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.11	7.86	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0794	0.0222	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	661-01	CC-20	----	----	----
					Client sampling date / time	13-Dec-2022	13-Dec-2022	----	----	----
						VA22D0364-001	VA22D0364-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00050	0.00061	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00282	0.00750	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		2.88	19.9	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.149	0.133	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		0.687	4.49	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0237	0.0256	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000104	0.000682	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.164	0.800	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		5.26	5.67	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		1.77	3.51	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0235	0.106	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	1.06	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00052	0.00096	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000044	0.000115	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-01	CC-20	----	----	----
					Client sampling date / time	13-Dec-2022	13-Dec-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22D0364-001	VA22D0364-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0700	0.0020	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00038	0.00054	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00278	0.00705	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		2.76	18.9	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00021	0.00033	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.126	0.065	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		0.730	4.67	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0206	0.0203	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000099	0.000614	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.173	0.824	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	0.000056	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.25	5.47	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.87	3.55	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0231	0.0961	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	661-01	CC-20	----	----	----
					Client sampling date / time	13-Dec-2022	13-Dec-2022	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22D0364-001	VA22D0364-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	1.17 RRV	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00044	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000039	0.000105	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22D0364**	Page	: 1 of 16
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: VA22-BWGL 100-002	Date Samples Received	: 15-Dec-2022 09:00
PO	: 10857	Issue Date	: 28-Dec-2022 10:15
C-O-C number	: ----		
Sampler	: Avison		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 661-01	E298	13-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) CC-20	E298	13-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE 661-01	E235.Br-L	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE CC-20	E235.Br-L	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 661-01	E235.Cl	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-20	E235.Cl	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE 661-01	E378-U	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-20	E378-U	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 661-01	E235.F	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-20	E235.F	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE 661-01	E235.NO3-L	13-Dec-2022	15-Dec-2022	3 days	3 days	✓	16-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-20	E235.NO3-L	13-Dec-2022	15-Dec-2022	3 days	3 days	✓	16-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 661-01	E235.NO2-L	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-20	E235.NO2-L	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	3 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 661-01	E235.SO4	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
CC-20	E235.SO4	13-Dec-2022	15-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
661-01	E318	13-Dec-2022	16-Dec-2022	----	----		22-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-20	E318	13-Dec-2022	16-Dec-2022	----	----		22-Dec-2022	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
661-01	E372-U	13-Dec-2022	16-Dec-2022	----	----		21-Dec-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-20	E372-U	13-Dec-2022	16-Dec-2022	----	----		21-Dec-2022	28 days	9 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
661-01	E344	13-Dec-2022	----	----	----		19-Dec-2022	14 days	7 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-20	E344	13-Dec-2022	----	----	----		19-Dec-2022	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
661-01	E333	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CC-20	E333	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) 661-01	E336	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-20	E336	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) 661-01	E509	13-Dec-2022	17-Dec-2022	----	----		17-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-20	E509	13-Dec-2022	17-Dec-2022	----	----		17-Dec-2022	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 661-01	E421	13-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-20	E421	13-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) 661-01	E358-L	13-Dec-2022	17-Dec-2022	----	----		17-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-20	E358-L	13-Dec-2022	17-Dec-2022	----	----		17-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) 661-01	E355-L	13-Dec-2022	16-Dec-2022	----	----		16-Dec-2022	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-20	E355-L	13-Dec-2022	16-Dec-2022	----	----		16-Dec-2022	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE 661-01	E283	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-20	E283	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 661-01	E290	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-20	E290	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 661-01	E100	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-20	E100	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 661-01	E108	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	0.25 hrs	5.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-20	E108	13-Dec-2022	15-Dec-2022	----	----		15-Dec-2022	0.25 hrs	5.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE 661-01	E162	13-Dec-2022	----	----	----		19-Dec-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE CC-20	E162	13-Dec-2022	----	----	----		19-Dec-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 661-01	E160	13-Dec-2022	----	----	----		19-Dec-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CC-20	E160	13-Dec-2022	----	----	----		19-Dec-2022	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE 661-01	E121	13-Dec-2022	----	----	----		15-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-20	E121	13-Dec-2022	----	----	----		15-Dec-2022	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) 661-01	E508	13-Dec-2022	17-Dec-2022	----	----		17-Dec-2022	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-20	E508	13-Dec-2022	17-Dec-2022	----	----		17-Dec-2022	28 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) 661-01	E420	13-Dec-2022	19-Dec-2022	----	----		21-Dec-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
CC-20	E420	13-Dec-2022	19-Dec-2022	----	----		21-Dec-2022	180 days	8 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	780415	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	780404	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	781684	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	780409	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	780408	1	20	5.0	5.0	✓
Conductivity in Water	E100	780405	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	782073	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	781417	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782277	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	780414	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	780407	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	780410	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	780411	1	20	5.0	5.0	✓
pH by Meter	E108	780403	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	780412	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	782066	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	780596	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	781607	0	16	0.0	5.0	✗
Total Mercury in Water by CVAAS	E508	782135	2	37	5.4	5.0	✓
Total metals in Water by CRC ICPMS	E420	780339	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	781609	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	781608	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	782067	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	780044	1	10	10.0	5.0	✓
WAD Cyanide	E336	780595	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	780415	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	780404	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	781684	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	780409	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	780408	1	20	5.0	5.0	✓
Conductivity in Water	E100	780405	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	782073	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	781417	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782277	1	16	6.2	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	780414	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	780407	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	780410	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	780411	1	20	5.0	5.0	✓
pH by Meter	E108	780403	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	780412	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	782066	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	780596	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	781607	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	782135	2	37	5.4	5.0	✓
Total metals in Water by CRC ICPMS	E420	780339	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	781609	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	781608	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	782067	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	780044	1	10	10.0	5.0	✓
WAD Cyanide	E336	780595	1	20	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	780415	1	7	14.2	5.0	✓
Alkalinity Species by Titration	E290	780404	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	781684	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	780409	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	780408	1	20	5.0	5.0	✓
Conductivity in Water	E100	780405	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	782073	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	781417	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782277	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	780414	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	780407	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	780410	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	780411	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	780412	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	782066	1	19	5.2	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	780596	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	781607	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	782135	2	37	5.4	5.0	✓
Total metals in Water by CRC ICPMS	E420	780339	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	781609	1	17	5.8	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	781608	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	782067	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	780044	1	10	10.0	5.0	✓
WAD Cyanide	E336	780595	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	781684	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	780409	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	780408	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	782073	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	781417	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782277	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	780414	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	780407	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	780410	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	780411	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	780412	1	20	5.0	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	780596	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	781607	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	782135	2	37	5.4	5.0	✓
Total metals in Water by CRC ICPMS	E420	780339	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	781609	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	781608	1	16	6.2	5.0	✓
WAD Cyanide	E336	780595	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22D0364**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: VA22-BWGL 100-002	Date Samples Received	: 15-Dec-2022 09:00
PO	: 10857	Date Analysis Commenced	: 15-Dec-2022
C-O-C number	: ----	Issue Date	: 28-Dec-2022 10:15
Sampler	: Avison ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **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: 780044)											
VA22D0272-011	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 780403)											
KS2204703-003	Anonymous	pH	----	E108	0.10	pH units	7.39	7.36	0.407%	4%	----
Physical Tests (QC Lot: 780404)											
KS2204703-003	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	634	613	3.37%	20%	----
Physical Tests (QC Lot: 780405)											
KS2204703-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1390	1370	1.31%	10%	----
Physical Tests (QC Lot: 780415)											
VA22D0253-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 782066)											
VA22D0364-001	661-01	solids, total dissolved [TDS]	----	E162	10	mg/L	31	30	1	Diff <2x LOR	----
Physical Tests (QC Lot: 782067)											
VA22D0364-001	661-01	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 780407)											
KS2204703-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 780408)											
KS2204703-001	Anonymous	chloride	16887-00-6	E235.Cl	2.50	mg/L	3.19	3.35	0.16	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 780409)											
KS2204703-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 780410)											
KS2204703-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.108	0.106	0.0024	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 780411)											
KS2204703-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0068	0.0061	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 780412)											
KS2204703-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	15.8	17.4	9.40%	20%	----
Anions and Nutrients (QC Lot: 780414)											
KS2204703-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0186	0.0187	0.660%	20%	----
Anions and Nutrients (QC Lot: 781608)											
KS2204705-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0768	0.0767	0.221%	20%	----
Anions and Nutrients (QC Lot: 781684)											

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*
Anions and Nutrients (QC Lot: 781684) - continued											
KS2204705-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 780595)											
KS2204679-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 780596)											
KS2204679-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0400	mg/L	<0.0400	<0.0400	0	Diff <2x LOR	----
Cyanides (QC Lot: 783737)											
EO2210988-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 781609)											
KS2204705-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.32	3.17	0.15	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 782277)											
VA22D0344-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.04	0.86	0.18	Diff <2x LOR	----
Total Metals (QC Lot: 780339)											
KS2204687-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0130	0.0126	0.0004	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	0.00017	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0104	0.0106	1.69%	20%	----
		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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	13.3	13.5	1.16%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.00202	0.00199	0.00003	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	0.000138	0.000134	0.000004	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	2.28	2.27	0.117%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00090	0.00088	0.00001	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000752	0.000716	4.85%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.920	0.920	0.0410%	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: 780339) - continued											
KS2204687-001	Anonymous	selenium, total	7782-49-2	E420	0.000050	mg/L	0.000118	0.000130	0.000012	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.08	3.10	0.647%	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	5.44	5.43	0.271%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0867	0.0868	0.0560%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	2.38	2.46	0.08	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000073	0.000072	0.0000007	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 782135)											
FJ2203464-008	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 782136)											
VA22D0364-002	CC-20	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 781417)											
VA22D0406-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0027	0.0008	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	0.00051	0.00057	0.00006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0994	0.102	2.56%	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	0.045	0.044	0.001	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	83.1	82.4	0.843%	20%	----
		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	0.00117	0.00123	0.00006	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	0.0028	0.0027	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.3	35.0	1.94%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0143	0.0151	5.27%	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*
Dissolved Metals (QC Lot: 781417) - continued											
VA22D0406-001	Anonymous	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00944	0.00946	0.305%	20%	----
		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	4.32	4.57	5.74%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000342	0.000311	0.000031	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	8.49	8.55	0.606%	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	42.6	44.2	3.69%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.380	0.377	0.886%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	47.9	47.4	0.921%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000776	0.000781	0.526%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00142	0.00149	0.00008	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 782073)											
VA22D0349-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 780044)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 780404)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.2	----
Physical Tests (QCLot: 780405)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 780415)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 782066)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 782067)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 780407)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 780408)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 780409)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 780410)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 780411)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 780412)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 780414)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 781607)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 781608)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 781684)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 780595)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 780595) - continued						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 780596)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 783737)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 781609)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 782277)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 780339)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 780339) - continued						
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 782135)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 782136)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 781417)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 781417) - continued						
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 782073)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 780044)									
turbidity	----	E121	0.1	NTU	200 NTU	103	85.0	115	----
Physical Tests (QCLot: 780403)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 780404)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 780405)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 780415)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	98.0	85.0	115	----
Physical Tests (QCLot: 782066)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	105	85.0	115	----
Physical Tests (QCLot: 782067)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	96.5	85.0	115	----
Anions and Nutrients (QCLot: 780407)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.7	90.0	110	----
Anions and Nutrients (QCLot: 780408)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	97.2	90.0	110	----
Anions and Nutrients (QCLot: 780409)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.3	85.0	115	----
Anions and Nutrients (QCLot: 780410)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 780411)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.0	90.0	110	----
Anions and Nutrients (QCLot: 780412)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 780414)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	89.2	80.0	120	----
Anions and Nutrients (QCLot: 781607)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 781608)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	88.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 781684)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.4	85.0	115	----
Cyanides (QCLot: 780595)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	96.3	80.0	120	----
Cyanides (QCLot: 780596)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	85.6	80.0	120	----
Cyanides (QCLot: 783737)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	100	85.0	115	----
Organic / Inorganic Carbon (QCLot: 781609)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 782277)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	95.5	80.0	120	----
Total Metals (QCLot: 780339)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	105	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 780339) - continued									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	109	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	88.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	99.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.1	80.0	120	----
Total Metals (QCLot: 782135)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.2	80.0	120	----
Total Metals (QCLot: 782136)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	95.2	80.0	120	----
Dissolved Metals (QCLot: 781417)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.3	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	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	97.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	97.1	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 781417) - continued									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.2	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.6	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	90.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.9	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: 780407)										
KS2204703-002	Anonymous	fluoride	16984-48-8	E235.F	4.55 mg/L	5 mg/L	91.1	75.0	125	----
Anions and Nutrients (QCLot: 780408)										
KS2204703-002	Anonymous	chloride	16887-00-6	E235.Cl	490 mg/L	500 mg/L	98.1	75.0	125	----
Anions and Nutrients (QCLot: 780409)										
KS2204703-002	Anonymous	bromide	24959-67-9	E235.Br-L	2.49 mg/L	2.5 mg/L	99.5	75.0	125	----
Anions and Nutrients (QCLot: 780410)										
KS2204703-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	12.6 mg/L	12.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 780411)										
KS2204703-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2.30 mg/L	2.5 mg/L	91.9	75.0	125	----
Anions and Nutrients (QCLot: 780412)										
KS2204703-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	492 mg/L	500 mg/L	98.4	75.0	125	----
Anions and Nutrients (QCLot: 780414)										
KS2204703-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0355 mg/L	0.03 mg/L	118	70.0	130	----
Anions and Nutrients (QCLot: 781607)										
KS2204705-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.63 mg/L	2.5 mg/L	105	70.0	130	----
Anions and Nutrients (QCLot: 781608)										
KS2204705-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 781684)										
KS2204705-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.111 mg/L	0.1 mg/L	111	75.0	125	----
Cyanides (QCLot: 780595)										
KS2204679-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.121 mg/L	0.125 mg/L	96.5	75.0	125	----
Cyanides (QCLot: 780596)										
KS2204679-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	4.19 mg/L	5 mg/L	83.9	75.0	125	----
Cyanides (QCLot: 783737)										
VA22D0364-001	661-01	thiocyanate	302-04-5	E344	10.2 mg/L	10 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 781609)										
KS2204705-002	Anonymous	carbon, total organic [TOC]	----	E355-L	5.36 mg/L	5 mg/L	107	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
Organic / Inorganic Carbon (QCLot: 782277)										
VA22D0344-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.88 mg/L	5 mg/L	97.5	70.0	130	----
Total Metals (QCLot: 780339)										
VA22D0361-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0188 mg/L	0.02 mg/L	94.1	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	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00909 mg/L	0.01 mg/L	90.9	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0357 mg/L	0.04 mg/L	89.3	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.82 mg/L	2 mg/L	91.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0898 mg/L	0.1 mg/L	89.8	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	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0352 mg/L	0.04 mg/L	88.0	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.76 mg/L	10 mg/L	97.6	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0367 mg/L	0.04 mg/L	91.8	70.0	130	----
		silicon, total	7440-21-3	E420	9.13 mg/L	10 mg/L	91.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00387 mg/L	0.004 mg/L	96.9	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	19.1 mg/L	20 mg/L	95.7	70.0	130	----
		thallium, total	7440-28-0	E420	0.00358 mg/L	0.004 mg/L	89.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00375 mg/L	0.004 mg/L	93.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.366 mg/L	0.4 mg/L	91.4	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: 782135)										
VA22D0236-001	Anonymous	mercury, total	7439-97-6	E508	0.0000941 mg/L	0.0001 mg/L	94.1	70.0	130	----
Total Metals (QCLot: 782136)										
VA22D0365-001	Anonymous	mercury, total	7439-97-6	E508	0.0000951 mg/L	0.0001 mg/L	95.1	70.0	130	----
Dissolved Metals (QCLot: 781417)										
VA22D0406-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.977 mg/L	1 mg/L	97.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0954 mg/L	0.1 mg/L	95.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0955 mg/L	0.1 mg/L	95.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0958 mg/L	0.1 mg/L	95.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.192 mg/L	0.2 mg/L	95.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0453 mg/L	0.05 mg/L	90.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.5 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.187 mg/L	0.2 mg/L	93.4	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0919 mg/L	0.1 mg/L	91.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0894 mg/L	0.1 mg/L	89.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	9.32 mg/L	10 mg/L	93.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0927 mg/L	0.1 mg/L	92.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.473 mg/L	0.5 mg/L	94.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	5 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.180 mg/L	0.2 mg/L	90.2	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	51.2 mg/L	50 mg/L	102	70.0	130	----
		potassium, dissolved	7440-09-7	E421	18.2 mg/L	20 mg/L	90.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
		silicon, dissolved	7440-21-3	E421	49.1 mg/L	50 mg/L	98.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0140 mg/L	0.02 mg/L	70.0	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	100 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0936 mg/L	0.1 mg/L	93.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0188 mg/L	0.02 mg/L	93.9	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: 781417) - continued										
VA22D0406-002	Anonymous	vanadium, dissolved	7440-62-2	E421	0.480 mg/L	0.5 mg/L	96.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	1.87 mg/L	2 mg/L	93.6	70.0	130	----
Dissolved Metals (QCLot: 782073)										
VA22D0349-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000962 mg/L	0.0001 mg/L	96.2	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Tonia.Robb@erm.com

Email 2: tdesormeaux@artemisgoldinc.com

Email 3: ktanaka@artemisgoldinc.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: tdesormeaux@artemisgoldinc.com

Email 2: accounts@artemisgoldinc.com

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): D0364

ALS Contact: A. Springer

Sampler: Avison

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
					P	F/P	P		F		F	P						
	661-01	13-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-20	13-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
				Water														
				Water														
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				Water														
				Water														

Environmental Division Vancouver

Work Order Reference VA22D0364

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com

Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: <Original signed by>	Date: Dec. 14 - 22	Time: 0700	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 15 Dec 22	Time: 9 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

CERTIFICATE OF ANALYSIS

Work Order	: **VA22D0519**	Page	: 1 of 6
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 689 9460	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 16-Dec-2022 09:15
PO	: 10857	Date Analysis Commenced	: 16-Dec-2022
C-O-C number	: ----	Issue Date	: 30-Dec-2022 15:14
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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*
Erin Sanchez		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	CC-30	CC-40	Travel Blank	----	----
					Client sampling date / time	14-Dec-2022	14-Dec-2022	14-Dec-2022	----	----
						VA22D0519-001	VA22D0519-002	VA22D0519-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		2.1	2.2	2.2	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		77.9	82.1	<1.0	----	----
conductivity	----	E100	2.0	µS/cm		166	174	<2.0	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		72.6	79.0	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		74.7	79.9	<0.60	----	----
pH	----	E108	0.10	pH units		8.00	8.06	5.35	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		110	112	<10	----	----
solids, total suspended [TSS]	----	E160	3.0	mg/L		<3.0	<3.0	<3.0	----	----
turbidity	----	E121	0.10	NTU		1.11	1.37	<0.10	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0425	0.0402	0.0178 RRV	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.066	0.071	<0.020	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.298	0.285	<0.050	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0750	0.0732	<0.0050	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0010	0.0010	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0078	0.0080	<0.0010	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0189	0.0174	<0.0020	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3.58	4.01	<0.30	----	----
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.06	7.20	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.25	7.17	<0.50	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0205	0.0221	<0.0030	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-30	CC-40	Travel Blank	----	----
					Client sampling date / time	14-Dec-2022	14-Dec-2022	14-Dec-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22D0519-001	VA22D0519-002	VA22D0519-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00054	0.00069	<0.00010	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.00859	0.00900	<0.00010	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		21.4	22.6	<0.050	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.240	0.244	<0.010	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		5.17	5.69	<0.100	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0434	0.0412	<0.00010	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000835	0.000858	<0.000050	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		0.905	0.956	<0.100	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000053	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		5.85	5.99	<0.10	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		4.05	4.44	<0.050	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.114	0.118	<0.00020	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		1.00	1.19	<0.50	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00108	<0.00090 DLM	<0.00030	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000144	0.000178	<0.000010	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CC-30	CC-40	Travel Blank	----	----
					Client sampling date / time	14-Dec-2022	14-Dec-2022	14-Dec-2022	----	----
Analyte	CAS Number	Method	LOR	Unit		VA22D0519-001	VA22D0519-002	VA22D0519-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0014	0.0017	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00047	0.00058	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00815	0.00820	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		20.8	22.4	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00028	0.00030	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.136	0.140	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		5.01	5.60	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0352	0.0346	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000784	0.000826	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.889	0.907	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000062	<0.000050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.12	6.11	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.98	4.30	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.110	0.115	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	CC-30	CC-40	Travel Blank	----	----
				Client sampling date / time	14-Dec-2022	14-Dec-2022	14-Dec-2022	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22D0519-001	VA22D0519-002	VA22D0519-003	--------	--------
					Result	Result	Result	----	----
Dissolved Metals									
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.21	1.08	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000132	0.000170	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22D0519**	Page	: 1 of 18
Client	: **ERM Consultants Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 10th Floor, 1100 Melville St. Vancouver BC Canada V6E 4A6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 16-Dec-2022 09:15
PO	: 10857	Issue Date	: 30-Dec-2022 15:14
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	14-Dec-2022	24-Dec-2022	----	----		29-Dec-2022	28 days	15 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
CC-30	E298	14-Dec-2022	18-Dec-2022	----	----		22-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
CC-40	E298	14-Dec-2022	18-Dec-2022	----	----		22-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-30	E235.Br-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CC-40	E235.Br-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.Br-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
CC-30	E235.Cl	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE CC-40	E235.Cl	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Travel Blank	E235.Cl	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-30	E378-U	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CC-40	E378-U	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Travel Blank	E378-U	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-30	E235.F	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE CC-40	E235.F	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Travel Blank	E235.F	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-30	E235.NO3-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE CC-40	E235.NO3-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-30	E235.NO2-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CC-40	E235.NO2-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-30	E235.SO4	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CC-40	E235.SO4	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Travel Blank	E235.SO4	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-30	E318	14-Dec-2022	18-Dec-2022	----	----		28-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
CC-40	E318	14-Dec-2022	18-Dec-2022	----	----		28-Dec-2022	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Travel Blank	E318	14-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Travel Blank	E372-U	14-Dec-2022	24-Dec-2022	----	----		29-Dec-2022	28 days	15 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-30	E372-U	14-Dec-2022	18-Dec-2022	----	----		22-Dec-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CC-40	E372-U	14-Dec-2022	18-Dec-2022	----	----		22-Dec-2022	28 days	8 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-30	E344	14-Dec-2022	----	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
CC-40	E344	14-Dec-2022	----	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : Thiocyanate by Colourimetry										
HDPE (nitric acid)										
Travel Blank	E344	14-Dec-2022	----	----	----		19-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E333	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E333	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Travel Blank	E333	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-30	E336	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CC-40	E336	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	14 days	5 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Travel Blank	E336	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	14 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-30	E509	14-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) CC-40	E509	14-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-30	E421	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) CC-40	E421	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	180 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-30	E358-L	14-Dec-2022	18-Dec-2022	----	----		18-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) CC-40	E358-L	14-Dec-2022	18-Dec-2022	----	----		18-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Travel Blank	E355-L	14-Dec-2022	24-Dec-2022	----	----		24-Dec-2022	28 days	10 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-30	E355-L	14-Dec-2022	18-Dec-2022	----	----		18-Dec-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CC-40	E355-L	14-Dec-2022	18-Dec-2022	----	----		18-Dec-2022	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-30	E283	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE CC-40	E283	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE Travel Blank	E283	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE CC-30	E290	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE CC-40	E290	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	14 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-30	E100	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE CC-40	E100	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Travel Blank	E100	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE CC-30	E108	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	0.25 hrs	11.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CC-40	E108	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	0.25 hrs	11.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	14-Dec-2022	16-Dec-2022	----	----		17-Dec-2022	0.25 hrs	11.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CC-30	E162	14-Dec-2022	----	----	----		22-Dec-2022	7 days	8 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE CC-40	E162	14-Dec-2022	----	----	----		22-Dec-2022	7 days	8 days	× EHT
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	14-Dec-2022	----	----	----		22-Dec-2022	7 days	8 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE CC-30	E160	14-Dec-2022	----	----	----		22-Dec-2022	7 days	8 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE CC-40	E160	14-Dec-2022	----	----	----		22-Dec-2022	7 days	8 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160	14-Dec-2022	----	----	----		22-Dec-2022	7 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE CC-30	E121	14-Dec-2022	----	----	----		17-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE CC-40	E121	14-Dec-2022	----	----	----		17-Dec-2022	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Travel Blank	E121	14-Dec-2022	----	----	----		17-Dec-2022	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-40	E508	14-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Travel Blank	E508	14-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) CC-30	E508	14-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-30	E420	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) CC-40	E420	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Travel Blank	E420	14-Dec-2022	19-Dec-2022	----	----		19-Dec-2022	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Acidity by Titration	E283	781982	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	781980	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	782816	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	781977	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	781976	1	13	7.6	5.0	✓
Conductivity in Water	E100	781981	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	785231	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	782806	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782817	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	781983	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	781975	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	781973	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	781974	1	20	5.0	5.0	✓
pH by Meter	E108	781979	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	781978	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	785847	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	783517	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	782814	2	24	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	785158	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	782333	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	782818	2	26	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	782815	2	28	7.1	5.0	✓
TSS by Gravimetry	E160	785846	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	782365	1	20	5.0	5.0	✓
WAD Cyanide	E336	783518	1	8	12.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	781982	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	781980	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	782816	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	781977	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	781976	1	13	7.6	5.0	✓
Conductivity in Water	E100	781981	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	785231	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	782806	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782817	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	781983	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	781975	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	781973	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	781974	1	20	5.0	5.0	✓
pH by Meter	E108	781979	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	781978	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	785847	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	783517	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	782814	2	24	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	785158	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	782333	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	782818	2	26	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	782815	2	28	7.1	5.0	✓
TSS by Gravimetry	E160	785846	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	782365	1	20	5.0	5.0	✓
WAD Cyanide	E336	783518	1	8	12.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	781982	1	3	33.3	5.0	✓
Alkalinity Species by Titration	E290	781980	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	782816	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	781977	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	781976	1	13	7.6	5.0	✓
Conductivity in Water	E100	781981	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	785231	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	782806	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782817	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	781983	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	781975	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	781973	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	781974	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	781978	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	785847	1	18	5.5	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	783517	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	782814	2	24	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	785158	2	40	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	782333	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	782818	2	26	7.6	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							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	782815	2	28	7.1	5.0	✓
TSS by Gravimetry	E160	785846	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	782365	1	20	5.0	5.0	✓
WAD Cyanide	E336	783518	1	8	12.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	782816	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	781977	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	781976	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	785231	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	782806	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	782817	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	781983	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	781975	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	781973	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	781974	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	781978	1	13	7.6	5.0	✓
Thiocyanate by Colourimetry	E344	783737	1	20	5.0	5.0	✓
Total Cyanide	E333	783517	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	782814	2	24	8.3	5.0	✓
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Total metals in Water by CRC ICPMS	E420	782333	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	782818	2	26	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	782815	2	28	7.1	5.0	✓
WAD Cyanide	E336	783518	1	8	12.5	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
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 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Vancouver - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
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)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 Vancouver - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Vancouver - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate by Colourimetry	E344 Vancouver - Environmental	Water	APHA 4500-CN M (mod)	Thiocyanate is determined by the ferric nitrate colourimetric method. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 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.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA22D0519**	Page	: 1 of 18
Client	: ERM Consultants Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Tonia Robb	Account Manager	: Amber Springer
Address	: 3083-595 Burrard St Vancouver BC Canada V7X 1L3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 0332945-0102-0001	Date Samples Received	: 16-Dec-2022 09:15
PO	: 10857	Date Analysis Commenced	: 16-Dec-2022
C-O-C number	: ----	Issue Date	: 30-Dec-2022 15:14
Sampler	: ---- ----		
Site	: ----		
Quote number	: ERM/BW Gold SW (VA22-BWGL100-002/Q56205)		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 781979)											
VA22D0519-003	Travel Blank	pH	----	E108	0.10	pH units	5.35	5.38	0.559%	4%	----
Physical Tests (QC Lot: 781980)											
VA22D0519-003	Travel Blank	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 781981)											
VA22D0519-003	Travel Blank	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 781982)											
VA22D0519-002	CC-40	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.2	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 782365)											
KS2204722-001	Anonymous	turbidity	----	E121	0.10	NTU	1.34	1.31	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 785846)											
FJ2203500-001	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 785847)											
FJ2203500-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	187	194	7	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 781973)											
VA22D0519-001	CC-30	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0750	0.0741	1.14%	20%	----
Anions and Nutrients (QC Lot: 781974)											
VA22D0519-001	CC-30	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	0.00004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 781975)											
VA22D0519-001	CC-30	fluoride	16984-48-8	E235.F	0.020	mg/L	0.066	0.065	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 781976)											
VA22D0519-001	CC-30	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 781977)											
VA22D0519-001	CC-30	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 781978)											
VA22D0519-001	CC-30	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.58	3.55	0.664%	20%	----
Anions and Nutrients (QC Lot: 781983)											
VA22D0519-001	CC-30	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0078	0.0077	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 782814)											
KS2204772-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.140	0.130	0.010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 782815)											

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*
Anions and Nutrients (QC Lot: 782815) - continued											
KS2204772-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0548	0.0556	1.49%	20%	----
Anions and Nutrients (QC Lot: 782816)											
KS2204772-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 784173)											
VA22D0519-003	Travel Blank	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 788846)											
KS2204765-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0488	0.0487	0.226%	20%	----
Anions and Nutrients (QC Lot: 788847)											
KS2204765-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 783517)											
VA22D0522-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 783518)											
VA22D0522-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 783737)											
EO2210988-001	Anonymous	thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 782817)											
KS2204772-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.29	3.15	0.14	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 782818)											
KS2204772-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.68	4.42	0.26	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 788844)											
KS2204785-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Total Metals (QC Lot: 782333)											
VA22D0504-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0679	0.0655	3.58%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00010	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00061	0.00063	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0118	0.0120	1.60%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.026	0.026	0.0005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000135	0.0000109	0.0000026	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	33.7	34.4	1.97%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00042	0.00044	0.00002	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: 782333) - continued											
VA22D0504-001	Anonymous	copper, total	7440-50-8	E420	0.00050	mg/L	0.00313	0.00319	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.237	0.234	1.43%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000050	0.000051	0.000001	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	11.9	11.9	0.252%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0651	0.0656	0.747%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00449	0.00457	1.66%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00148	0.00151	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.066	0.057	0.009	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.29	3.30	0.490%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000126	0.000186	0.000060	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.52	5.59	1.31%	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	30.4	30.0	1.11%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.144	0.147	2.43%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	10.0	10.3	2.63%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00320	0.00299	6.86%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000349	0.000352	0.730%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00073	0.00069	0.00004	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0096	0.0096	0.00004	Diff <2x LOR	----
Total Metals (QC Lot: 785158)											
KS2204733-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 787077)											
FJ2203500-002	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 782806)											
VA22D0492-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0085	0.0077	0.0007	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	0.00012	0.00011	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0302	0.0291	3.84%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	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	----

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: 782806) - continued											
VA22D0492-001	Anonymous	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	27.5	26.3	4.46%	20%	----
		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	0.199	0.193	3.34%	20%	----
		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	3.40	3.31	2.43%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0106	0.0102	3.62%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000105	0.000095	0.000010	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	0.258	0.252	0.006	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.82	2.76	2.10%	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	0.957	0.930	2.88%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.114	0.112	1.49%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000094	0.000093	0.0000008	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	----
Dissolved Metals (QC Lot: 785231)											
KS2204733-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	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: 781980)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.1	----
Physical Tests (QCLot: 781981)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 781982)						
acidity (as CaCO3)	----	E283	2	mg/L	2.3	----
Physical Tests (QCLot: 782365)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 785846)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 785847)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 781973)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 781974)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 781975)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 781976)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 781977)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 781978)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 781983)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 782814)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 782815)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 782816)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 784173)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 784173) - continued						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 788846)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 788847)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 783517)						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 783518)						
cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 783737)						
thiocyanate	302-04-5	E344	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 782817)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 782818)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 788844)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 782333)						
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	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 782333) - continued						
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	----
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	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
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	----
Total Metals (QCLot: 785158)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 787077)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 782806)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 782806) - continued						
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	----
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	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
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	----
Dissolved Metals (QCLot: 785231)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 781979)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 781980)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 781981)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.8	90.0	110	----
Physical Tests (QCLot: 781982)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	96.6	85.0	115	----
Physical Tests (QCLot: 782365)									
turbidity	----	E121	0.1	NTU	200 NTU	103	85.0	115	----
Physical Tests (QCLot: 785846)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	93.0	85.0	115	----
Physical Tests (QCLot: 785847)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.4	85.0	115	----
Anions and Nutrients (QCLot: 781973)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 781974)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 781975)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 781976)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 781977)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 781978)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 781983)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	96.7	80.0	120	----
Anions and Nutrients (QCLot: 782814)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 782815)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	91.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 782816)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.3	85.0	115	----
Anions and Nutrients (QCLot: 784173)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.2	75.0	125	----
Anions and Nutrients (QCLot: 788846)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	97.6	80.0	120	----
Anions and Nutrients (QCLot: 788847)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.7	85.0	115	----
Cyanides (QCLot: 783517)									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	81.1	80.0	120	----
Cyanides (QCLot: 783518)									
cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	96.1	80.0	120	----
Cyanides (QCLot: 783737)									
thiocyanate	302-04-5	E344	0.5	mg/L	10 mg/L	100	85.0	115	----
Organic / Inorganic Carbon (QCLot: 782817)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	99.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 782818)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 788844)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	107	80.0	120	----
Total Metals (QCLot: 782333)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	119	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.6	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.0	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Total Metals (QCLot: 782333) - continued									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.3	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.6	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	83.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
Total Metals (QCLot: 785158)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	96.4	80.0	120	----
Total Metals (QCLot: 787077)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	92.7	80.0	120	----
Dissolved Metals (QCLot: 782806)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	96.0	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 782806) - continued									
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	94.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.4	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	92.7	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	98.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.2	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.1	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: 781973)										
VA22D0519-002	CC-40	nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 781974)										
VA22D0519-002	CC-40	nitrite (as N)	14797-65-0	E235.NO2-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 781975)										
VA22D0519-002	CC-40	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 781976)										
VA22D0519-002	CC-40	chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 781977)										
VA22D0519-002	CC-40	bromide	24959-67-9	E235.Br-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 781978)										
VA22D0519-002	CC-40	sulfate (as SO4)	14808-79-8	E235.SO4	99.2 mg/L	100 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 781983)										
VA22D0519-002	CC-40	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0255 mg/L	0.03 mg/L	85.1	70.0	130	----
Anions and Nutrients (QCLot: 782814)										
KS2204772-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.58 mg/L	2.5 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 782815)										
KS2204772-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 782816)										
KS2204772-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0986 mg/L	0.1 mg/L	98.6	75.0	125	----
Anions and Nutrients (QCLot: 784173)										
VA22D0573-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 788846)										
KS2204765-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0458 mg/L	0.05 mg/L	91.6	70.0	130	----
Anions and Nutrients (QCLot: 788847)										
KS2204765-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0902 mg/L	0.1 mg/L	90.2	75.0	125	----
Cyanides (QCLot: 783517)										
VA22D0522-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.211 mg/L	0.25 mg/L	84.4	75.0	125	----

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
Cyanides (QCLot: 783518)										
VA22D0522-002	Anonymous	cyanide, weak acid dissociable	----	E336	0.120 mg/L	0.125 mg/L	95.9	75.0	125	----
Cyanides (QCLot: 783737)										
VA22D0364-001	Anonymous	thiocyanate	302-04-5	E344	10.2 mg/L	10 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 782817)										
KS2204772-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.85 mg/L	5 mg/L	97.1	70.0	130	----
Organic / Inorganic Carbon (QCLot: 782818)										
KS2204772-002	Anonymous	carbon, total organic [TOC]	----	E355-L	4.42 mg/L	5 mg/L	88.4	70.0	130	----
Organic / Inorganic Carbon (QCLot: 788844)										
VA22D0519-003	Travel Blank	carbon, total organic [TOC]	----	E355-L	6.04 mg/L	5 mg/L	121	70.0	130	----
Total Metals (QCLot: 782333)										
VA22D0504-002	Anonymous	aluminum, total	7429-90-5	E420	0.187 mg/L	0.2 mg/L	93.5	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		barium, total	7440-39-3	E420	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0364 mg/L	0.04 mg/L	90.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00893 mg/L	0.01 mg/L	89.3	70.0	130	----
		boron, total	7440-42-8	E420	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00370 mg/L	0.004 mg/L	92.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, total	7440-47-3	E420	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		iron, total	7439-89-6	E420	1.82 mg/L	2 mg/L	91.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0175 mg/L	0.02 mg/L	87.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0869 mg/L	0.1 mg/L	86.9	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	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0357 mg/L	0.04 mg/L	89.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.1 mg/L	10 mg/L	101	70.0	130	----
		potassium, total	7440-09-7	E420	3.80 mg/L	4 mg/L	95.1	70.0	130	----
		selenium, total	7782-49-2	E420	0.0372 mg/L	0.04 mg/L	93.1	70.0	130	----
		silicon, total	7440-21-3	E420	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00379 mg/L	0.004 mg/L	94.7	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: 782333) - continued										
VA22D0504-002	Anonymous	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	20.7 mg/L	20 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00351 mg/L	0.004 mg/L	87.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		uranium, total	7440-61-1	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0957 mg/L	0.1 mg/L	95.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.376 mg/L	0.4 mg/L	94.0	70.0	130	----
Total Metals (QCLot: 785158)										
KS2204733-002	Anonymous	mercury, total	7439-97-6	E508	0.0000921 mg/L	0.0001 mg/L	92.1	70.0	130	----
Total Metals (QCLot: 787077)										
KS2204585-002	Anonymous	mercury, total	7439-97-6	E508	ND mg/L	0.0001 mg/L	ND	70.0	130	----
Dissolved Metals (QCLot: 782806)										
VA22D0492-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.183 mg/L	0.2 mg/L	91.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00801 mg/L	0.01 mg/L	80.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.78 mg/L	2 mg/L	89.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0173 mg/L	0.02 mg/L	86.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0951 mg/L	0.1 mg/L	95.1	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	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0352 mg/L	0.04 mg/L	88.1	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.80 mg/L	10 mg/L	98.0	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: 782806) - continued										
VA22D0492-002	Anonymous	potassium, dissolved	7440-09-7	E421	3.77 mg/L	4 mg/L	94.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.24 mg/L	10 mg/L	92.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00371 mg/L	0.004 mg/L	92.9	70.0	130	----
		sodium, dissolved	7440-23-5	E421	1.85 mg/L	2 mg/L	92.6	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	18.8 mg/L	20 mg/L	94.0	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00342 mg/L	0.004 mg/L	85.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0351 mg/L	0.04 mg/L	87.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00347 mg/L	0.004 mg/L	86.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0923 mg/L	0.1 mg/L	92.3	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.370 mg/L	0.4 mg/L	92.5	70.0	130	----
Dissolved Metals (QCLot: 785231)										
KS2204733-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000950 mg/L	0.0001 mg/L	95.0	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 - ...

Environmental Division
Vancouver
Work Order Reference
VA22D0519

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	ERM
Contact:	Tonia Robb
Phone:	604-689-9460
	Company address below will appear on the final report
Street:	15th Floor, 1111 West Hastings St
City/Province:	Vancouver, BC
Postal Code:	V6E 2J3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Artemis Gold Ltd, Blackwater
Contact:	Travis Desormeaux

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Tonia.Robb@erm.com
Email 2	tdesormeaux@artemisgoldinc.com
Email 3	ktanaka@artemisgoldinc.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	tdesormeaux@artemisgoldinc.com
Email 2	accounts@artemisgoldinc.com

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q56205	AFE/Cost Center:	PO#
Job #:	VA22-BWGL100-002	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: A. Springer	Sampler:

Select Service Level Below - Please confirm all E&P TATs with your

Regular [R] ☑ Standard TAT if received by 3

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Bus | Sam | Sta

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level se

Analysis Requ

Indicate Filtered (F), Preserved (P) or Filtered and Pr

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General Parameters/Anions	Ammonia/Nutrients/TOC	DOC	T-CN, WAD-CN	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Thiocyanate					Number of Containers
						P	F/P	P		F		F	P					
	CC-30	14-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	CC-40	14-Dec-22		Water	R	R	R	R	R	R	R	R	R					9
	Travel Blank	14-Dec-22		Water	R	R		R	R		R		R					6
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														
				Water														

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human drinking water use?
☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please also email reports to Envirogeneral@artemisgoldinc.com
Dissolved parameters field-filtered. Metals and mercury not preserved.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
				3	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
<Original signed by>	Date: Dec 15-22	Time: 1100	Received by:	Date:	Time:	Received by: <Original signed by>	Date: 16/12/22	Time: 915 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

APPENDIX B BOX PLOTS SHOWING RESULTS OF MONITORING

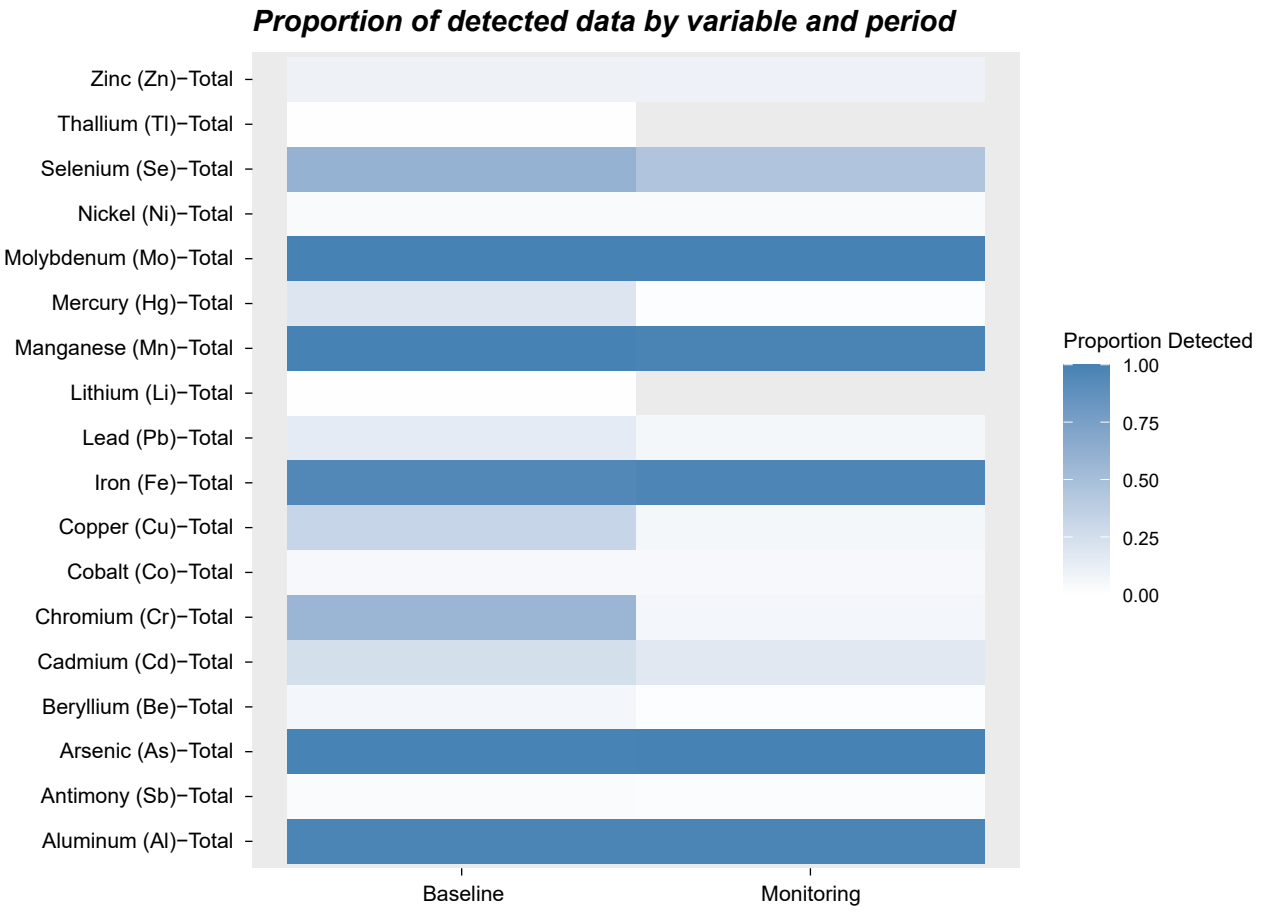
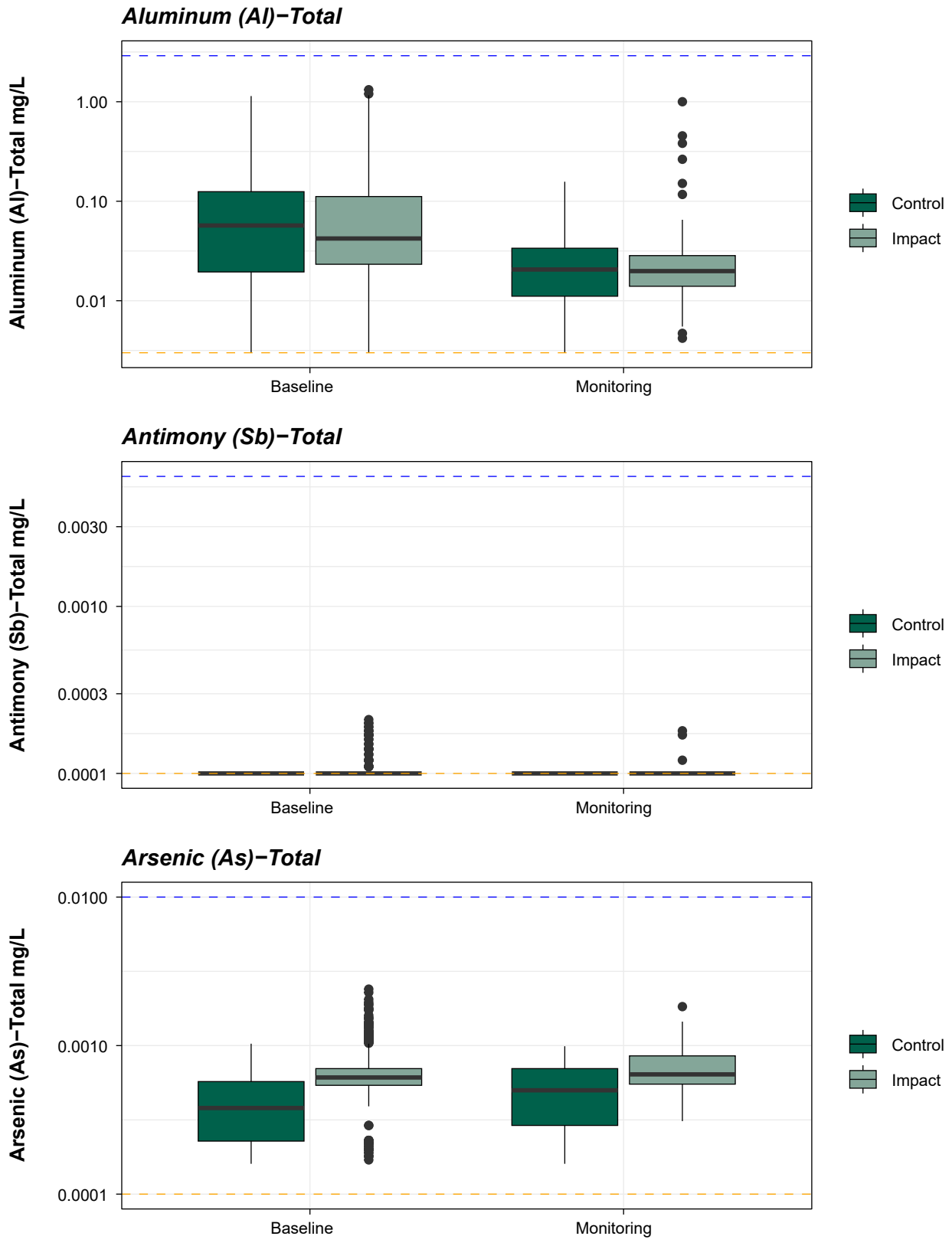
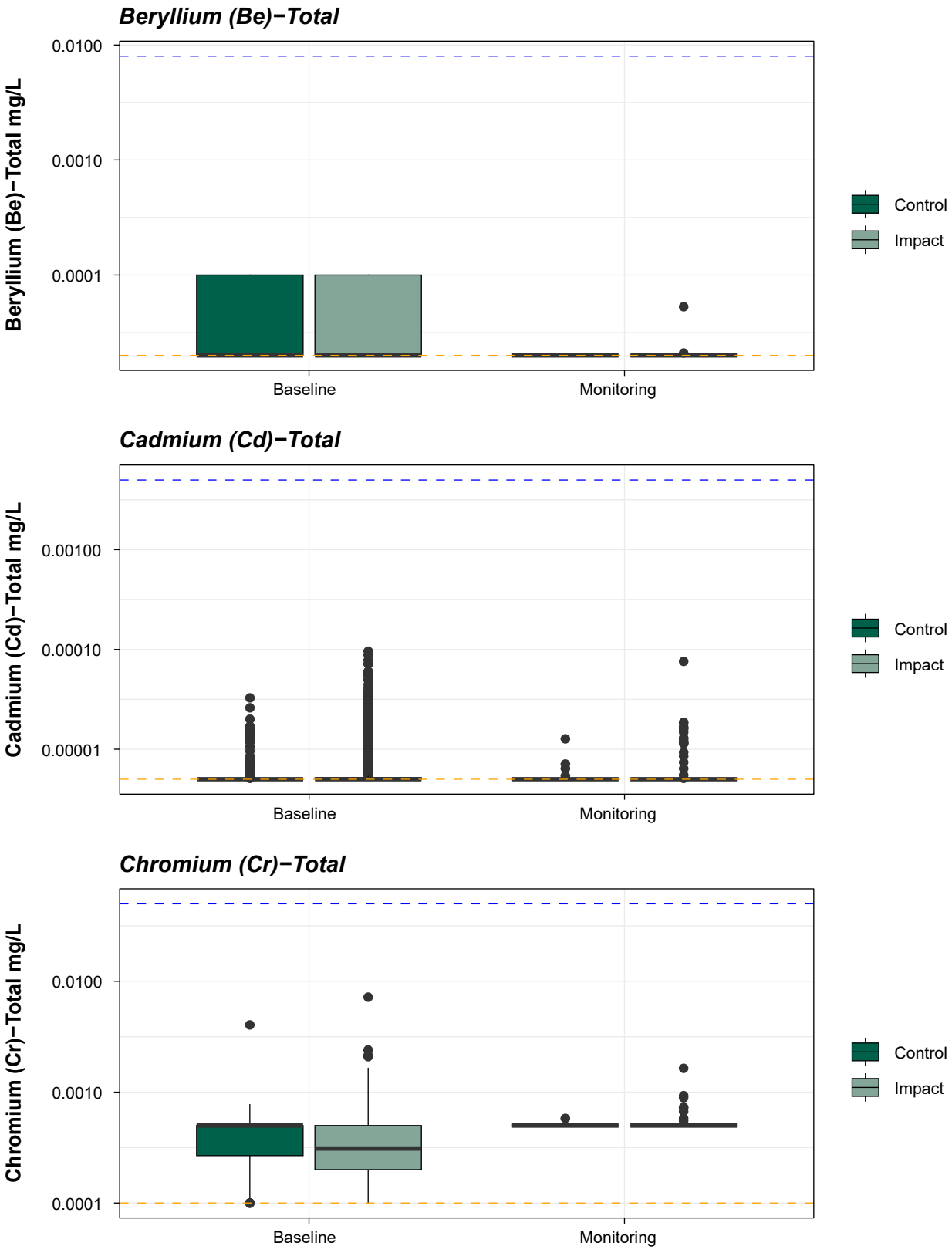


Figure 1: Proportion of Detected Data By Metal Parameter and Time Period



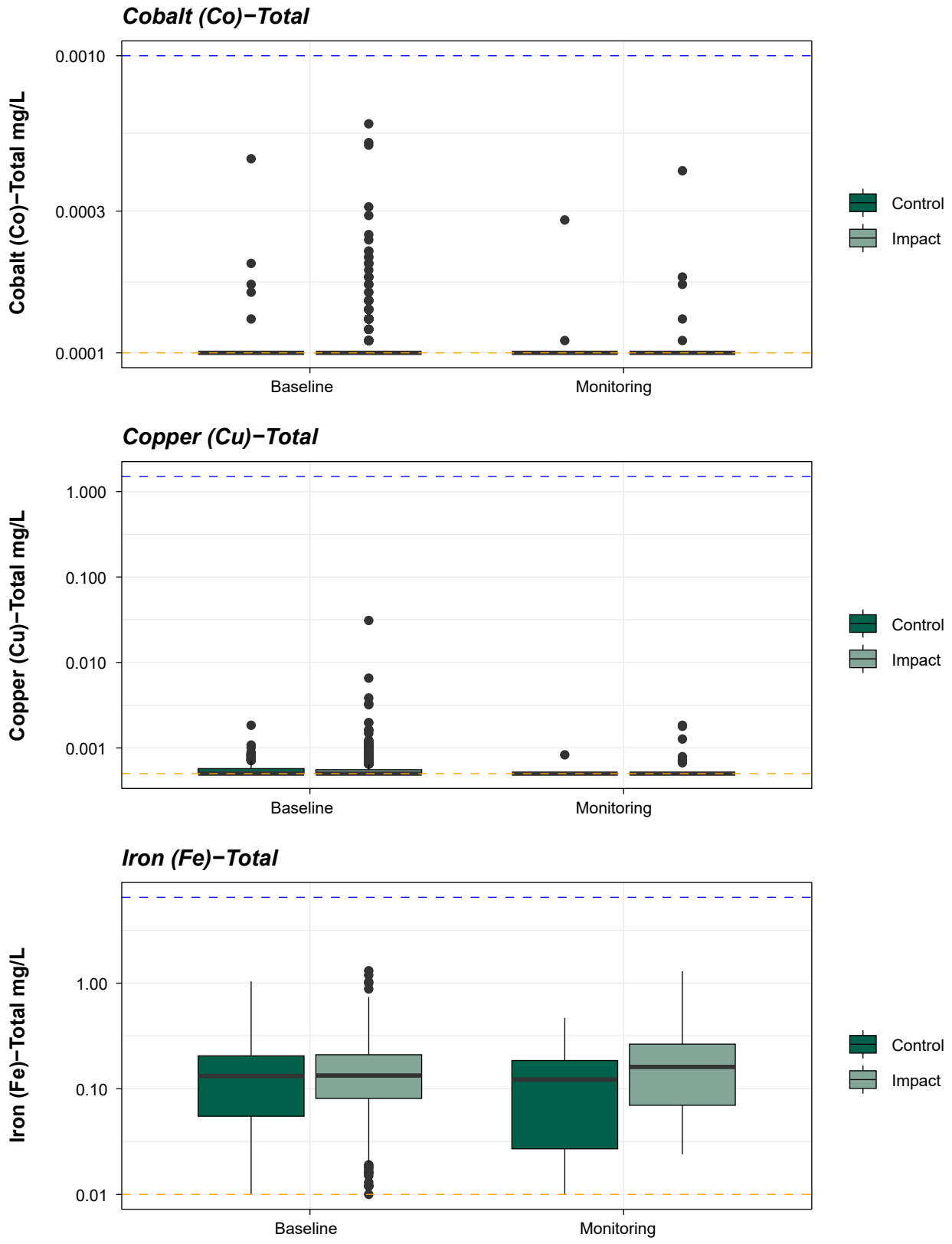
Notes: The center line of each box in the plot denotes the mean value, while the box contains the interquartile range (IQR) of the dataset. The whiskers extend to 1.5 x IQR, and the points beyond these upper and lower bounds may be outliers and are marked with dots. The orange line denotes the lowest detection limit. The blue line denotes the guideline or standard. The lowest of the BC Contaminated Sites Regulation Schedule 3.2 Drinking Water Standards, the BC Source Drinking Water Guideline, and the Health Canada Drinking Water Quality Guideline is shown.

Figure 2: Concentrations of Aluminum, Antimony, and Arsenic in Baseline and during Monitoring at Control and Potential Impact Sites within the Study Area



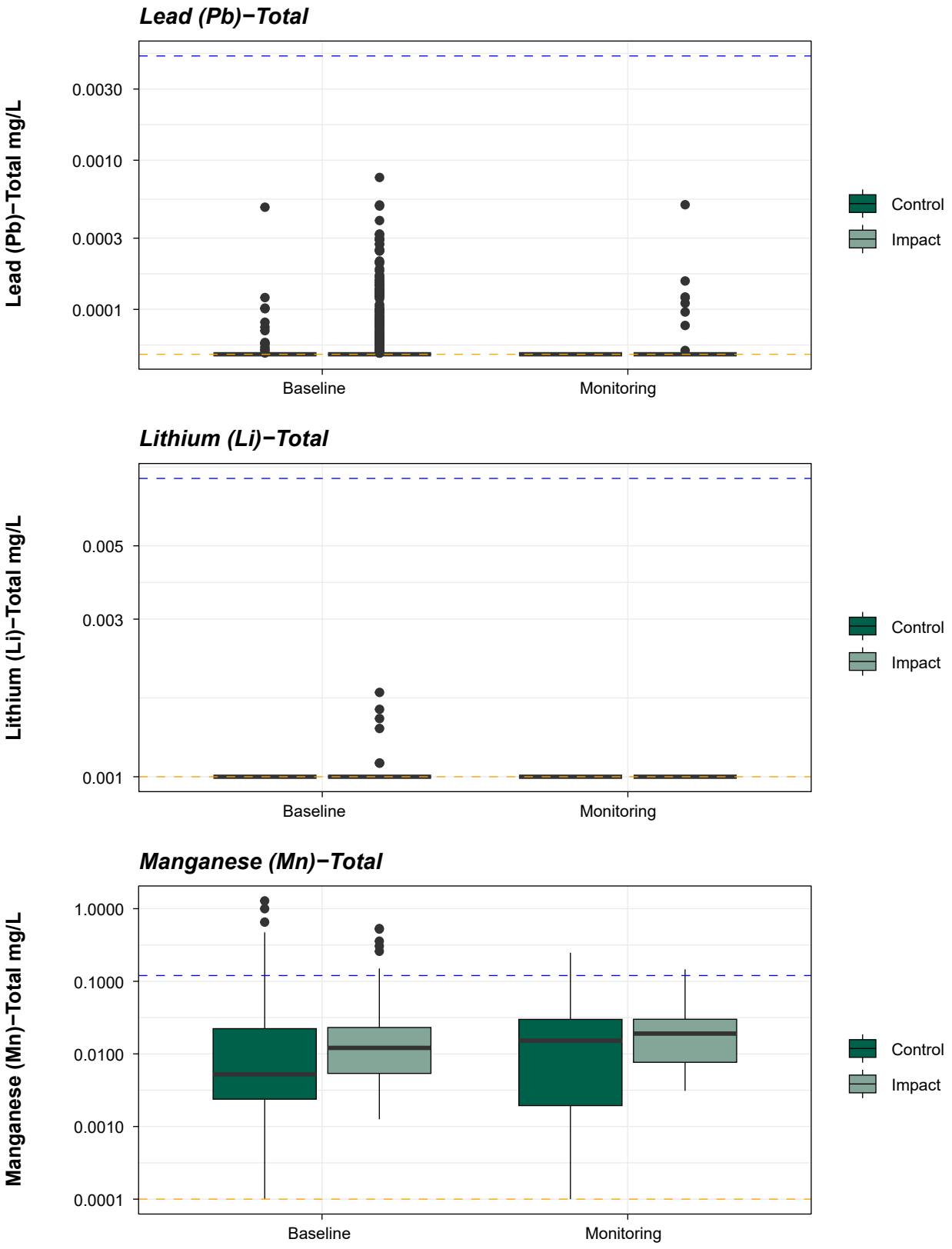
Notes: *The center line of each box in the plot denotes the mean value, while the box contains the interquartile range (IQR) of the dataset. The whiskers extend to 1.5 x IQR, and the points beyond these upper and lower bounds may be outliers and are marked with dots. The orange line denotes the lowest detection limit. The blue line denotes the guideline or standard. The lowest of the BC Contaminated Sites Regulation Schedule 3.2 Drinking Water Standards, the BC Source Drinking Water Guideline, and the Health Canada Drinking Water Quality Guideline is shown.*

Figure 3: Concentrations of Beryllium, Cadmium, and Chromium in Baseline and during Monitoring at Control and Potential Impact Sites within the Study Area



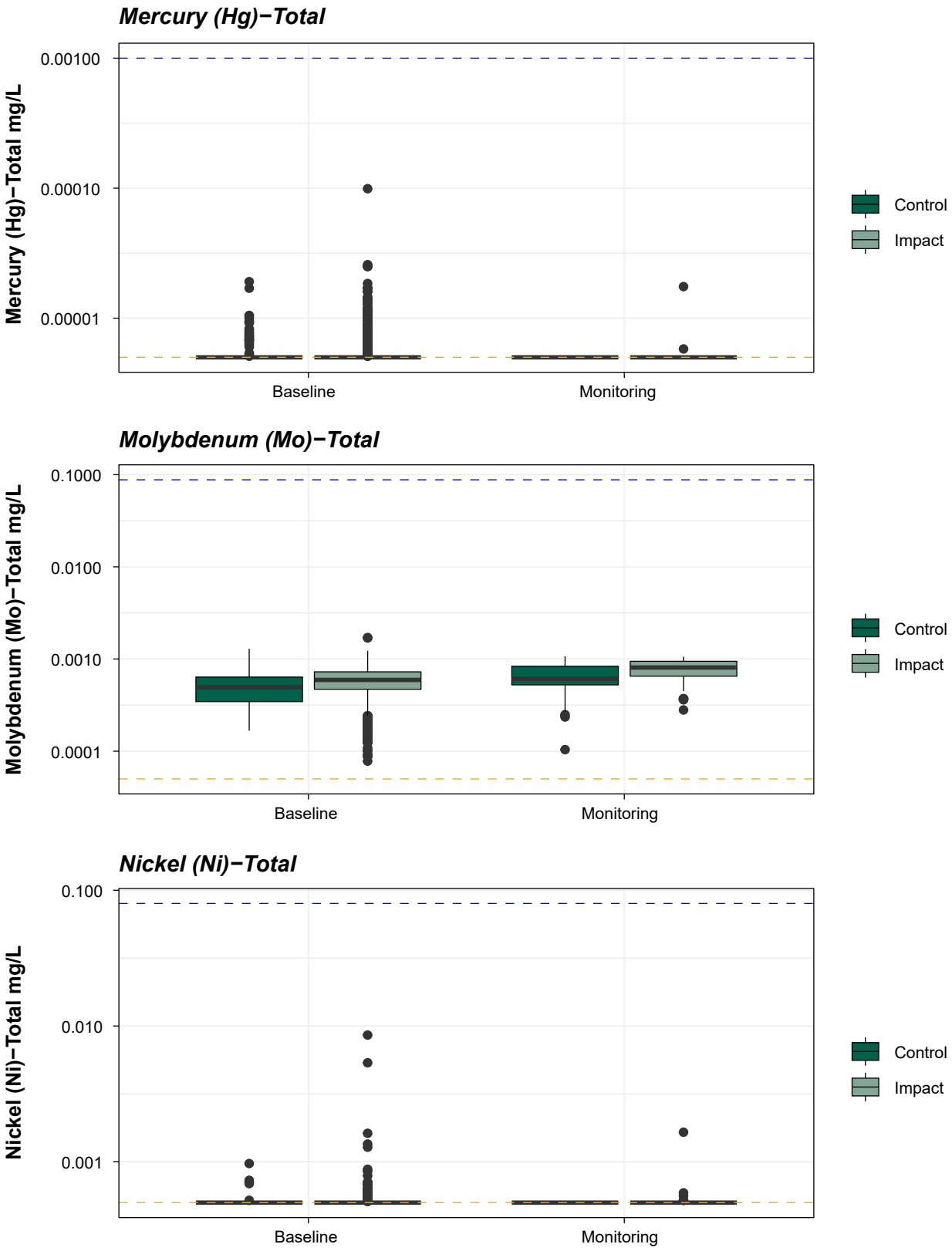
Notes: The center line of each box in the plot denotes the mean value, while the box contains the interquartile range (IQR) of the dataset. The whiskers extend to 1.5 x IQR, and the points beyond these upper and lower bounds may be outliers and are marked with dots. The orange line denotes the lowest detection limit. The blue line denotes the guideline or standard. The lowest of the BC Contaminated Sites Regulation Schedule 3.2 Drinking Water Standards, the BC Source Drinking Water Guideline, and the Health Canada Drinking Water Quality Guideline is shown.

Figure 4: Concentrations of Cobalt, Copper, and Iron in Baseline and during Monitoring at Control and Potential Impact Sites within the Study Area



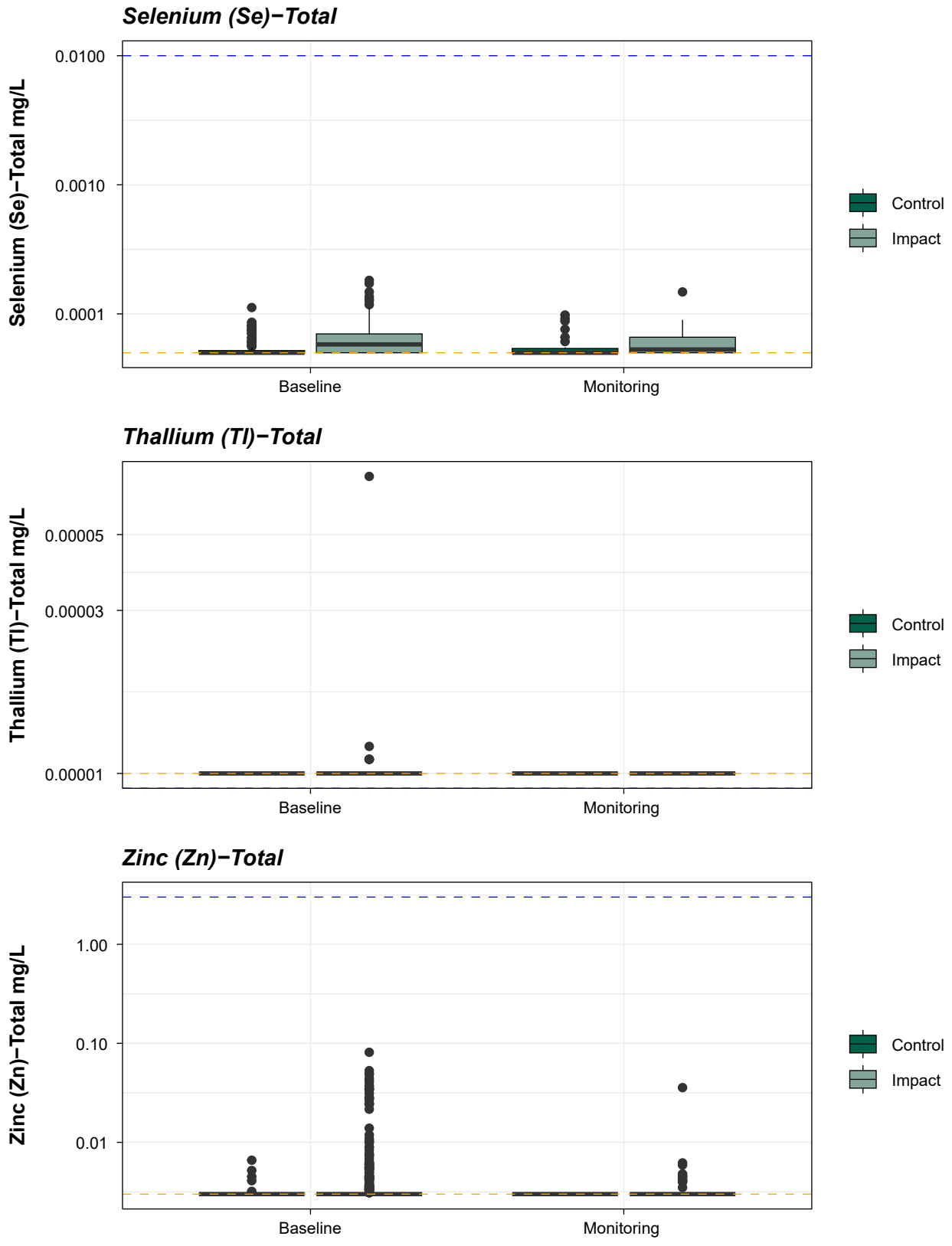
Notes: The center line of each box in the plot denotes the mean value, while the box contains the interquartile range (IQR) of the dataset. The whiskers extend to 1.5 x IQR, and the points beyond these upper and lower bounds may be outliers and are marked with dots. The orange line denotes the lowest detection limit. The blue line denotes the guideline or standard. The lowest of the BC Contaminated Sites Regulation Schedule 3.2 Drinking Water Standards, the BC Source Drinking Water Guideline, and the Health Canada Drinking Water Quality Guideline is shown.

Figure 5: Concentrations of Lead, Lithium, and Manganese in Baseline and during Monitoring at Control and Potential Impact Sites within the Study Area



Notes: *The center line of each box in the plot denotes the mean value, while the box contains the interquartile range (IQR) of the dataset. The whiskers extend to 1.5 x IQR, and the points beyond these upper and lower bounds may be outliers and are marked with dots. The orange line denotes the lowest detection limit. The blue line denotes the guideline or standard. The lowest of the BC Contaminated Sites Regulation Schedule 3.2 Drinking Water Standards, the BC Source Drinking Water Guideline, and the Health Canada Drinking Water Quality Guideline is shown.*

Figure 6: Concentrations of Mercury, Molybdenum, and Nickel in Baseline and during Monitoring at Control and Potential Impact Sites within the Study Area



Notes: The center line of each box in the plot denotes the mean value, while the box contains the interquartile range (IQR) of the dataset. The whiskers extend to 1.5 x IQR, and the points beyond these upper and lower bounds may be outliers and are marked with dots. The orange line denotes the lowest detection limit. The blue line denotes the guideline or standard. The lowest of the BC Contaminated Sites Regulation Schedule 3.2 Drinking Water Standards, the BC Source Drinking Water Guideline, and the Health Canada Drinking Water Quality Guideline is shown.

Figure 7: Concentrations of Selenium, Thallium, and Zinc in Baseline and during Monitoring at Control and Potential Impact Sites within the Study Area

APPENDIX C RESULTS FOR RELATIVE PERCENT DIFFERENCE CALCULATIONS

Appendix C: Relative Percent Difference Results for Stream Water Quality Duplicates, Blackwater Gold Project, October 1 to December 31, 2022

Site	CC-20			CC-03			705-10			CC-05			DC-10			705-10		
Date	2022-10-05			2022-10-11			2022-10-13			2022-10-17			2022-10-20			2022-10-25		
QAQC	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)
Physical Tests																		
pH	7.93	7.75	2.3	8.26	8.25	0.12	7.94	7.92	0.25	8.18	8.19	0.12	7.97	7.97	0	7.63	7.62	0.13
Conductivity	141	139	1.43	226	223	1.34	89.4	88.4	1.12	181	177	2.23	112	113	0.89	84.7	84.7	0
Hardness (as $CaCO_3$)	68.7	68.4	0.44	117	116	0.86	39.4	41.8	5.91	86.4	87	0.69	47.9	48.3	0.83	40.6	39.6	2.49
Hardness, Total (as $CaCO_3$)	67	67.6	0.89	108	108	0	40	39.8	0.5	91.7	92.9	1.3	52.7	52.9	0.38	38.9	38.7	0.52
Total Dissolved Solids	96	118	20.56	122	148	19.26	65	60	8	115	120	4.26	76	70	8.22	60	57	-
Total Suspended Solids	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-
Turbidity	0.84	0.86	2.35	0.82	0.74	10.26	0.17	0.17	-	1.01	0.69	37.65	0.37	0.15	-	0.31	0.12	-
Acidity (as $CaCO_3$)	<2.0	<2.0	-	<2.0	<2.0	-	2.3	2.2	-	<2.0	<2.0	-	<2.0	<2.0	-	2.5	2.6	-
Alkalinity, Total (as $CaCO_3$)	72.3	72.7	0.55	119	119	0	44	44.2	0.45	90.5	92.2	1.86	49.9	50.1	0.4	40.9	40.7	0.49
Anions and Nutrients																		
Total Kjeldahl Nitrogen	0.31	0.299	3.61	0.147	0.187	-	0.101	0.11	-	0.148	0.142	-	0.054	0.062	-	0.115	0.1	-
Ammonia, Total (as N)	0.0059	<0.0050	-	<0.0050	0.0061	-	<0.0050	0.0128	-	<0.0050	<0.0050	-	0.0056	0.0093	-	<0.0050	<0.0050	-
Bromide (Br)	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Chloride (Cl)	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Fluoride (F)	0.056	0.059	-	0.06	0.067	-	0.027	0.028	-	0.059	0.062	-	0.041	0.041	-	0.028	0.029	-
Nitrate (as N)	<0.0050	<0.0050	-	0.0169	0.0145	-	0.0428	0.0425	0.7	<0.0050	0.0171	-	<0.0050	<0.0050	-	0.0647	0.0643	0.62
Nitrite (as N)	<0.0010	<0.0010	-	0.0014	0.0012	-	<0.0010	<0.0010	-	0.0011	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
Orthophosphate-Dissolved (as P)	0.0024	0.0023	-	0.0134	0.0136	1.48	<0.0010	<0.0010	-	0.0141	0.0141	0	0.0036	0.0038	-	0.0012	<0.0010	-
Total Phosphate (as P)	0.0109	0.0097	11.65	0.0145	0.0168	14.7	0.0024	0.0022	-	0.0225	0.0225	0	0.0058	0.0061	-	0.0028	0.0032	-
Sulfate (SO_4)	3.32	3.36	1.2	6.37	6.4	0.47	1.55	1.52	1.95	3.84	3.66	4.8	2.75	2.75	0	1.56	1.55	0.64
Cyanides																		
Cyanide, Strong Acid Diss	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Cyanide, Weak Acid Diss	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Thiocyanate	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Organic / Inorganic Carbon																		
Total Organic Carbon	8.03	7.21	10.76	4.43	4.56	2.89	5.02	4.98	0.8	4.3	4.17	3.07	2.11	1.97	-	4.29	4.29	0
Dissolved Organic Carbon	7.38	7.84	6.04	4.56	4.24	7.27	5.1	4.88	4.41	4	4.07	1.73	1.75	2.37	-	4.25	4.25	0
Total Metals																		
Aluminum (Al)-Total	0.0132	0.0165	22.22	0.0144	0.0141	-	0.0209	0.0202	3.41	0.0151	0.0144	4.75	0.0139	0.0126	-	0.0231	0.0175	27.59
Antimony (Sb)-Total	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Arsenic (As)-Total	0.00062	0.0007	12.12	0.0008	0.00075	6.45	0.00017	0.00017	-	0.00086	0.00087	1.16	0.00062	0.00057	8.4	0.00016	0.00016	-
Barium (Ba)-Total	0.00734	0.00724	1.37	0.00691	0.00704	1.86	0.0112	0.0114	1.77	0.00665	0.00688	3.4	0.00906	0.00887	2.12	0.0105	0.0106	0.95
Beryllium (Be)-Total	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-
Bismuth (Bi)-Total	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Boron (B)-Total	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-
Cadmium (Cd)-Total	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Calcium (Ca)-Total	19.7	19.9	1.01	30.4	30.2	0.66	12.2	12.1	0.82	25.3	25.8	1.96	15.9	15.9	0	11.8	11.7	0.85
Chromium (Cr)-Total	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-

Notes:

RPD = Relative Percent Difference.

All measurements are mg/L unless otherwise noted.

< indicates less than detection limit.

Dashes indicate the relative percent difference was not calculated.

Appendix C: Relative Percent Difference Results for Stream Water Quality Duplicates, Blackwater Gold Project, October 1 to December 31, 2022

Site	CC-20			CC-03			705-10			CC-05			DC-10			705-10		
Date	2022-10-05			2022-10-11			2022-10-13			2022-10-17			2022-10-20			2022-10-25		
QAQC	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)
Total Metals *(cont'd)*																		
Cobalt (Co)-Total	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Copper (Cu)-Total	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Iron (Fe)-Total	0.164	0.176	7.06	0.182	0.18	1.1	0.022	0.024	-	0.161	0.161	0	0.032	0.032	-	0.027	0.022	-
Lead (Pb)-Total	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Lithium (Li)-Total	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
Magnesium (Mg)-Total	4.33	4.36	0.69	7.86	7.84	0.25	2.32	2.33	0.43	6.92	6.91	0.14	3.16	3.2	1.26	2.29	2.3	0.44
Manganese (Mn)-Total	0.0216	0.0234	8	0.029	0.0279	3.87	0.00168	0.00182	8	0.0135	0.0138	2.2	0.00408	0.00402	1.48	0.00201	0.00144	33.04
Mercury (Hg)-Total	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Molybdenum (Mo)-Total	0.000725	0.000746	2.86	0.00103	0.00103	0	0.000544	0.000501	8.23	0.00103	0.000978	5.18	0.000988	0.000994	0.61	0.000549	0.000528	3.9
Nickel (Ni)-Total	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Phosphorus (P)-Total	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Potassium (K)-Total	0.756	0.766	1.31	1.17	1.15	1.72	0.383	0.382	-	0.936	0.941	0.53	0.522	0.533	2.09	0.354	0.352	-
Selenium (Se)-Total	<0.000050	0.000065	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	0.000073	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Silicon (Si)-Total	4.09	4.03	1.48	6.73	6.72	0.15	4.44	4.56	2.67	7.46	7.38	1.08	6.55	6.6	0.76	4.81	4.81	0
Silver (Ag)-Total	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Sodium (Na)-Total	3.33	3.48	4.41	4.91	4.91	0	2.78	2.78	0	5.09	5.03	1.19	3.73	3.79	1.6	2.76	2.77	0.36
Strontium (Sr)-Total	0.106	0.104	1.9	0.123	0.122	0.82	0.0772	0.078	1.03	0.118	0.12	1.68	0.107	0.107	0	0.0753	0.0747	0.8
Sulfur (S)-Total	1.08	1.08	-	2.07	2.14	-	<0.50	<0.50	-	1.38	1.37	-	1.22	1.02	-	<0.50	<0.50	-
Thallium (Tl)-Total	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Tin (Sn)-Total	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Titanium (Ti)-Total	0.00054	<0.00090	-	0.00052	0.00055	-	<0.00030	<0.00030	-	0.00049	0.00045	-	<0.00030	<0.00030	-	0.00033	<0.00030	-
Uranium (U)-Total	0.000108	0.00011	1.83	0.000198	0.000193	2.56	0.000114	0.00011	3.57	0.000228	0.000238	4.29	0.000288	0.000301	4.41	0.000114	0.000111	2.67
Vanadium (V)-Total	0.00065	0.00068	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	0.00052	0.00059	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Zinc (Zn)-Total	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-
Dissolved Metals																		
Aluminum (Al)-Dissolved	0.0052	0.0046	12.24	0.0033	0.0035	-	0.0172	0.0178	3.43	0.0062	0.0075	18.98	0.0144	0.009	46.15	0.0162	0.0151	7.03
Antimony (Sb)-Dissolved	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Arsenic (As)-Dissolved	0.00059	0.0006	1.68	0.00069	0.00072	4.26	0.00017	0.00015	-	0.00088	0.00084	4.65	0.00052	0.00051	1.94	0.00014	0.00015	-
Barium (Ba)-Dissolved	0.00749	0.00748	0.13	0.00679	0.00673	0.89	0.0113	0.0113	0	0.00645	0.00636	1.41	0.00869	0.00863	0.69	0.0103	0.0302	98.27
Beryllium (Be)-Dissolved	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Boron (B)-Dissolved	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Calcium (Ca)-Dissolved	19.7	19.6	0.51	32.9	32.6	0.92	12	13	8	23.9	24.1	0.83	14.2	14.4	1.4	12.6	12.2	3.23
Chromium (Cr)-Dissolved	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Cobalt (Co)-Dissolved	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Copper (Cu)-Dissolved	0.00048	0.00046	-	<0.00020	<0.00020	-	0.00034	0.00035	-	<0.00020	0.00021	-	<0.00020	<0.00020	-	0.00028	0.00028	-
Iron (Fe)-Dissolved	0.115	0.112	2.64	0.103	0.105	1.92	0.019	0.019	-	0.107	0.111	3.67	0.04	0.025	-	0.019	0.018	-

Notes:

RPD = Relative Percent Difference.

All measurements are mg/L unless otherwise noted.

< indicates less than detection limit.

Dashes indicate the relative percent difference was not calculated.

Appendix C: Relative Percent Difference Results for Stream Water Quality Duplicates, Blackwater Gold Project, October 1 to December 31, 2022

Site	CC-20			CC-03			705-10			CC-05			DC-10			705-10		
Date	2022-10-05			2022-10-11			2022-10-13			2022-10-17			2022-10-20			2022-10-25		
QAQC	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)
Dissolved Metals *(cont'd)*																		
Lead (Pb)-Dissolved	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Lithium (Li)-Dissolved	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
Magnesium (Mg)-Dissolved	4.73	4.73	0	8.5	8.51	0.12	2.3	2.28	0.87	6.49	6.52	0.46	3.03	2.99	1.33	2.22	2.21	0.45
Manganese (Mn)-Dissolved	0.0192	0.0186	3.17	0.018	0.0183	1.65	0.00143	0.00141	1.41	0.00657	0.00655	0.3	0.00328	0.00326	0.61	0.00103	0.00108	4.74
Mercury (Hg)-Dissolved	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Molybdenum (Mo)-Dissolved	0.000747	0.000731	2.17	0.000996	0.000966	3.06	0.000518	0.000572	9.91	0.000958	0.000934	2.54	0.000965	0.000943	2.31	0.000512	0.000507	0.98
Nickel (Ni)-Dissolved	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Phosphorus (P)-Dissolved	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Potassium (K)-Dissolved	0.826	0.829	0.36	1.14	1.13	0.88	0.38	0.381	-	0.882	0.921	4.33	0.484	0.489	-	0.328	0.328	-
Selenium (Se)-Dissolved	0.000064	0.000052	-	<0.000050	0.000053	-	<0.000050	<0.000050	-	<0.000050	0.00005	-	<0.000050	0.000076	-	<0.000050	<0.000050	-
Silicon (Si)-Dissolved	4.2	4.27	1.65	6.63	6.79	2.38	4.55	4.53	0.44	7.18	7.08	1.4	6.15	6.33	2.88	4.45	4.41	0.9
Silver (Ag)-Dissolved	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	0.000016	0.000011	-	<0.000010	<0.000010	-
Sodium (Na)-Dissolved	3.8	3.81	0.26	4.95	4.96	0.2	2.74	2.78	1.45	4.49	4.54	1.11	3.48	3.43	1.45	2.63	2.6	1.15
Strontium (Sr)-Dissolved	0.102	0.103	0.98	0.13	0.131	0.77	0.0756	0.0802	5.91	0.108	0.109	0.92	0.104	0.104	0	0.072	0.0705	2.11
Sulfur (S)-Dissolved	1.11	1.03	-	2	2.2	-	<0.50	<0.50	-	1.38	1.28	-	0.9	0.84	-	<0.50	<0.50	-
Thallium (Tl)-Dissolved	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Tin (Sn)-Dissolved	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Titanium (Ti)-Dissolved	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	0.001	<0.00030	-	<0.00030	<0.00030	-
Uranium (U)-Dissolved	0.000106	0.000102	3.85	0.000194	0.000197	1.53	0.000109	0.000114	4.48	0.000222	0.000231	3.97	0.000287	0.000301	4.76	0.000111	0.00011	0.9
Vanadium (V)-Dissolved	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	0.0005	0.00051	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Zinc (Zn)-Dissolved	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-

Notes:
RPD = Relative Percent Difference.
All measurements are mg/L unless otherwise noted.
< indicates less than detection limit.
Dashes indicate the relative percent difference was not calculated.

Appendix C: Relative Percent Difference Results for Stream Water Quality Duplicates, Blackwater Gold Project, October 1 to December 31, 2022

Site	DC-20			705-10			DC-10			FC-01			CC-15		
Date	2022-10-26			2022-11-02			2022-11-21			2022-12-01			2022-12-07		
QAQC	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)
Physical Tests															
pH	8.08	8.08	0	7.72	7.74	0.26	7.9	7.89	0.13	7.71	7.72	0.13	7.74	7.75	0.13
Conductivity	128	128	0	92.8	91.8	1.08	116	116	0	86	86.8	0.93	151	151	0
Hardness (as $CaCO_3$)	61	60.6	0.66	43.1	42.8	0.7	49.2	49.4	0.41	35.4	37.2	4.96	65.5	69.4	5.78
Hardness, Total (as $CaCO_3$)	59.1	60.1	1.68	45.5	45.9	0.88	47.9	48.7	1.66	39.5	37.8	4.4	69.3	70.6	1.86
Total Dissolved Solids	93	86	7.82	76	58	26.87	72	73	1.38	57	58	-	108	100	7.69
Total Suspended Solids	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-	<3.0	<3.0	-
Turbidity	0.46	0.63	31.19	0.12	0.12	-	0.17	0.19	-	<0.10	<0.10	-	0.73	0.72	1.38
Acidity (as $CaCO_3$)	2.2	<2.0	-	<2.0	<2.0	-	2.2	2.1	-	2.2	2.2	-	<2.0	<2.0	-
Alkalinity, Total (as $CaCO_3$)	58.4	58.2	0.34	41.5	40.9	1.46	52.7	53	0.57	40.3	40.1	0.5	71.7	71.5	0.28
Anions and Nutrients															
Total Kjeldahl Nitrogen	0.087	0.062	-	0.139	0.151	-	<0.050	<0.050	-	<0.050	<0.050	-	0.229	0.234	-
Ammonia, Total (as N)	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	0.0113	0.0085	-
Bromide (Br)	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Chloride (Cl)	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Fluoride (F)	0.049	0.049	-	0.029	0.03	-	0.044	0.045	-	0.021	0.02	-	0.056	0.058	-
Nitrate (as N)	<0.0050	<0.0050	-	0.0505	0.0497	1.6	0.0271	0.0272	0.37	0.0547	0.0503	8.38	0.0836	0.0835	0.12
Nitrite (as N)	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	0.0016	0.0016	-
Orthophosphate-Dissolved (as P)	0.0043	0.0046	-	0.0014	<0.0010	-	0.0058	0.0058	0	0.0041	0.0054	27.37	0.0118	0.0121	2.51
Total Phosphate (as P)	0.0074	0.0073	-	0.0033	0.0029	-	0.0052	0.0048	-	0.006	0.0069	-	0.0215	0.022	2.3
Sulfate (SO_4)	2.52	2.52	0	1.64	1.6	2.47	3.32	3.33	0.3	2.55	2.42	5.23	3.69	3.71	0.54
Cyanides															
Cyanide, Strong Acid Diss	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Cyanide, Weak Acid Diss	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Thiocyanate	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Organic / Inorganic Carbon															
Total Organic Carbon	2.98	2.86	4.11	4.75	4.82	1.46	1.56	1.75	-	1.59	1.38	-	8.08	8.12	0.49
Dissolved Organic Carbon	2.78	2.55	8.63	4.48	4.66	3.94	1.83	1.89	-	1.04	1.29	-	7.8	7.44	4.72
Total Metals															
Aluminum (Al)-Total	0.014	0.0153	8.87	0.0227	0.0198	13.65	0.0136	0.0126	-	0.0099	0.0088	-	0.0155	0.0166	6.85
Antimony (Sb)-Total	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Arsenic (As)-Total	0.00058	0.00055	5.31	0.00018	0.00019	-	0.00053	0.00051	3.85	0.0008	0.00077	3.82	0.00054	0.00055	1.83
Barium (Ba)-Total	0.00916	0.00937	2.27	0.0118	0.0121	2.51	0.00836	0.00803	4.03	0.0044	0.00424	3.7	0.00721	0.00735	1.92
Beryllium (Be)-Total	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-
Bismuth (Bi)-Total	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Boron (B)-Total	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-
Cadmium (Cd)-Total	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Calcium (Ca)-Total	16.7	17.3	3.53	14	14	0	14.5	14.9	2.72	13.4	12.8	4.58	20	20.4	1.98
Chromium (Cr)-Total	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-

Notes:

RPD = Relative Percent Difference.

All measurements are mg/L unless otherwise noted.

< indicates less than detection limit.

Dashes indicate the relative percent difference was not calculated.

Appendix C: Relative Percent Difference Results for Stream Water Quality Duplicates, Blackwater Gold Project, October 1 to December 31, 2022

Site	DC-20			705-10			DC-10			FC-01			CC-15		
Date	2022-10-26			2022-11-02			2022-11-21			2022-12-01			2022-12-07		
QAQC	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)
Total Metals *(cont'd)*															
Cobalt (Co)-Total	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Copper (Cu)-Total	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Iron (Fe)-Total	0.238	0.241	1.25	0.028	0.023	-	0.034	0.034	-	<0.010	<0.010	-	0.115	0.116	0.87
Lead (Pb)-Total	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Lithium (Li)-Total	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
Magnesium (Mg)-Total	4.22	4.11	2.64	2.56	2.65	3.45	2.84	2.8	1.42	1.46	1.43	2.08	4.7	4.77	1.48
Manganese (Mn)-Total	0.0245	0.0255	4	0.00171	0.00132	25.74	0.00341	0.0032	6.35	<0.00010	<0.00010	-	0.0231	0.0233	0.86
Mercury (Hg)-Total	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Molybdenum (Mo)-Total	0.000845	0.000866	2.45	0.000581	0.000595	2.38	0.00091	0.000901	0.99	0.000905	0.000817	10.22	0.000649	0.000652	0.46
Nickel (Ni)-Total	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Phosphorus (P)-Total	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Potassium (K)-Total	0.602	0.624	3.59	0.404	0.431	-	0.46	0.449	-	0.427	0.414	-	0.827	0.82	0.85
Selenium (Se)-Total	<0.000050	0.000057	-	0.000061	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Silicon (Si)-Total	6.34	6.58	3.72	5.38	5.5	2.21	6.41	6.35	0.94	5.95	5.66	5	5.68	5.7	0.35
Silver (Ag)-Total	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Sodium (Na)-Total	3.94	3.82	3.09	3.15	3.27	3.74	3.36	3.28	2.41	2.8	2.72	2.9	3.59	3.6	0.28
Strontium (Sr)-Total	0.106	0.107	0.94	0.0865	0.0849	1.87	0.0972	0.0912	6.37	0.0594	0.0544	8.79	0.105	0.106	0.95
Sulfur (S)-Total	0.71	0.75	-	0.68	0.58	-	0.85	1.1	-	1	1.14	-	1.15	1.2	-
Thallium (Tl)-Total	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Tin (Sn)-Total	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Titanium (Ti)-Total	<0.00060	0.00082	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	0.00064	0.0006	-
Uranium (U)-Total	0.000282	0.00029	2.8	0.000125	0.000121	3.25	0.000286	0.000286	0	0.00007	0.000073	4.2	0.000117	0.000116	0.86
Vanadium (V)-Total	<0.00050	0.00052	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	0.00054	0.00052	-	<0.00050	<0.00050	-
Zinc (Zn)-Total	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-	<0.0030	<0.0030	-
Dissolved Metals															
Aluminum (Al)-Dissolved	0.0065	0.0057	13.11	0.0152	0.0149	1.99	0.0074	0.0078	5.26	0.0063	0.0065	3.12	0.0024	0.0021	-
Antimony (Sb)-Dissolved	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Arsenic (As)-Dissolved	0.0005	0.00047	6.19	0.00014	0.00014	-	0.00051	0.00048	6.06	0.00068	0.00074	8.45	0.00052	0.0005	3.92
Barium (Ba)-Dissolved	0.00882	0.00869	1.48	0.0111	0.0112	0.9	0.00793	0.00817	2.98	0.00417	0.00421	0.95	0.00715	0.00694	2.98
Beryllium (Be)-Dissolved	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-	<0.000020	<0.000020	-
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Boron (B)-Dissolved	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Calcium (Ca)-Dissolved	17.5	17.7	1.14	13.3	13.2	0.75	14.9	14.9	0	12	12.6	4.88	18.6	19.9	6.75
Chromium (Cr)-Dissolved	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Cobalt (Co)-Dissolved	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Copper (Cu)-Dissolved	<0.00020	<0.00020	-	0.00031	0.00031	-	<0.00020	<0.00020	-	<0.00020	<0.00020	-	0.00032	0.00038	-
Iron (Fe)-Dissolved	0.196	0.188	4.17	0.018	0.018	-	0.019	0.019	-	<0.010	<0.010	-	0.068	0.066	2.99

Notes:

RPD = Relative Percent Difference.

All measurements are mg/L unless otherwise noted.

< indicates less than detection limit.

Dashes indicate the relative percent difference was not calculated.

Appendix C: Relative Percent Difference Results for Stream Water Quality Duplicates, Blackwater Gold Project, October 1 to December 31, 2022

Site	DC-20			705-10			DC-10			FC-01			CC-15		
Date	2022-10-26			2022-11-02			2022-11-21			2022-12-01			2022-12-07		
QAQC	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)	Regular	Replicate	RPD (%)
Dissolved Metals *(cont'd)*															
Lead (Pb)-Dissolved	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Lithium (Li)-Dissolved	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
Magnesium (Mg)-Dissolved	4.21	3.99	5.37	2.41	2.38	1.25	2.92	2.95	1.02	1.32	1.4	5.88	4.62	4.78	3.4
Manganese (Mn)-Dissolved	0.0227	0.0222	2.23	0.00093	0.00101	8.25	0.0023	0.00251	8.73	<0.00010	<0.00010	-	0.0204	0.02	1.98
Mercury (Hg)-Dissolved	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	<0.0000050	-
Molybdenum (Mo)-Dissolved	0.0008	0.000822	2.71	0.000547	0.000566	3.41	0.000886	0.00088	0.68	0.000814	0.000818	0.49	0.000648	0.000642	0.93
Nickel (Ni)-Dissolved	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Phosphorus (P)-Dissolved	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Potassium (K)-Dissolved	0.58	0.567	2.27	0.369	0.369	-	0.48	0.474	-	0.381	0.393	-	0.882	0.878	0.45
Selenium (Se)-Dissolved	<0.000050	<0.000050	-	<0.000050	<0.000050	-	0.000053	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Silicon (Si)-Dissolved	6.14	6.16	0.33	4.92	4.89	0.61	6.38	6.43	0.78	5.33	5.47	2.59	5.44	5.35	1.67
Silver (Ag)-Dissolved	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Sodium (Na)-Dissolved	3.8	3.66	3.75	2.84	2.83	0.35	3.68	3.64	1.09	2.49	2.59	3.94	3.67	3.67	0
Strontium (Sr)-Dissolved	0.105	0.102	2.9	0.0772	0.0786	1.8	0.104	0.105	0.96	0.0581	0.0583	0.34	0.106	0.103	2.87
Sulfur (S)-Dissolved	0.76	0.74	-	0.59	0.65	-	0.78	0.89	-	0.82	0.74	-	1.17	1.14	-
Thallium (Tl)-Dissolved	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-
Tin (Sn)-Dissolved	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-
Titanium (Ti)-Dissolved	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-
Uranium (U)-Dissolved	0.000254	0.00026	2.33	0.000114	0.000113	0.88	0.000238	0.000241	1.25	0.000065	0.000061	6.35	0.00011	0.000109	0.91
Vanadium (V)-Dissolved	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Zinc (Zn)-Dissolved	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-

Notes:
RPD = Relative Percent Difference.
All measurements are mg/L unless otherwise noted.
< indicates less than detection limit.
Dashes indicate the relative percent difference was not calculated.

Appendix 8: 2022 Country Foods and Socio-economic Conditions Follow-up Program: Current Conditions Report

DRAFT



BW GOLD LTD
a subsidiary company of Artemis Gold Inc

Blackwater Gold Project

Country Foods and Socio-economic Conditions Follow-Up Program: Current Conditions Report

June 2023

Project No.: 0679176-10

The business of sustainability

ERM

June 2023

Blackwater Gold Project

Country Foods and Socio-economic Conditions Follow-Up Program: Current Conditions Report

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CONTEXT STATEMENT

The Blackwater Gold Project (Project) received Environmental Assessment Certificate #M19-01 (EAC) on June 21, 2019 under the 2002 *Environmental Assessment Act* and a Decision Statement (DS) on April 15, 2019 under the *Canadian Environmental Assessment Act*, 2012, approving the Project with conditions. Blackwater is an open pit gold and silver mine with associated ore processing facilities located 112 kilometres southwest of Vanderhoof in British Columbia.

Condition 6.13 of the DS requires the development of a follow-up program to verify the accuracy of environmental assessment as it pertains to adverse environmental effects of the Project on the socioeconomic conditions of Indigenous Peoples as a result of changes to access, availability and quality of country foods.

Condition 2.5.4 of the DS requires the Project proponent to include monitoring relative to baseline conditions.

BW Gold has prepared a Country Foods and Socio-economic Monitoring Follow-Up Program (FUP) in consultation with Indigenous groups. The FUP outlines a process for understanding country food harvesting and socio-economic conditions in the FUP Monitoring Area throughout the life of the Project. A component of the FUP is the development of a Current Conditions Report (CFSEC FUP Current Conditions Report or Current Conditions Report) to describe harvesting and socio-economic conditions prior to Major Works and lay a foundation for ongoing monitoring as described in the FUP.

BW Gold is providing this draft version of the Current Conditions Report to the Indigenous groups for review and comment. BW Gold welcomes comments on the draft report.

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ACRONYMS AND ABBREVIATIONS

Artemis	Artemis Gold Inc.
BW Gold	BW Gold Inc.
BC	British Columbia
Blackwater or Project	Blackwater Project or Blackwater Gold Project
BW Gold	BW Gold LTD.
CEMMP	Community Effects Monitoring and Management Plan
CFMP	Country Food Monitoring Program
CFSEC FUP Current Conditions Report or Current Conditions Report	Country Foods and Socio-economic Conditions Follow up Program: Current Conditions Report
CSFNs	Carrier Sekani First Nations
DL	Detection L
DS	Decision Statement
EAC or Certificate	Environmental Assessment Certificate
FSR	Forestry Service Road
FUP	Country Foods and Socio-Economic Conditions Follow-Up Program
ha	Hectares
Indigenous Groups or Aboriginal Peoples	Lhoosk'uz Dené Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Saik'uz First Nation, Stellat'en First Nation, Nazko First Nation, Skin Tyee Nation, Tŝilhqot'in Nation, Métis Nation British Columbia, and Nee-Tahi-Buhn Band (as defined in the Project's federal Decision Statement)
IR	Indian Reserve
km	Kilometre
kV	Kilovolt
LDN	Lhoosk'uz Dené Nation
LSA	Local Study Area
MNBC	Métis Nation British Columbia
MSDP	Mine Water and Discharge Management Plan
MTL	Mineral Tolerance Limit
Mtpa	Million tonnes per annum
New Gold	New Gold Inc.

NFN	Nazko First Nation
NHS	National Household Survey
NTBB	Nee-Tahi-Buhn Band
NWFN	Nadleh Whut'en First Nation
Project	Blackwater Gold Project
RSA	Regional Study Area
SFN	Saik'uz First Nation
Skin Tyee	Skin Tyee Nation
StFN	Stellat'en First Nation
TLU	Traditional Land Use
TLUOS	Traditional Land Use and Occupancy Study
TN	Tŝilhqot'in Nation
TNG	Tŝilhqot'in National Government
TSF	Tailings Storage Facility
t/d	Tonnes per day
UFN	Ulkatcho First Nation

1. INTRODUCTION

1.1 Project Overview

The Blackwater Gold Project (the Project) is a greenfield gold and silver open pit mine with associated ore processing facilities, located in central British Columbia (BC) approximately 112 kilometres (km) southwest of Vanderhoof, 160 km southwest of Prince George, and 446 km northeast of Vancouver (Figure 1-1 and Figure 1-2). The mine site is centred at latitude 53°11′22.872″ N and longitude 124°52′0.437″ W (375400 E, 5893000 N) on National Topographic System sheet 93F/02. The mine site is currently accessed by vehicle via the Kluskus Forest Service Road (FSR), the Kluskus-Ootsa FSR and an exploration access road. The Kluskus FSR joins Highway 16 approximately 10 km west of Vanderhoof.

Major mine components include a tailings storage facility (TSF), ore processing facilities, waste rock, overburden and soil stockpiles, borrow areas and quarries, water management infrastructure, water treatment plants, accommodation camps and ancillary facilities. The gold and silver will be recovered into a gold-silver doré product and shipped by air and/or transported by road. Electrical power will be supplied by a new approximately 135 km, 230 kilovolt (kV) overland transmission line that will connect to the BC Hydro grid at the Glenannan substation located near the Endako mine, 65 km west of Vanderhoof.

The Blackwater mine site is located within the traditional territories of Lhoosk'uz Dené Nation (LDN), Ulkatcho First Nation (UFN), Skin Tyee Nation (STN) and Tsilhqot'in Nation (TN). The previous owners of the Project, New Gold Inc. (New Gold) entered into a Participation Agreement with LDN and UFN on April 18, 2019, and LDN and UFN confirmed their support for the Project and consented to the EAC issuance. On closing of the acquisition of the Blackwater Project by Artemis, the Participation Agreement was assigned to BW Gold. Other components of the Project, including the existing Kluskus and Kluskus-Ootsa FSRs and transmission line, cross the traditional territories of Nadleh Whut'en First Nation (NWFN), Saik'uz First Nation (SFN), and Stellat'en First Nation (StFN) (collectively, the Carrier Sekani First Nations [CSFNs]) as well as the traditional territories of the Nazko First Nation (NFN), Nee Tahi Buhn Band, Cheslatta Carrier Nation, and Yekooche First Nation.[1]

The Project is expected to produce approximately 7.5 million ounces (Moz; 198,447 kilograms [kg]) of gold and approximately 40 Moz (850,485 kg) of silver and will generate positive economic impacts, including employment, contracting opportunities, and tax revenues. The Project's capital expenditure is estimated at $1.5 billion with average annual operating costs estimated at $284 million. During the Construction phase, the Project would generate an estimated $810 million in value for the BC economy and an estimated $12.4 billion in value over the 23-year mine life.

New Gold received Environmental Assessment Certificate (EAC) #M19-01 on June 21, 2019 under the 2002 *Environmental Assessment Act* and a Decision Statement on April 15, 2019 under the *Canadian Environmental Assessment Act, 2012*. In August 2020, Artemis acquired the mineral tenures, assets and rights in the Project that were previously held by New Gold. On August 7, 2020, the EAC was transferred to BW Gold, under the 2018 *Environmental Assessment Act*. The Impact Assessment Agency of Canada notified BW Gold on September 25, 2020 to verify that written notice had been provided within 30 days of the change of proponent as required in condition 2.16 of the Decision Statement for the Blackwater Project.

[1] Throughout the EA process, EAO consulted the LDN, UFN, NWFN, SFN and STFN according to the deeper end of the consultation spectrum described in 2004 by the Supreme Court of Canada in Haida Nation v. British Columbia (Minister of Forests). The EAO consulted with STN, TN, Nee-Tahi-Buhn, Cheslatta Carrier Nation and Yekooche First Nation at the lower end of the Haida consultation spectrum (BC EAO 2019).

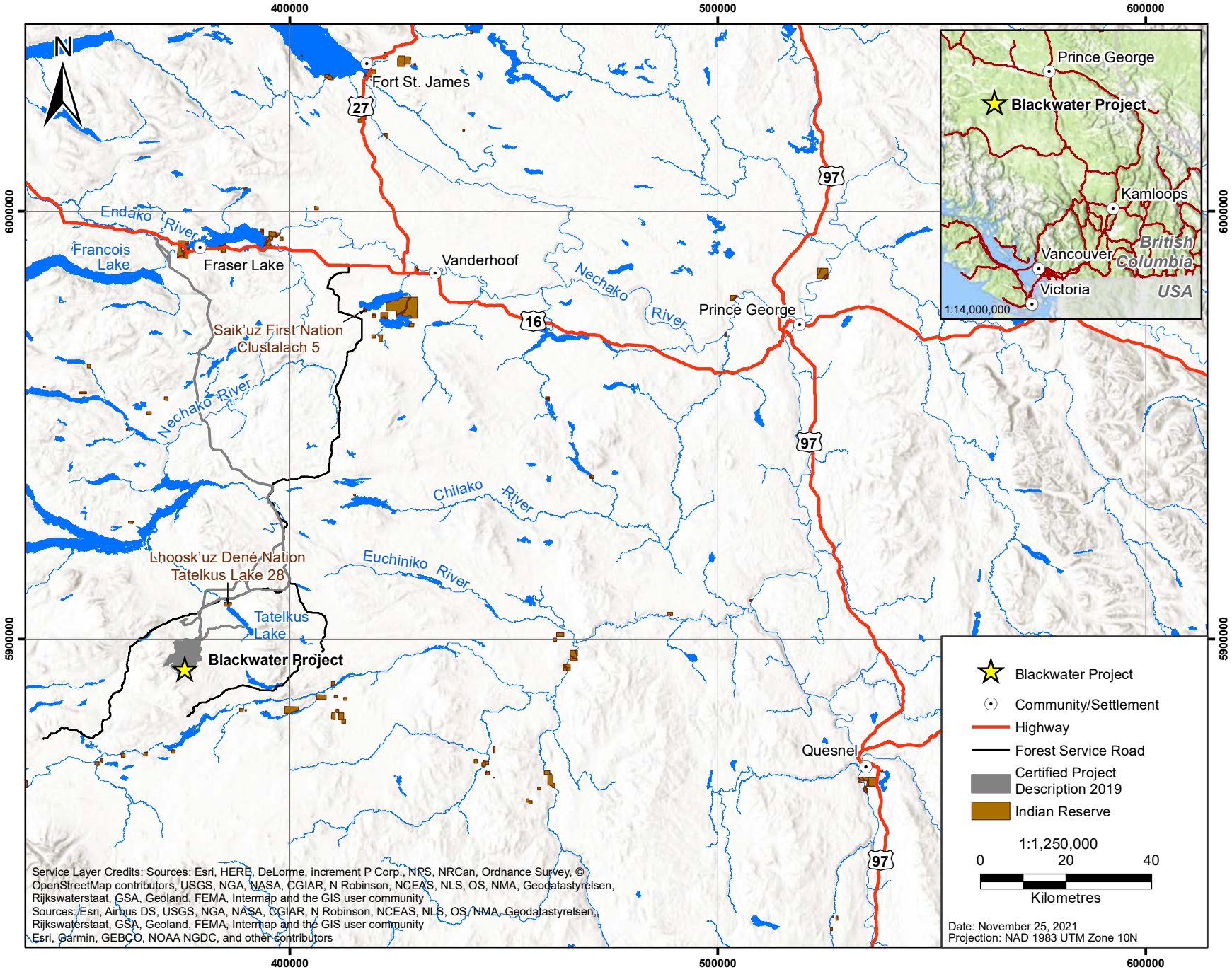


Figure 1-1: Location of the Blackwater Gold Project

DRAFT

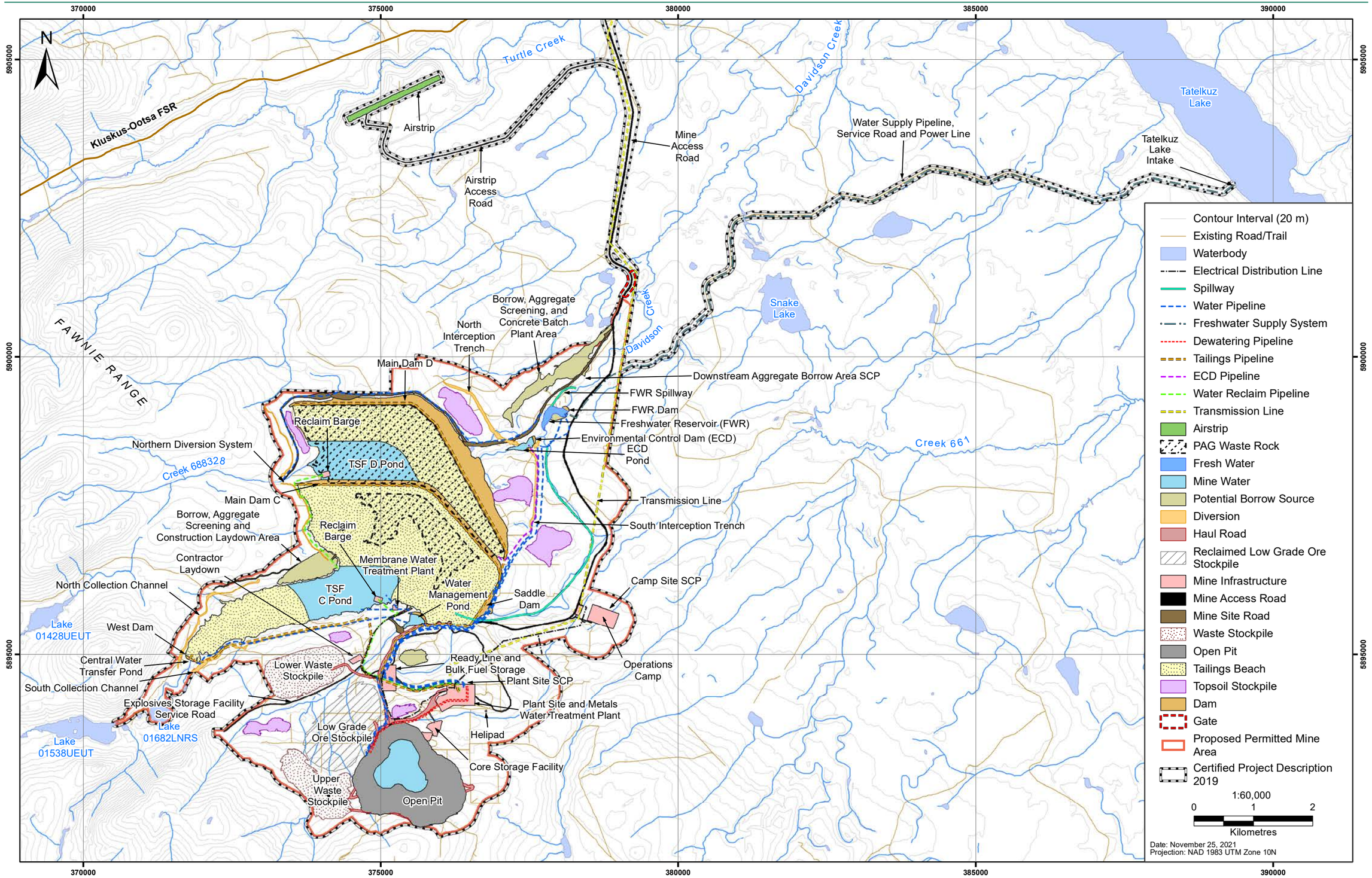


Figure 1-2: Blackwater Gold Project General Arrangement at Year +23

BW Gold holds a 100% recorded interest in 328 mineral claims covering an area of 148,688 hectares (ha) distributed among the Blackwater, Capoose, Auro, Key, Parlane, and RJK claim blocks. The mine site is located within the Blackwater claim block. There are no other parties with beneficial interests in these mineral rights. None of the Blackwater cell claims are known to overlap any legacy, placer mineral claims, Crown granted mineral claims, or no-staking reserves.

1.2 Purpose and Objectives of the FUP

Indigenous groups continue to hunt, trap, fish, and gather country foods. Central to the health of country foods is the availability and quality of water. Water and country foods are critical to the health and well-being of Indigenous peoples, including but not limited to traditional harvesting practices, supporting knowledge transfer, enhancing community members' well-being, and supporting physical fitness.

Condition 6.13 of the Decision Statement requires the Project proponent to develop a Country Food and Socio-Economic Conditions Follow-Up Program (FUP) as follows:

> *The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of the Designated Project on the socio-economic conditions of Indigenous Peoples as a result of changes to access, availability and quality of country foods. The Proponent shall implement the follow-up program from construction through decommissioning and shall apply conditions 2.9 and 2.10 when implementing the follow-up program.*

In accordance with Condition 6.13, BW Gold prepared the FUP to monitor and adaptively manage potential adverse effects on the socio-economic conditions of Indigenous groups as a result of changes to access, availability and quality of country foods due to the Project components and activities.

As described in the FUP, a Current Conditions Report is necessary to understand conditions prior to Major Works and provides the context for identifying changes to country foods and socio-economic condition that may be attributed to the Project over time.

As described in the FUP, the CFSEC FUP Current Conditions Report aims to identify:

- Validate and identify country foods of importance, based on Table 1-2[2] (see Section 1.3-3);
- Validate and update information, as it becomes available, related to country foods access (per species listed in Table 1-2), such as harvesting locations (by type of country foods), current access routes by Indigenous group (e.g., road, trail, water), and anticipated changes, and existing and anticipated barriers to harvesting access;
- Validate and update information, as it becomes available, related to country foods availability (per Table 1-2 species), such as typical harvest in a season, per species, as well as anticipated changes to harvest levels (including a discussion of why the changes are anticipated);
- Understand country foods consumption pattern information provided by Indigenous groups, which, if and when made available, will be used to update future human health risk assessments completed by BW Gold;
- Understand current perceptions of country foods quality (per species listed in Table 1-2) provided by representatives of Indigenous groups (e.g., harvesters, Elders), discuss anticipated changes (real or perceived) to country foods quality as a result of the Project as well as potential changes in consumption levels as a result of perceived effects of the Project to harvested species;

[2] Information presented in Table 1-2 focuses on the species proposed for monitoring in this FUP.

- Understand and validate current reliance on country foods and perception of food security in consideration of access to country foods and store-bought food;
- Understand current levels of physical activity associated with harvesting activities and the relationship between country foods harvesting and wellness; and
- Understand changes to culture, for example in relation to changes to culture camp activities, locations, programming and participation, as appropriate.

The following Current Conditions Report compiles information about socio-economic and country foods harvesting conditions, based on publicly available information. It will be used to present BW Gold's understanding of access, availability and quality of country foods being monitored as part of the FUP, as well as to highlight BW Gold's understanding of the current socio-economic conditions related to food security, health, and culture.

1.3 Methodology

1.3.1 Data Sources

The approach for preparing this Current Conditions Report included a review and compilation of secondary sources (Table 1-1) about country foods access, availability and quality, as well as socio-economic conditions. Additionally, information from field work and studies (e.g., sampling associated with the Country Food Monitoring Program [CFMP]) was incorporated, as it was made available, and this Current Conditions Report includes data collected in August and September 2021.

Many, but not all, secondary sources were prepared prior to the current Project design, including changes to the water management system at the mine as well as the re-alignment of the transmission line undertaken in collaboration with the CSFNs. In the case of the transmission line re-alignment, changes were made specifically in consideration of traditional knowledge and to avoid impacting important sites and/or reduce adverse impacts on Aboriginal rights and interests such as harvesting rights.

Table 1-1: Data Sources for the Current Conditions Report

Name of Data Source/Report	Year
Ulkatcho Food and Medicine Plants	1996
2011 First Nations Food, Nutrition and Environment Study	2011
Ulkatcho First Nation Traditional Land Use and Ecological Knowledge of the proposed New Gold Inc. Blackwater Project	2013
Stellat'en First Nation Land and Resource Use Study Report	2014
Skin Tyee First Nation Traditional Land Use Study for New Gold Inc.'s Proposed Blackwater Project	2015
Stellat'en First Nation Socio-economic Study – For New Gold Inc.'s Proposed Blackwater Gold Project	2015
Traditional Land Use and Occupancy Study for the New Gold Inc. Blackwater Project (SFN)	2015
Nadleh Whut'en First Nation Socio-economic Study – For New Gold Inc.'s Proposed Blackwater Gold Project	2016
Nadleh Whut'en First Nation Knowledge and Use Study - New Gold's Proposed Blackwater Gold Project	2016
Saik'uz First Nation Socio-economic Baseline Study for the Proposed New Gold Inc. Blackwater Gold Project	2016

Name of Data Source/Report	Year
Blackwater Gold Project Proposed Change to the Transmission Line Alignment – Non-Traditional Land Use Effects Assessment Memorandum	2017
Letter to Tavis McDonald Re: The Impacts from the Blackwater Gold Project on Nazko First Nation's Aboriginal Title and Rights.	2017
Lhoosk'uz Dené Nation Socio-Economic Assessment – New Gold Inc.'s Blackwater Gold Project Environmental Assessment	2017
Federal Assessment Report	2019
Lhoosk'uz Dené Nation and Ulkatcho First Nation Part C - Blackwater Gold Mine Project	2019
Part C Assessment (CSFNs)	2019
Part C Assessment (LDN and UFN)	2019
2021 Cumulative Soil and Vegetation Baseline Report (ERM)	2022
Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline	2022
Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan	2022
Indigenous Food Sovereignty and Food Security in a Changing Climate Report	2022
Ulkatcho First Nation Strategic Plan 2022-2027	2022
2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report	2023
Country Foods Monitoring Plan: Environmental Assessment Certificate Condition 41 Annual Report 2022	2023
Indigenous-led projects get $1.1M to grow food security (Article)	2023

1.3.2 Engagement on the Draft Current Conditions Report

BW Gold has engaged with UFN and LDN regarding the Current Conditions Report and understands that additional information may be provided by UFN and LDN. Draft data related to current conditions for UFN and LDN was shared with the Nations in late 2022, and comments received noted that relevant secondary data was being included. Additional information, should it be provided, will be incorporated into ongoing monitoring.

BW Gold has engaged with CSFNs regarding the Current Conditions Report and understands that the CSFNs are focused on the Country Foods Monitoring Plan (CFMP), which is a source of information for this Current Conditions Report and ongoing monitoring.[3] Relevant information from the CFMP will be incorporated into ongoing monitoring, supplemented with qualitative data from other sources.

Additional information regarding socio-economic and harvesting conditions within the FUP Monitoring area will be incorporated as it becomes available for ongoing monitoring required by the CFSEC FUP monitoring program.

BW Gold is inviting Indigenous groups to review this draft Current Conditions Report, validate or update existing information and provide information where data may be absent. The absence of information should not be interpreted as absence of use or significance of any particular species or of country foods in general.

[3] The CFMP is focused on measuring changes in concentrations of contaminants of potential concern in water, soil, vegetation, and wildlife (including fish), and provides primarily quantitative data.

A draft Current Conditions Report will be shared by email with Indigenous groups and BW Gold is available to discuss the Report with Indigenous groups, based on interest.

1.3.3 Country Foods Species and Socio-Economic Conditions

Species and socio-economic conditions identified for monitoring were selected and discussed during engagement activities with Indigenous groups as part of the development of the CFSEC FUP. A consideration for the list of monitoring species and conditions was the availability of publicly available data that can be referenced on an ongoing basis to support monitoring.

Country foods / species listed in Table 1-2 are the focus of the FUP, and current conditions, based on secondary sources, are described within this Current Conditions Report. The descriptions aim to identify:

- **Access:** current conditions regarding the ability for Indigenous harvesters to reach country foods in locations that intersect or are located within the FUP monitoring area, and where hunting, trapping, fishing and gathering may occur, or may commence or end.
- **Availability:** current quantities or levels of abundance of country foods, per species within the FUP monitoring area.
- **Quality**: current conditions, based on the visual appearance of country foods, and also considering input from Indigenous groups regarding their perception of the quality of country foods.

Table 1-2: Country Foods Species Monitored within this FUP

Plant and Berries	Aquatic Species	Wildlife
■ Black huckleberry ■ Blueberry ■ Hudson Bay Tea/Labrador Tea ■ Mushrooms ■ Poplar bark ■ Soapberry	■ Kokanee salmon ■ Rainbow trout ■ Whitefish	■ Beaver ■ Black bear (including fat) ■ Grouse ■ Moose

The Current Conditions Report also includes BW Gold's understanding of current socio-economic conditions, that have potential to change over time as a result of changes from the project on harvesting activities. For the purpose of the FUP and this Current Conditions Report, the socio-economic focus is on food security[4], health and culture. These socio-economic considerations are broad and subjective, and input from Indigenous groups may be used to refine understanding of socio-economic conditions. Food security, health, culture, and related socio-economic conditions are also personal and experienced differently from person-to-person, and this Current Conditions Report is not intended to represent individual experiences or perceptions of food security, health or culture. Rather, this Current Conditions Report aims to provide a high-level, community-focused understanding of current socio-economic conditions and the descriptions are based on secondary data sources. The presentation of data at the community level does not invalidate these experiences nor does it intend to present that Indigenous communities are identical.

[4] In this CFSEC Report, food security refers to, or means, people within a population have physical, social and/or economic means to access sufficient and safe food and food preferences for healthy and active living. It recognizes traditional and cultural food sources as well as food preparation and distribution among Indigenous people. This definition is modified from the First Nation Health and Wellness Agenda (FNHA 2021).

Where information is available, this Current Conditions Report describes current conditions for:

- **Food Security –** current conditions for food security as it relates to country foods harvesting in the FUP monitoring area.
- **Health –** current levels of physical activity associated with country foods harvesting, as well as current perceptions of country foods and/or trust in consumption of country foods.[5]
- **Culture –** current associations of culture and country foods harvesting in the FUP monitoring area that may be affected by Project activities, components or effects.

Where available and to the extent possible, the current context information presented in the following sections is focused on country food and socio-economic conditions within the monitoring area.

1.3.4 Limitations

Information presented in the Current Conditions Report is based on secondary sources. The absence of information in this report does not represent the absence of use or socio-economic conditions. Additional information regarding socio-economic and harvesting conditions within the FUP Monitoring area will be incorporated as it becomes available for ongoing monitoring required by the CFSEC FUP monitoring program.

The report is focused on harvesting activities within the FUP Monitoring Area in order to understand potential changes to harvesting activities and socio-economic conditions emerging as a result of Project activities. A conservative approach has been used to account for harvesting activities near or adjacent to the FUP Monitoring Area. BW Gold recognizes that harvesting requires movement in accordance with the lifecycle and movements of animal and plant species.

Species and socio-economic conditions included in the Current Conditions Report were discussed during engagement activities with Indigenous groups as part of the development of the CFSEC FUP. The exclusion of species does not represent lack of use or importance. Similarly, the focus on socio-economic conditions included in this report does represent the fulsomeness of socio-economic and cultural context for Indigenous groups.

An effort has been made to respect and protect sensitive information related to country foods and socio-economic conditions, and this may limit the level of detail this report can provide.

1.4 Monitoring Area

This Current Conditions Report assess current conditions of country foods in the monitoring area determined by the FUP presented in Figure 1-3[6]. The FUP monitoring area incorporates the study area determined by the Country Foods Monitoring Plan (CFMP) and linear components of the Project with respect to country foods access, availability, and quality.

[5] Due to the sensitive nature of health-related data, this Current Conditions Report (and FUP monitoring) do not intend to include data related to nutrition, mental health or other personal-related information.

[6] The monitoring area surrounding the linear corridors is 1.5 km on either side, for a total of 3 km. This is the same distance that was used in the Further Assessment of Potential Effects on Current Aboriginal Use (ERM 2016).

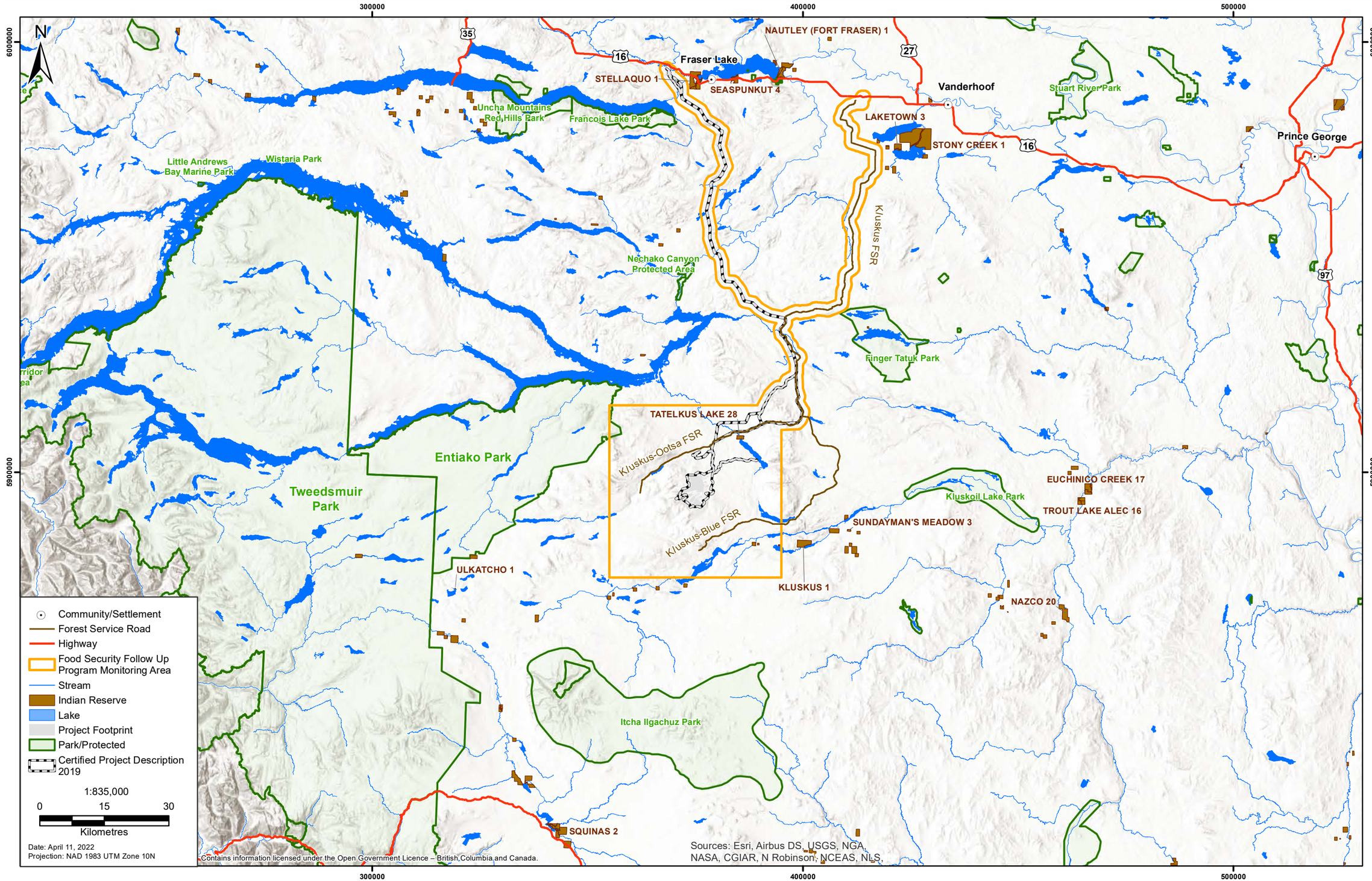


Figure 1-3: Monitoring Area of the Country Foods Follow-Up Program (FUP)

With respect to monitoring potential changes to socio-economic conditions emerging from changes to country foods conditions, the FUP monitoring area includes the Local Study Area (LSA) from the Community Effects Monitoring and Management Plan (CEMMP) as it pertains to populated communities[7]. Additionally, the most populated UFN reserves (i.e., Squinas 2 and Ulkatcho) are included in this monitoring area[8].

Maps of LDN, UFN, SFN, StFN, and NWFN traditional territories with the FUP monitoring area overlaid are located in Appendix A.

1.5 Report Structure

The following sections of the draft Current Conditions Report describe the country foods and socio-economic conditions for Indigenous groups, based on secondary information. In each section, a table is used to present country foods conditions related to access, availability and quality, and a narrative is used to present information related to food security, health, and culture.

[7] The CEMMP LSA overlaps with the traditional territories of LDN, UFN, NFN, NWFN, StFN, SFN, Skin Tyee Nation, Tsilhqot'in Nation, Nee Tahi Buhn Band, Cheslatta Carrier Nation, and Yekooche First Nation. The following populated communities within the LSA (LSA communities) are: Vanderhoof; Fraser Lake; LDN reserves (Kluskus 1, Tatelkus Lake 28, Sundayman's Meadow 3) NFN reserves (Euchinico Creek 17, Trout Lake, Alex 16, Nazco 20); SFN reserves (Stony Creek 1, Laketown 3); NWFN reserves (Nautley [Fort Fraser] 1, Seaspunkut 4; and StFN Reserve (Stellaquo 1).

[8] Squinas 2 and Ulkatcho

2. LHOOSK'UZ DENÉ NATION

The Lhoosk'uz Dené people refers to the people of Kluskus Lake, originating from the Dakelh words *lhoos* and *k'uz* which mean whitefish and lake respectively. As of April 2023, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) reported that LDN had a total registered population of 232, with 28 members living on LDN reserves (CIRNAC 2023). LDN territory is centered around the Kluskus lakes, with seventeen LDN Indian Reserves (IR). Kluskus 1 is the most populated IR (Keefer Ecological Services Ltd. 2019). Appendix A-1 provides a map of LDN traditional territory with the FUP monitoring area.

2.1 Country Foods Conditions

Table 2-1 provides a summary of the current conditions of harvested species by LDN within the FUP monitoring area, based on secondary data sources (Table 1-1) and complemented by BW Gold data.

At the time of preparing this draft Current Conditions Report, no information pertaining to poplar bark or black bear access, availablility and quality as country foods was identified. Limited information was available for grouse as a country food. BW Gold had limited LDN input regarding the access and quality of country foods, as well as anticipated changes to country food consumption (Table 2-1). These fields are retained in Table 2-1 of this draft Current Conditions Report in the case LDN is able to provide additional context information to support BW Golds understanding of current conditions and contain the acronym "NIA" to indicate "no information available" at the time of first submission of this draft.

Table 2-1: Summary of Lhoosk'uz Dené Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Berries are a staple part of the diet, described by LDN as "perhaps [the] most widely used [traditional food] in current times". Berries are harvested during the summer as they ripen and preserved for use later in the year.	Berries and medicinal plants are harvested on the south and south-east sides of Tatelkuz Lake, around the base of Mt. Davidson, and along trails such as the Messue Wagon trail, and in relation to trapline TR0512T027. Berries are accessed by foot along trails throughout LDN traditional territory.	NIA	Trapline TR0512T027 is overlapped by the Project, resulting in loss of access to harvesting in this area. Delays and potential detours are expected along access routes intersected by the transmission line and Kluskus-Ootsa. The freshwater pipeline and transmission line will cross the Messue Wagon Trail and a trail near Tatelkuz Lake, potentially interrupting LDN access to harvesting plants during construction.	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	Concerns raised regarding potential contamination of berries and plants near the mine.	NIA
Black huckleberry (Mai dunulk'un)	Gathered in the summer.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the Mineral Tolerance Limits (MTLs; National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective detection limits (DLs). Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry ('Ilhtsul)	Staple of LDN diet.	Harvested throughout LDN territory. Large blueberries ('ilhtsul) are found "approximately 3.5 km southwest of Tatelkus Lake IR28, near Davidson Creek".	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Mushrooms (Benidzo)	Pine mushroom (benidzo) and morels are a crucial part of LDN's modern economy. They are also consumed. Morels typically fruit after fires in the spring to early summer.	NIA	The logging industry, and associated of beetle-impacted stands can "greatly decrease or eliminate benidzo for years".	NIA	Quantities of mushroom harvests fluctuate year to year.	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	NIA	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry (Nawus)	Harvested as they ripen in the summer. Can be made into tea which is consumed as a cleanser. LDN members continue to use and trade soapberry (nawus) despite its "declining worth" in the informal economy; Soopolallie bush (nawus t'an chun) is traded with the Nuxalk in exchange for fish, as well as sold and traded at cultural events for a "high value" as part of the informal economy.	NIA	NIA	NIA	Harvested in "large volumes" on a yearly basis.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General Aquatic Species	Fishing generally takes place in the spring using traps, weirs, and nets, with the fish dried for consumption throughout the year. LDN members currently eat 3 to 4 meals per week consisting of fresh or dried fish. In addition to fishing practices, LDN continue to undertake water resource management to support the availability and quality of fish; although traditional water management practices are declining.	Blackwater River (also known as West Road River) is used by LDN for fishing. Other fishing locations used by LDN that are not specific to fish species include Tatelkuz Lake, Kuyakuz Lake, middle Chedakuz Creek, lower Chedakuz Creek, the Twin Lakes, and an unnamed creek near km 104 of the Kluskus FSR. There is also a fish trap on Chedakuz Creek, and West Kluskus Lake has multiple fishing camps.	NIA	NIA	NIA	NIA	LDN community members are concerned that water contamination and deteriorating water quality will negatively affect fish. Specifically, LDN members have raised concerns that tailings water will be "toxic" and will "poison" fish.	There is potential for reduced consumption and/or avoidance of fishing in Davidson Creek and/or Tatelkuz Lake if members perceive the water to be contaminated.

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Kokanee salmon (Lhuyul)*	Harvested in late summer and early fall and are eaten both fresh and dried for winter consumption.	Fished at the outlets of lakes as they spawn, including at Tatelkuz Lake, lower Davidson Creek, and lower and middle Chedakuz Creek.	NIA	FSS may cause a change in abundance of kokanee salmon (lhuyul) in upper Davidson Creek, however, they are expected to continue spawning in the middle and lower Davidson Creek.	Lhuyul are trapped in "large quantities".	Samples of lhuyul collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout (Duk'ai)	Rainbow trout (duk'ai) spawn in May and are eaten both fresh and dried for winter.	Duk'ai are found in lakes and rivers around the Project site, including Blackwater River. LDN Elders note that Tatelkuz Lake is the preferred location for trout fishing, since trout caught in rivers taste "muddy".	NIA	FSS may result in a change in abundance of duk'ai in upper Davidson Creek, however, they are expected to continue spawning in the middle and lower Davidson Creek.	NIA	Samples of duk'ai collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of duk'ai from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Whitefish (Lhoos)	Whitefish (lhoos) are trapped from late summer through early fall and dried for the winter.	Lhoos are found in lakes and rivers around the Project site, including in the Blackwater River.	NIA	NIA	Lhoos are trapped in "large quantities".	Samples of lhoos collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Wildlife								
General Wildlife	NIA	Wildlife are hunted throughout LDN traditional territory, including the south side and summit of Mt. Davidson. Two provincially registered traplines that overlap the Project area, TR0512T014 and TR0512T027 are held by LDN members. TR0512T014 is actively used.	NIA	Hunting and trapping access is expected to be restricted in the Project area for the duration of the mine cycle. Off road or foot access to the south side of Mt. Davidson from the Tatelkuz Lake IR 28 will be impeded by the Project; however, this has not been identified as a preferred route by LDN, and access will be possible via other routes. Wildlife abundance in areas surrounding the mine site is expected to reduce, thereby, impacting availability of wildlife country foods, although these effects are expected to be low. Sensory disturbance of wildlife by the mine site is expected to be limited to a 4-6 km band around the mine site, while sensory disturbance at the airstrip and mine access road are expected to be intermittent.	NIA	NIA	If community members believe that water has become contaminated by the Project, they may no longer consume wildlife for fear of consuming contaminants passed on from the water.	NIA
Beaver (Tsa)	LDN members hunt and trap beaver (tsa) for both food and meat. LDN members note that despite tsa furs providing a declining source of income, tsa meat for subsistence purposes is of equal importance to furs. Tsa hunting and trapping is conducted in the spring as lakes and creeks thaw, as well as in the fall, with traplines being reported as "very productive" for small furbearers such as tsa during this season.	NIA	NIA	NIA	NIA	NIA	LDN community members are concerned that water contamination and deteriorating water quality will negatively affect tsa. Specifically, LDN members have raised concerns that tailings water will be "toxic" and will "poison" waterfowl.	NIA
Black bear (including fat)	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse (Dih)	Grouse (dih) is captured by snare.	NIA	NIA	NIA	NIA	NIA	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Moose (Duni)	Moose (duni) are hunted for meat.	Mt. Davidson and the surrounding area (Ts'oodenia) is a traditionally important hunting ground for duni. The Baptiste and Paul families indicated in 2017 communications that they access duni hunting at Mt. Davidson using a wagon road connecting the eastern end of Tsacha Lake to Mt. Davidson. A 2018 aerial survey observed 12 duni in the Mt. Davidson area, including four bulls, six cows, and two calves. Duni were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	Existing habitat fragmentation impacts availability of duni. Community members report increasing travel times to harvest duni.	Areas of Mt. Davidson will not be accessible due to the Project. As well, habitat fragmentation may change where duni are found and therefore how they are accessed. There is also concern that access roads to the Project will increase access to duni hunting to a point where it is detrimental to the duni population.	NIA	NIA	LDN community members are concerned that if duni consume contaminated water that the duni meat will become contaminated, thereby impacting the quality.	NIA

Sources used for Table 2-1 include: *Lhoosk'uz Dené Nation and Ulkatcho First Nation Part C - Blackwater Gold Mine Project* (Keefer Ecological Services Ltd. 2019, 20), *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022), *Blackwater Gold Project - 2021 Cumulative Soil and Vegetation Baseline Report* (ERM 2022a), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022b), and *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c).

Notes:

NIA = No information available

** For all Indigenous groups, only explicit references to kokanee salmon were included for this species. Where secondary sources identified general references to salmon, this information was not included.*

2.2 Drinking Water

BW Gold's Mine Water and Discharge Management Plan (MSDP) provides a monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine. The plan is designed to provide an early detection system and identify trends in surface water and groundwater quality so that potential impacts to the receiving environment can be investigated, mitigated, and avoided.

In an effort to avoid duplication of water monitoring efforts, while also recognizing the importance of water to LDN, the following summary of BW Gold's understanding of current conditions for access, availability and quality of drinking water has been included:

- LDN members collect drinking water at freshwater springs and from surface water sources throughout their territory. LDN protects the locations of freshwater springs because of their value (Keefer Ecological Services Ltd. 2019). LDN members have described spring water as fresh, clean, cold, better tasting than other sources of water, and healing.
- Starting in May 2021, a water treatment system was launched in Kluskus 1, supplying drinking water to the community. The system uses ultraviolet light and chlorine disinfection. The community is monitored the water supply quality and has reported that the results are "clean, good-tasting water" (UBC 2021).
- LDN has indicated that if Davidson Creek is perceived as contaminated, residents will cease using it for drinking water. LDN has raised concerns regarding contamination of drinking water from the mine and TSF, including from the tailings pond, the freshwater pipeline, the transmission line, and access roads (ERM 2016).

2.3 Socio-economic Conditions

2.3.1 Food Security Conditions

The economic base and food security for LDN requires access and use of traditional lands and resources, including country foods. Natural resource development in the area of LDN traditional territory has disrupted LDN members' self-reliance on land-based lifestyles. If community members are uncomfortable or unable to access resource harvesting, their ability to participate in the informal economy will be compromised (Keefer Ecological Services Ltd. 2019).

LDN members participate in non-monetary barter and trade economy, as well as the wage economy, both of which contribute to food security. LDN members have indicated that mushroom harvesting can be a profitable activity, depending on prices. Mushroom harvesting is important for food security, reducing economic barriers and getting out on the land. Trapping also remains an economically significant practice for LDN members.

LDN members have expressed concern about the impact of declining duni (moose) populations on food security. There are community members who are reliant on duni meat and cannot afford to shop at grocery stores (Keefer Ecological Services Ltd. 2019).

While general to First Nations in BC, the 2011 First Nations Food, Nutrition & Environment Study (FNFNES) reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Although still not LDN specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were “sometimes” or “often” unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of LDN members has been shared with BW Gold.

2.3.2 Health Conditions

The health of LDN community members is closely tied to culture and language, including consumption of country foods. Diabetes (and especially type 2 diabetes) and gastroenterological diseases are common among LDN community members.

Community members have raised concerns that lack of access to country foods will negatively impact health. Community members are also concerned that healthy people will benefit from the Project, while unhealthy people will be “left behind” (Keefer Ecological Services Ltd. 2019).

There is no specific information regarding the level of physical activity associated with country foods harvesting of LDN members.

2.3.3 Cultural Conditions

Connection to land is significant for community members’ spirituality, both generally and in connection to specific cultural sites. LDN members follow the *keyoh* system, which outlines family territories for harvesting. LDN members rely on Elders to provide information on the best locations to gather plants and berries (Keefer Ecological Services Ltd. 2019). The provision of knowledge from Elders to future generations is important for cultural continuity.

Duni (moose) is described as central to LDN culture (Keefer Ecological Services Ltd. 2019).

LDN community members have expressed a desire for “cultural revival”, as settler-colonialism, technology, natural resource extraction, and other factors have impacted traditional practices and language. This desire for cultural revival includes desires of families to move back to their *keyohs*, desire for reconnection of knowledge keepers with younger generations, and general desire for programs that would promote cultural traditions. The LDN and UFN Part C Report for BW Gold notes that community members are concerned that the Project will strip the area of its heritage and that younger generations will not know the area for what it was prior to the mine.

There is “substantial concern” that newcomers will not respect the protocols[9] for visiting sacred sites and traditional hunting grounds (Keefer Ecological Services Ltd. 2019).

[9] BW Gold has requested protocols from Indigenous groups as part of the development of Aboriginal Group Monitor and Monitoring Plans (AGMMP), EAC Condition #17. At the time of writing the LDN AGMMP, no protocols were shared with BW Gold.

3. ULKATCHO FIRST NATION

The Ulkatcho people refers to the “people of Gatcho Lake”, with Ulkatcho meaning “fat of the land” in reference to “the fact that all the animals and fish in this area are fat and healthy”. As of April 2023, CIRNAC reported that UFN had a total registered population of 1,066, with 593 members living on UFN reserves (CIRNAC 2023). UFN has 21 Indian Reserves (IRs), with many of these IRs located along Highway 20 and north of Anahim Lake (Keefer Ecological Services Ltd. 2019). UFN members follow the *keyah*[10] system, which outlines family territory for harvesting (Keefer Ecological Services Ltd. 2019). Appendix A-2 provides a map of UFN traditional territory with the FUP monitoring area.

3.1 Country Foods Conditions

Table 3-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on secondary sources (Table 1-1) and complemented by BW Gold data.

At the time of preparing this draft Current Conditions Report, BW Gold had limited UFN input on country food access, quality and anticipated changes to their consumption of country foods (Table 3-1). Notwithstanding, the fields have been retained in the draft Current Conditions Report in the case UFN is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

[10] *Keyah* is the Ulkatcho dialect name for family territory or a trapline, also known as the *Keyoh* system by LDN (Keefer Ecological Services Ltd. 2019).

Table 3-1: Summary of Ulkatcho First Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Berries are a staple of the UFN diet, described by UFN as “perhaps [the] most widely used [traditional food] in current times”. Berries are harvested during the summer as they ripen and preserved for use later in the year.	Berry harvesting is accessed by foot, along the Grease Trails. UFN have identified the Messue Wagon Trail, Tatelkuz Lake, near Top Lake, Tsacha Lake, and Kuyakuz lake as berry and plant harvesting sites. Mt. Davidson is a key berry-picking location. UFN members rely on Elders to provide information on the best locations to gather plants and berries.	*NIA*	Access to harvesting sites in the mine site will be restricted until post-closure, as well as some sites close to the Project Site. As well, intermittent disruptions of access to gathering areas may occur during the construction of the freshwater supply pipeline and the transmission line. Availability of plants and berries will be reduced in the mine site and the vicinity of the Kluskus-Ootsa FSR, the freshwater supply pipeline, and transmission line where vegetation clearing is to occur. Vegetation is expected to return to previous structure and potential use following the burial of the freshwater supply pipeline and decommissioning of the transmission line ROW.	*NIA*	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	UFN has expressed concern regarding the introduction of invasive species, loss of understory vegetation, and the changing of mature forests to low shrub plant communities. UFN has raised concerns over fugitive dust and water borne contaminants damaging vegetation beyond the mine area.	NIA
Black huckleberry (Mai cho)	Black huckleberries (mai cho) are consumed fresh after picking and harvest these berries in the summer, primarily in mid-August.	Mai cho are harvested in moist mountain woods and pine woodlands. They are also commonly found in coniferous forests and on mountain slopes, and are picked wherever they are found. The UFN Food and Medicine Plants book identifies maik’ut (“berry place”), a large open hill approximately 6-7km from Tanya Lakes near the end of Tanya Mountain, and not within the FUP monitoring area.	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry (‘Ilhtsul)	Alaska blueberry (ilhtsul cho) are harvested in the summer, and consume the berries fresh, frozen, or as jam. UFN members harvest dwarf blueberry (‘ilhtsul) in the summer, particularly in August, and have historically picked these berries using spruce wood combs. The berries are then mashed and dried into cakes for consumption in	Large blueberries are found specifically “approximately three and a half kilometers southwest of Tatelkus Lake IR28, near Davidson Creek”. Dwarf blueberries are particularly found in meadows, rocky ridges, tundra and moist coniferous forests. As well, oval-leafed blueberry is particularly found in moist coniferous forests and clearings at mid-mountain and subalpine elevations. The UFN	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
	winter. UFN members harvest oval-leafed blueberry (‘ilhtsul) in the summer, particularly July, and consume these berries fresh, frozen, or as jam. Blueberries of all kinds are picked and eaten fresh or frozen, canned in jars, and made into jam.	Food and Medicine Plants book, they were found at maik’ut (“berry place”), a large open hill approximately 6-7km from Tanya Lakes near the end of Tanya Mountain, and outside the FUP Monitoring Area. Dwarf blueberries are specifically found near the bottom of the hill and on the narrow road called “East Branch” where there is an old burnt area. The location of East Branch is outside the FUP Monitoring Area.				Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.		
Mushrooms (Benidzo)	Pine mushroom (benidzo) is harvested in the summer, primarily in late August. Morels typically fruit after fires in the spring to early summer. One UFN member described that benidzo can be made into soup.	UFN Elders describe mushroom harvesting as happening wherever mushrooms are found, as well as particularly in the Mt. Davidson area. Benidzo are found under coniferous trees throughout UFN territory.	The logging industry currently affects access and availability of mushrooms.	Loss of access to the Mt. Davidson area will impact mushroom harvesting. The Project will result in loss of understory vegetation, including mushrooms.	Quantities of mushroom harvests fluctuate.	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea (Yak’unulh’a)	Hudson bay/labrador tea (yak’unulh’a) is consumed as a drink when people travel to the mountains. It is made by drying and boiling leaves. Used medicinally to treat sore throat and lung ailments. Chewing the leaves can also relieve sore throat and lung ailments	Yak’unulh’a is found and harvested in acidic moist places throughout UFN territory. This includes muskegs, swamps, bogs, moist and mossy coniferous forests, and wet peaty meadows at high elevations.	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark (T’ughus Lat’ooz)	Poplar bark (t’ughus lat’ooz) is chewed or boiled into a tea to be used for medicinal purposes. T’ughus lat’ooz is collected year-round.	Collected in the plateau zone of UFN territory, extending partway up mountain slopes.	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry (Nawus)	Soapberries (nawus) are harvested from soopolallie bush (nawus t’an chun) as they ripen over the summer (July-September). Ripe nawus are boiled into a thick jam and dried into berry cakes, while unripe berries are mixed with water and whipped into “Indian ice cream”.	Nawus are found and harvested throughout UFN territory, but are particularly found along lake shores, rocky bluffs, and in open woods. They are also found in the interior douglas fir forest. Berry-picking was historically accessed through the foot, horse, and wagon Grease Trails covering UFN and surrounding Nations’ territories.	NIA	UFN members will lose access to berry-picking on parts of Mt. Davidson as a result of the Project.	Nawus are harvested in “large volumes” on a yearly basis.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
						maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.		
Aquatic Species								
General Aquatic Species	Traditional water resource management, although declining in practice, remains key to the availability and quality of fish species in the FUP area.	Blackwater River is used for fishing. UFN has indicated that they fish at Chedakuz Creek, Tatelkuz Lake, and the Klukus Lake area.	NIA	UFN has expressed concern regarding the effects on water levels in Tatelkuz Lake, specifically the amount of water that will be removed for the Project. As well, UFN has raised general concerns regarding Blackwater River and Kuyakuz Lake and other fishing sites. UFN members may experience delays in accessing fishing locations on Chedakuz Creek as a result of Project-related traffic, particularly related to construction of the transmission line where the creek aligns with the existing Kluskus-Ootsa FSR. Disruptions to fishing access may occur during construction of other sections of the transmission line as well. The introduction of workers to the area may increase competition for fish, therefore, impacting availability of multiple species.	NIA	NIA	UFN community members are concerned that water contamination and deteriorating water quality will negatively affect fish. Specifically, concerns have been raised that tailings water will be “toxic” and will “poison fish”.	NIA
Kokanee salmon (Lhuyul or Ges)	Kokanee salmon (lhuyul or ges) are harvested in late summer and early fall using traps, weirs, lattice fences, and dip nets. Lhuyul are eaten fresh and dried for winter consumption.	UFN members harvest lhuyul across their territory at the outlets of lakes as they spawn. All species of salmon are harvested at Salmon House on the Dean River and at Tanya Lakes, outside the FUP Monitoring Area.	NIA	NIA	Fished in “large quantities”.	Samples of lhuyul collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout (Duk’ai)	Rainbow trout (duk’ai) spawn in May and are eaten both fresh and dried for winter. Moose heart is used as bait for large duk’ai.	Duk’ai are found in lakes and rivers around the Project site, including Blackwater River	NIA	FSS may cause a change in abundance of duk’ai in upper Davidson Creek, however, they are expected to continue spawning in the middle and lower Davidson Creek.	NIA	Samples of duk’ai collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of duk’ai from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
						ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).		
Whitefish (Ghusi)	Whitefish (ghusi) are trapped in summer and dried for the winter.	Ghusi are found in lakes and rivers around the Project site, including in the Blackwater River. Ghusi are trapped as they spawned at the outlets of lakes.	NIA	NIA	Fished in “large quantities”.	Samples of ghusi collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA
Wildlife								
General Wildlife	NIA	NIA	NIA	Localized changes to wildlife abundance may occur as a result of localized changes in habitat availability, sensory disturbance, and increased presence of predators. These changes are anticipated in areas within and adjacent to the mine site, the transmission line, Kluskus-Ootsa FSR, mine access road, and landing strip.	NIA	NIA	NIA	NIA
Beaver (Tsa)	Beaver (tsa) is hunted and trapped for both fur and meat. Despite beaver furs providing a declining source of income, tsa meat is of equal importance to furs for its subsistence value. Tsa hunting and trapping is conducted in the spring as lakes and creeks thaw, as well as in the fall, with traplines being reported as “very productive” for small furbearers like tsa during this season.	NIA	NIA	NIA	NIA	NIA	UFN community members are concerned that water contamination and deteriorating water quality will negatively affect tsa. Specifically, UFN has raised concerns that tailings water will be “toxic” and will “poison” waterfowl.	NIA
Black bear (including fat) (Sus)	UFN members consume black bear (sus) for food in addition to using their fur. Sus are hunted and trapped in summer and fall.	NIA	NIA	NIA	NIA	NIA	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Grouse (Dihcho)	UFN members capture grouse (dihcho) by snare for consumption.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose (Duni)	NIA	Mt. Davidson and the surrounding area (Ts'oodenia) is a traditionally important hunting ground for moose (duni). A 2018 aerial survey observed 12 duni in the Mt. Davidson area, including four bulls, six cows, and two calves. Duni were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	The BC Ministry of Environment notes that duni populations are currently low compared to previous levels, with calf recruitment levels indicating an unsustainable population. Duni are now found at higher elevation areas due to industrial projects at lower elevations. Community members report increasing travel times to harvest moose.	Areas of Mt. Davidson will not be accessible due to the Project. As well, habitat fragmentation may change where duni are found and therefore how they are accessed. The transmission line crosses near the north end of Tatelkuz lake, through an area identified by UFN as a moose harvesting location. Concerns have been raised that access roads to the Project will increase access to moose hunting to a point where it is detrimental to the moose population.	NIA	NIA	Community members are concerned that if moose and other terrestrial animals consume contaminated water that the duni meat will become contaminated, thereby impacting the quality.	NIA

Sources used for Table 3-1 include: *Lhoosk'uz Dené Nation and Ulkatcho First Nation Part C - Blackwater Gold Mine Project* (Keefer Ecological Services Ltd. 2019, 20), *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022), *Blackwater Gold Project - 2021 Cumulative Soil and Vegetation Baseline Report* (ERM 2022a), *Ulkatcho First Nation Traditional Land Use and Ecological Knowledge of the proposed New Gold Inc* (DM Cultural Services Ltd. and Ulkatcho First Nation 2013), *Ulkatcho Food and Medicine Plants* (Hebda, et al. 1996), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022b), and *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c).

Note: NIA = No information available

3.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine. The following summary of information regarding the access, availability and quality of drinking water has been included as a current context references to support FUP monitoring.

- UFN members collect drinking water at freshwater springs and from surface water sources throughout their territory. UFN protects the locations of freshwater springs because of their value. Drinking water is now collected from freshwater springs and surface waters due to quality issues (Keefer Ecological Services Ltd. 2019).
- UFN members have described spring water as fresh, clean, cold, better tasting than other sources of water, and healing (Keefer Ecological Services Ltd. 2019).
- UFN members are currently advised to avoid obtaining drinking water from groundwater wells due to elevated concentrations of bacteria, fluoride, chlorine, iron, magnesium, sodium, and various dissolved solids. These contaminants have contributed to “increased water turbidity and pH, which has made the water unpalatable and, in some cases, not fit for consumption” (Keefer Ecological Services Ltd. 2019).

3.3 Socio-economic Conditions

3.3.1 Food Security Conditions

UFN members’ livelihoods include a non-monetary economy of barter and trade. UFN members emphasize the importance of their traditional economy, saying that “money doesn’t equate to wealth; wealth is what people can get from the land” (DM Cultural Services Ltd. and Ulkatcho First Nation 2013).

UFN have indicated that the worth of products from the land in the informal economy is declining, including soapberry, fish, and ungulates. Natural resource development in the area has disrupted members’ self-reliance on land-based lifestyles. If community members are uncomfortable or unable to access resource harvesting in their traditional territory, their ability to participate in the informal economy will be compromised (Keefer Ecological Services Ltd. 2019).

The 2022-2027 UFN Strategic Plan identifies the following objectives related to food security:

- Explore further opportunities for emergency response technologies and facilities including designated food security sites.
- Continue research on the climate change impacts on traditional foods from extreme weather events.
- Organize hands-on training for people to learn about horses, camping, fishing, hunting, traditional medicine, meat-cutting and meat-drying techniques as well as food security and supply.

This Plan also identifies “Develop[ing] forestry, agriculture, mushrooms, and small business opportunities for food security purposes” as a goal for UFN, including the following objectives:

- Develop and maintain a 5-year timber harvesting plan for the territory.
- Assist in the development of agricultural business and tenure opportunities.
- Put policies in place to protect pine mushroom habitat from logging.
- Put policies in place for the harvesting of mushrooms and other traditional foods and medicines.
- Assist in the development of small business opportunities (Ulkatcho First Nation 2022).

While general to First Nations in BC, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Although still not UFN specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were “sometimes” or “often” unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of UFN members has been shared with BW Gold.

3.3.2 Health Conditions

The health of UFN community members is closely tied to culture and language. UFN members have indicated that reduced consumption of traditional foods and knowledge of traditional uses has resulted in health concerns including diabetes, heart disease, and cancer. Diabetes (especially type 2 diabetes) and gastroenterological diseases are common among UFN community members.

Community members have raised concerns that lack of access to country foods will negatively impact health. Community members are also concerned that healthy people will benefit from the Project, while unhealthy people will be “left behind”. One UFN member voiced concern that reliance on European diets rather than traditional diets will increase with the introduction of high-paying mining jobs (Keefer Ecological Services Ltd. 2019).

The 2022-2027 UFN Strategic Plan identifies the goal of improving the health and wellness of the community, with one objective being ensuring that determinants of health, including access to healthy food, are improved. Another objective under this goal is the development of opportunities for traditional food use and development of community gardens. This Plan identifies that practices related to the traditional economy (including fishing, hunting, gathering, and trapping) is key for maintaining a healthy and balanced life (Ulkatcho First Nation 2022).

There is no specific information regarding the level of physical activity associated with country foods harvesting of UFN members.

3.3.3 Cultural Conditions

Connection to land is significant for UFN community members spirituality, both generally and in connection to specific cultural sites. UFN members rely on Elders to provide information on the best locations to gather plants and berries (Keefer Ecological Services Ltd. 2019). Berries and plants are often used medicinally.

Many UFN community members have expressed a desire for “cultural revival”, as settler-colonialism, technology, natural resource extraction, and other factors have impacted traditional practices and language. This desire for cultural revival includes desires of families to move back to their *keyahs*, desire for reconnection of knowledge keepers with younger generations, and general desire for programs that would promote cultural traditions (Keefer Ecological Services Ltd. 2019). This desire is reflected in multiple goals and objectives of the 2022-2027 UFN Strategic Plan, including:

- Develop and implement programs in traditional medicine and healing.
- Offer opportunities for activities that foster cultural restoration.
- Continue to work to find ways to archive and pass on the traditional knowledge, wisdom, and stories of Elders.
- Collect and document traditional ecological and historical knowledge (Ulkatcho First Nation 2022).

UFN has expressed concern regarding the impacts of the introduction of new technologies and job opportunities to a society “reliant on hunting and gathering activities”. Specific impacts of concern related to country foods include “disturbances to the UFN peoples’ ability to practice their seasonal round within the proposed Blackwater Project tenure during exploration and development phases” and “impact on the inability of older generation UFN members to transfer traditional culture and knowledge to younger generations due to the disturbance of traditional activities around and within the proposed Blackwater Project tenure” (DM Cultural Services Ltd. and Ulkatcho First Nation 2013).

Community members are also concerned that the Project will “strip the area of its heritage and that younger generations will not know the area for what it was prior to the mine”. There is “substantial concern” that newcomers will not respect the protocols for visiting sacred sites and traditional hunting grounds (Keefer Ecological Services Ltd. 2019).

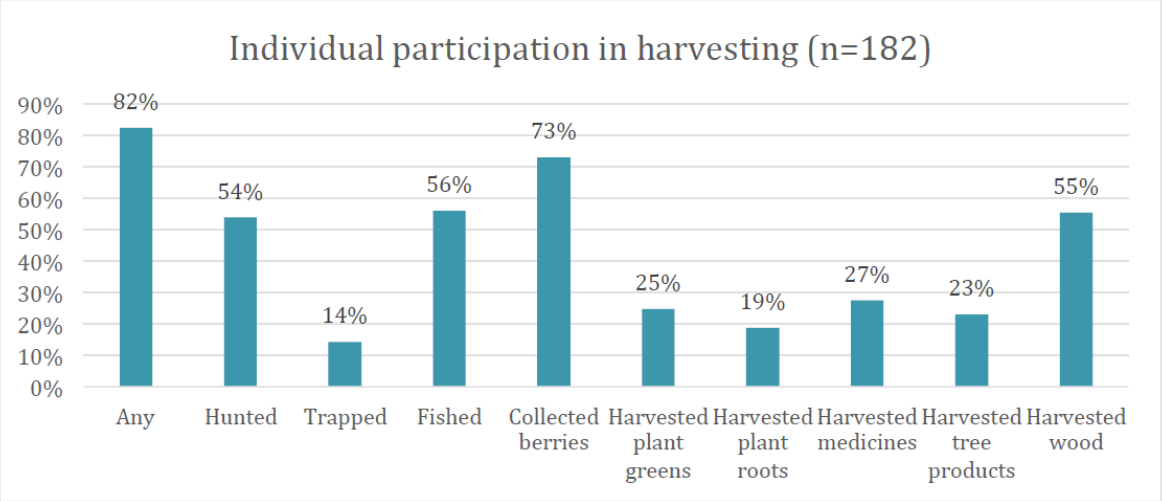
4. SAIK'UZ FIRST NATION

Saik'uz First Nation (SFN) is a Dakelh community located in interior BC. As of April 2023, CIRNAC reported that SFN had a total registered population of 988, with 326 members living on SFN reserves, primarily Stoney Creek 1 and Laketown 3 (CIRNAC 2023). SFN members follow the *keyoh* system and use a seasonal round with distinct land and resource uses per area and season. Part of the seasonal rounds relates to establishing and fostering trading networks. Balhats are also part of the traditional governance system for Dakelh peoples, which are a ceremonial feasting system that provided mechanisms for mutual agreement and peaceful relations amongst a Nation's clans. In the present day, the purpose of balhats has largely shifted to deal with inheritances, deaths, social obligations, and community assistance. Appendix A-3 provides a map of SFN traditional territory with the FUP monitoring area.

4.1 Country Foods Conditions

Table 4-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on secondary data sources (Table 1-1) and complemented by BW Gold data.

Figure 4-1 is a representation of Figure 4.4 of the 2016 Socio-Economic Study by SFN. This figure represents SFN's participation in harvesting activities in 2016.



Source: Saiku'z Socio-Economic Baseline Study (Gibson, Fediuk 2016)

Figure 4-1: Participation in Harvesting

The Baseline Study found that harvesting differed by age and gender among SFN members. The survey found that younger SFN members did more hunting, fishing, and berry collection, while the older members participated more in harvesting plants and medicines.

The Baseline Study also found that SFN members harvest both inside and outside traditional territory of the SFN. Of the 151 who reported harvesting (approximately 82% of survey participants), 52% reported harvesting only in SFN traditional territory, 9% harvested only on reserve, and 39% both in and outside of SFN traditional territory.

The Baseline Study inquired about barriers to country foods harvesting. Reasons or barriers to country food harvesting included lack of transportation or driver's license, insufficient financial resources for supplies or equipment, not enough time, fewer resources to harvest, uncertainty of where to harvest and too much competition for resources from non-Indigenous people.

Table 4-1: Summary of Saik'uz First Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	NIA	The 2015 TLUOS recorded 423 collection sites for berries and 27 for food plants in the TLOUS Study Area (kmz files or GIS information to identy those sites within the FUP monitoring area are not available).	See Section 4.1	NIA	78% of members surveyed in 2016 reported consuming berries in the last year, 42% reported consuming other plants/tree products in the last year.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	NIA	NIA
Black huckleberry	Huckleberries have "historical and contemporary importance" to SFN.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	Blueberries have "historical and contemporary importance" to SFN.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	NIA	NIA	NIA	NIA	13% of surveyed members in 2016 reported consuming mushrooms in the last year.	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	NIA	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
						typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.		
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry	Soapberries have "historical and contemporary importance" to SFN.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General Aquatic Species	*NIA*	There is a fish camp along the Nechako River and Greer Creek, which have been avoided by BW Gold through the realignment of the transmission line.	See Section 4.1	Introduction of workers to the area may increase competition for fish, thereby, impacting availability of multiple species.	NIA	10% of members surveyed in 2016 indicated that they would not eat fish due to concerns regarding poor water quality and contamination.	NIA	NIA
Kokanee salmon	Kokanee salmon is used for subsistence and other purposes by SFN members.	Kokanee populations are widespread through the Nechako basin, occurring in all sockeye nursery lakes. Kokanee are also documented in 41 other lakes and reservoirs within the Nechako watershed. The 2015 TLUOS recorded 55 kill sites for kokanee salmon in the TLOUS Study Area(kmz files or GIS information to identy those sites within the FUP monitoring area are not available).	NIA	NIA	NIA	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	Rainbow trout are harvested by SFN.	The 2015 TLUOS recorded 557 kill sites for trout in the TLOUSStudy Area (kmz files or GIS information to identy those sites within the FUP monitoring area are not available).	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Whitefish	Lake whitefish are used by SFN for "a variety of purposes".	Lake whitefish are recorded in 27 lakes within the Nechako river watershed. The 2015 TLUOS recorded 72 kill sites for whitefish in the TLOUS Study Area (kmz files or GIS information to identy those sites within the FUP monitoring area are not available).	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA
Wildlife								
General Wildlife	NIA	NIA	NIA	Access to hunting and trapping areas may be altered during the construction of the sections of transmission line that pass through traditional SFN territory. The transmission line overlaps the provincially registered trapline TR0711T007. The PNA. Disruption to access of this trapline will be limited to construction phase. Access to hunting and trapping areas may also be interrupted during the upgrading construction of the Kluskus-Ootsa FSR. Following this upgrading, an increase in Project-related traffic could result in delays for SFN using the Kluskus FSR to access hunting or trapping areas. Localized changes in wildlife abundance may occur due to changes in habitat availability, sensory disturbance, and increased presence of predators, specifically adjacent to the transmission line and the Kluskus FSRs.	86% of members surveyed in 2016 reported consuming game.	NIA	NIA	NIA
Beaver	NIA	The 2015 TLUOS recorded 74 kill sites for shot beaver and 90 for trapped beaver in the TLOUS Study Area (kmz files or GIS information to identify those sites within the FUP monitoring area are not available).	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	Bear are an important resource to CSFNs. CSFNs do not hunt black bear year-round.	The 2015 TLUOS recorded 30 kill sites for black bear in the TLOUS Study Area (kmz files or GIS information to identify those sites within the FUP monitoring area are not available).	NIA	NIA	NIA	NIA	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Grouse	Grouse are an important resource to CSFNs.	The 2015 TLUOS recorded 255 kill sites for grouse in the TLOUS Study Area (kmz files or GIS information to identify those sites within the FUP monitoring area are not available).	NIA	NIA	NIA	NIA	NIA	NIA
Moose	NIA	The 2015 TLUOS recorded 632 kill sites for moose in the TLOUS Study Area. These kill sites occur generally around and to the south of SFN reserves and along waterways, including Greer Creek. Kmz files or GIS information to identify those sites within the FUP monitoring area are not available. A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	NIA	NIA	In 2016, some members reported eating moose four times a week, while most reported eating moose twice a month.	NIA	NIA	NIA

Sources used for Table 4-1 include: *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Traditional Land Use and Occupancy For the Newgold Inc. - Blackwater Project* (Thomas 2015), "Blackwater Gold Project Proposed Change to the Transmission Line Alignment – Non-Traditional Land Use Effects Assessment Memorandum." (Page 2017), *Saik'uz First Nation Socio-economic Baseline Study for the Proposed New Gold Inc. Blackwater Gold Project* (The Firelight Group and Saik'uz First Nation 2016), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Assessment of Impacts on the Carrier Sekani First Nations' Aboriginal Title, Rights, and Interests from the Blackwater Gold Project (Part C)* (CSFNs, BC EAO, & CEAA 2019).

Note: NIA = No information available

Within Table 4.1-1, no information from SFN was available regarding use of poplar bark and limited information was available regarding blueberry, black huckleberry, mushroom, labrador tea and soapberry, kokanee salmon, rainbow trout, whitefish, beaver, black bear, and grouse. Limited information was available regarding harvest quantity, existing barriers to harvesting access, anticipated changes to quality and, anticipated changes to consumption. Notwithstanding, the fields have been retained in the draft Current Conditions Report in the case SFN is able to provide additional context information to support BW Gold's understanding of current conditions for species and their harvest.

4.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine. The following summary of information regarding the access, availability and quality of drinking water has been included as a current context references to support FUP monitoring.

- The 2015 Traditional Land Use and Occupancy Study (TLUOS) recorded 81 collection sites for drinking water in the TLUOS' Study Area (Thomas 2015, 19). Site specific information (e.g. kmz files or GIS data) was not provided for the symbols on the map and as such it is not possible to identify the drinking water collection sites that occur within the FUP Monitoring Area.
- The majority of SFN members surveyed in 2016 reported that they were not confident that non-treated surface water was safe to drink while out harvesting. Half of respondents reported using bottled water or filtration equipment (The Firelight Group and Saik'uz First Nation 2016).
- SFN has identified that sacred water for spiritual cleansing and drinking water are collected at areas near Corkscrew Road to the west of Nulki Lake, and outside the FUP Monitoring Area (ERM 2016).

4.3 Socio-economic Conditions

4.3.1 Food Security Conditions

SFN members participate in "forest-related activities" and trapping for economic benefit. In 2016, 81% of surveyed SFN members reported harvesting for personal and family use, 54% reported harvesting to share with others in the community, and 9% reported harvesting to supplement income (The Firelight Group and Saik'uz First Nation 2016).

In the 2016 survey, more than 50% of SFN participants indicated that "disturbance and displacement created by forestry, farming, mining, and roadways, and government restrictions limited their ability to harvest" (The Firelight Group and Saik'uz First Nation 2016).

The 2016 survey found that 90% of surveyed SFN members would like to have more traditional food than they currently have available. The survey found that 18% of respondents were not eating certain traditional foods out of safety concerns, with 10% saying they specifically would not eat fish due to concerns regarding poor water quality and contamination. The survey found that 72% of respondents reported that traditional food sometimes or often ran out. Regarding being able to afford food from the grocery store, 34% of surveyed members reported high food insecurity (struggled often), 31% reported moderate food insecurity (sometime struggled), and 35% reported that they were food secure (no concerns) (The Firelight Group and Saik'uz First Nation 2016).

While general to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Although still not SFN specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4

and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were “sometimes” or “often” unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

SFN members rely on country foods to meet both their physical health and cultural needs on a regular basis.

4.3.2 Health Conditions

A 2016 survey found that about one third (1/3) of SFN respondents reported ‘very good to excellent” mental health; about one third (1/3) reported “good” mental health and approximately one third (1/3) reported fair to poor mental health. The results were similar with respect to physical health (i.e., about 1/3 with “very good to excellent” health, 1/3 with “good” and 1/3 with fair to poor health; Figure 4:3 of The Firelight Group and Saik'uz First Nation 2016).

4.3.3 Cultural Conditions

Country foods are culturally important SFN with linkages to personal identify and cultural health. The 2016 study round that SFN members continue to have a strong traditional culture. Values of environmental stewardship and sustainability continue to be core to the culture of SFN despite industrialization.

Sharing country foods is important to SFN. The 2016 survey found that even those who harvest themselves also rely on sharing, trading, and community events to support cultural transmission.

No further information was available in secondary sources regarding SFN’s cultural linkages to country foods.

5. STELLAT'EN FIRST NATION

The Stellat'en First Nation (StFN) are a Dakelh community. StFN have two IRs. As of April 2023, CIRNAC reported that StFN had a total registered population of 609, with 211 members living on Stellaquo IR, the only populated StFN reserve (CIRNAC 2023). StFN has both a hereditary and elected band council governance system (CSFNs, BC EAO, & CEAA 2019). Appendix A-4 provides a map of StFN traditional territory with the FUP monitoring area.

5.1 Country Foods Conditions

Table 5-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on secondary data sources and complemented by BW Gold data.

No information was available for mushrooms or poplar bark use as a country food. Additionally, for species being monitored as part of the FUP there was limited information related to harvest quantity, anticipated changes or barriers in access/availability and anticipated changes to consumption. Notwithstanding, the fields have been retained in the draft Current Conditions Report in the case StFN is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 5-1: Summary of Stellat'en First Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Berries and plants are used for subsistence and medicinal purposes. Berries are eaten both fresh and preserved for the winter. Berries are dried using spruce wood trays over a fire and cooked using spruce bark baskets with juice from cooking collected in birch bark trays.	While new roads and transportation are now used to access plant and berry harvesting, traditional trails and waterways are still used as well.	NIA	NIA	Berries were consumed an average of 188 days per year. 62% of survey respondents consumed berries	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	StFN has raised concerns regarding the potential impacts associated with a partial or complete breach of the Project's tailings impoundment impacting multiple country foods. If this were to occur, effluent from the tailings pond would flow downstream, vegetation and other species in StFN territory relied on for subsistence and other purposes.	NIA
Black huckleberry	Huckleberries are used for subsistence purposes.	NIA	NIA	NIA	Survey respondents indicated huckleberry is consumed an average of 33 days per year (including respondents who did not consume huckleberries). 49% of survey respondents consumed huckleberries.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	Blueberries are used for subsistence purposes.	NIA	NIA	NIA	Survey respondents indicated blueberries are consumed an average of 49.80 days per year. 52% of survey respondents consumed blueberries.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Hudson Bay Tea / Labrador Tea (Yun K'unulh'a – Dakelh name, not Stellat'en dialect)	Labrador tea (yun k'unulh'a) is used as a tonic.	NIA	NIA	NIA	Survey respondents indicated tea plants were consumed an average of 27 days per year. 24% of survey respondents consumed tea plants.	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry (Nuwus Chun – Dakelh name, not Stellat'en dialect)	Soapberries (nuwus chun) are consumed for subsistence and medicinal purposes, including for cancer medicines/treatments. Soapberries are harvested using birch bark baskets, which are held under the bush while a piece of wood taps the branches. The falling berries are then caught in the basket.	NIA	NIA	NIA	Survey respondents indicated soapberry is consumed an average of 29 days per year. 45% of survey respondents consumed soapberries.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General Aquatic Species	StFN members use a variety of fishing practices, including hook and line fishing, netting, traps, and barricades.	The Nautley river is an important traditional fishing river (adjacent to the FUP monitoring area) for multiple species of fish.	NIA	NIA	The StFN survey found that fish was consumed an average of 119 days per year. 73% of survey respondents consumed fish.	NIA	StFN has raised concerns regarding the potential impacts associated with a partial or complete breach of the Project's tailings impoundment impacting multiple country foods. If this were to occur, effluent from the tailings pond would flow downstream, impacting fish and other species in StFN territory relied on for subsistence and other purposes.	NIA
Kokanee salmon	Kokanee are eaten both fresh and dried to provide nutrition year-round after they are harvested during the July spawning season. Dried salmon skins were also traditionally used to construct bags and to store and transport animal fats.	StFN members harvest kokanee from the Nautley River, which is an important traditional fishing river for multiple species of fish. Kokanee are also found in Ormond Creek (adjacent to the FUP monitoring area). Kokanee populations are	NIA	NIA	The StFN socio-economic survey found that river salmon was consumed an average of 61 days per year.	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
		widespread through the Nechako basin, occurring in all sockeye nursery lakes. Kokanee are also documented in 41 other lakes and reservoirs within the Nechako watershed.						
Rainbow trout	Rainbow trout are caught by both ice and open water fishing, particularly in early spring.	StFN members harvest rainbow trout from multiple traditionally important fishing bodies of water, including the Nautley River, the Stellako River, and Ormond Creek (adjacent to the FUP monitoring area).	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Whitefish	Whitefish are trapped for subsistence purposes in the late fall and early winter (November-December) following the salmon run.	Whitefish are found and harvested in the lakes and rivers across StFN territory, particularly the Nautley River (adjacent to the FUP monitoring area).	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA
Wildlife								
General	NIA	NIA	NIA	NIA	Game was consumed an average of 53 days per year. 55% of survey respondents consumed game.	NIA	StFN has raised concerns regarding the potential impacts associated with a partial or complete breach of the Project's tailings impoundment impacting multiple country foods. If this were to occur, effluent from the tailings pond would flow downstream, impacting fish and other species in StFN territory relied on for subsistence and other purposes.	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Beaver	Beaver is trapped for meat, fur, and hides, typically in the late winter to early spring (March-June). Specifically, beaver tail is considered a delicacy.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	Black bear grease is used for both nutritional and medicinal purposes. Black bears are typically harvested over summer and late fall, specifically August to November.	Black bears typically follow salmon runs and berry crops geographically, so they are often harvested near these other harvest locations. However, they are found throughout StFN territory and hunted opportunistically, so exact harvesting locations are difficult to identify.	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	Grouse is available and harvested year-round, but particularly in the winter.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose	Moose is the most sought-after animal by StFN hunters and are often hunted opportunistically. Reliance on moose hunting has increased as opposed to salmon fishing to supplement wage income as a result of recent industrial development.	A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	The moose population in the southern Omineca, including StFN traditional territory, has been continuously declining since 2005.	NIA	NIA	NIA	NIA	NIA

Sources used for Table 5-1 include: *Stellat'en First Nation Land and Resource Use Study Report Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022), *Stellat'en First Nation Socio-economic Baseline Study for the Proposed New Gold Inc. Blackwater Gold Project* (The Firelight Group 2015), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Assessment of Impacts on the Carrier Sekani First Nations' Aboriginal Title, Rights, and Interests from the Blackwater Gold Project (Part C)* (CSFNs, BC EAO, & CEAA 2019).

Note: NIA = No information available

5.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine. The following summary of information regarding the access, availability and quality of drinking water has been included as a current context reference to support FUP monitoring.

The water in Endako river is currently poor quality due to sedimentation and is no longer fit for drinking and StFN is concerned about surface and ground water quality (Triton Environmental Consultants Ltd. 2014).

StFN have been involved in the establishment of the Yinka Dene 'Uza'hné Surface Water Management Policy and Yinka Dene 'Uza'hné Guide to Surface Water Quality Standards.

5.3 Socio-economic Conditions

5.3.1 Food Security Conditions

The basis of the StFN economy has been described as respect and stewardship. The traditional Keyah and Bahl'ats systems[11] have been integral to facilitating social and economic cooperation, particularly aiding in the distribution of food and medicine to StFN members (Triton Environmental Consultants Ltd. 2014).

The StFN economy is a "complex interplay of wage-based work, self-employment, trapping, harvesting, sharing, and trading of traditional foods", with StFN members relying on traditional foods for both physical and cultural health. Reliance on moose hunting has increased as opposed to salmon fishing to supplement wage income as a result of recent industrial development (Triton Environmental Consultants Ltd. 2014).

A 2015 survey found that 80% of surveyed StFN members ranked traditional food as somewhat or very important to the diet of Stellat'en families. The 2015 study found that 90% of surveyed StFN members reported that they consumed traditional foods, with 66% reporting harvesting traditional foods themselves or with family members. Members that did not report harvesting traditional foods themselves indicated that they received traditional food through sharing, trading, community events, or buying. On-reserve members were more likely to harvest traditional foods themselves, while off-reserve members were more likely to receive traditional foods through sharing (The Firelight Group 2015).

The majority of respondents (68%) reported that they did not get enough traditional foods on a regular basis, citing less availability, contamination concerns, and not having the time or financial resources to go out and harvest as the primary reasons for not getting enough traditional foods. The 2014 survey found that 70% of respondents reported having enough to eat each month, however, 24% of respondents reported adults skipping or cutting meals to ensure there was enough food for the household. Due to the sensitive nature of the food security, individuals may have chosen not to answer rather than report food insecurity. Food secure members tended to be at lower income levels and between 30-49 years of age (The Firelight Group 2015).

While general to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Although still not StFN specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

[11] Also known as the potlatch or balhats system.

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were "sometimes" or "often" unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of StFN members has been shared with BW Gold.

5.3.2 Health Conditions

Based on a 2014 socio-economic focused survey, StFN members expressed concern regarding impacts of the mine on water quality (and related health implications) as well as the health impacts (and specifically cancer) of transmission lines.

The ability to meaningfully practice culture including the harvesting of traditional food is closely tied to mental and physical health of StFN members, as are social determinants of health such as food and income security. If access to country foods is reduced, there may be a greater reliance on more expensive and less healthy store-bought foods (The Firelight Group 2015).

5.3.3 Cultural Conditions

StFN members have described their connection to the land as economic, as well as spiritual and cultural. A 2015 socio-economic survey of StFN members found that 77% of respondents ranked traditional food as somewhat or very important to the Dakelh culture in Stellaquo, and 75% ranked traditional activities as somewhat or very important to the Dakelh culture in Stellaquo. StFN members living both on and off-reserve rely on traditional foods to meet their physical and cultural needs (The Firelight Group 2015).

6. NADLEH WHUT'EN FIRST NATION

The Nadleh Whut'en are a Dakelh community located between Nadleh Bun (Fraser Lake) and the Nechako River. The name Nadleh Whut'en refers to where the salmon return every year (Nadleh) and where you come from (Whut'en). As of April 2023, CIRNAC reported that NWFN had a total registered population of 608, with 253 members living on NWFN reserves (CIRNAC 2023). There are seven NWFN IRs, and the majority of NWFN's members living on reserve are based on Nautley 1 and Seaspunk 4 (CSFNs, BC EAO, & CEAA 2019). Appendix A-5 provides a map of NWFN traditional territory with the FUP monitoring area.

6.1 Country Foods Conditions

Table 6-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on secondary sources provided by NWFN and complemented by BW Gold data.

No information was available for poplar bark as a country food. Additionally, limited information was available in relation to country food access, quality and anticipated changes to consumption for any of the species that are being monitored as part of the FUP. Notwithstanding, these fields have been retained in the draft Current Conditions Report in the case NWFN is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 6-1: Summary of Nadleh Whut'en First Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Berry-picking and preserving activities take place in the late summer. In the 2016 survey, 97% of surveyed households on-reserve used traditional berries. Gathering of edible plants takes place in the spring and summer.	Berries are harvested at Barlow Road, Ormond Creek and Ormond Lake (adjacent to the FUP monitoring area), and Top Lake. Berry-picking also occurs in neighbouring communities with permission, including Cheslatta, Stoney Creek, and Stellako. The Holy Cross Tahultzu FSR (which is adjacent to the linear corridors) connects to trails used for accessing berry collection sites in the area. East of Tahultzu Lake, there are travel routes used to access berry collection sites. These travel routes may intersect with the linear corridors.	NWFN members report having to travel increased distances to access berry-picking as logging, agriculture, and mining across their territory grows.	Decreased access to berry collection sites along the Kluskus FSR and Holy Cross Road is anticipated. As well, avoidance of berries along the transmission line is anticipated. It is unknown if NWFN harvests berries in the areas on either side of the proposed ROW for the section of transmission line that passes through their traditional territory, however, if this is the case, the construction of this line may impede harvesting practices in this area.	Harvest quantities fluctuate due to natural plant growing cycles. One NWFN member describes picking 24-25 litres of berries (with the proportions of species unspecified) one year.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	NWFN members have voiced concerns regarding airborne pollutants and tailings ponds impacting berry quality. Food plants may be contaminated by Project components and effluents.	NIA
Black huckleberry	Eaten fresh, frozen, and canned. Huckleberries make up the majority of berries picked by NWFN members. In 2016, 68% of 155 surveyed NWFN members consumed huckleberries.	Collected in the Nithi Mountain area, Holy Cross Binta Forest Service Road and 215 road, the area of Holy Cross Road (commonly referred to as the 100 road), and east of Tahultzu Lake. Often harvested opportunistically.	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	Harvested for consumption. In 2016, 74% of 155 surveyed NWFN members consumed blueberries.	Harvested along the Holy Cross Road (commonly referred to as the 100 road) where the road turns to head west and approaches an unnamed lake (identified by an NWFN member as "24 mile lake").	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
						manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.		
Mushrooms	Harvested for consumption, specifically morel mushrooms.	Harvested around the Holy Cross road (also referred to as the 100 road).	NIA	NWFN members may experience decreased access to food collection sites along the Holy Cross road.	NIA	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	Labrador Tea is used medicinally.	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry	NWFN members jar, can, and freeze soapberries for the winter and refer to frozen soapberries as "Indian ice cream". NWFN members consume soapberry juice for medicinal purposes (e.g., to lower blood pressure). In 2016, 73% of 155 surveyed NWFN members consumed soapberries.	Collected in the Nithi Mountain area, Holy Cross Binta Forest Service Road and 215 road, and the area of Holy Cross Road (commonly referred to as the 100 road) by Chowsunket lake.	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Aquatic Species								
General Aquatic Species	Fish is eaten both fresh and preserved, through drying, smoking, freezing, and canning. Fishing camps take place in the fall, fishing with traps and weirs takes place in the summer. In 2016, 60% of 155 surveyed NWFN members consumed lake fish (excluding salmon). 99% of surveyed households on-reserve used salmon and other lake fish.	Fished in the Nautley River (adjacent to the FUP monitoring area) and other bodies of water outside the FUP area.	NIA	NWFN may experience temporary disruptions to fishing access where the transmission line crosses the Nechako River and Stellako River. Introduction of workers to the area may result in increased competition for fish.	NIA	NIA	NIA	NIA
Kokanee salmon	In 2009, 100% of NWFN women and 94% of men surveyed reported consuming salmon, although different varieties of salmon were not specified, on a regular basis, the majority of which was harvested in NWFN territory.	CSFNs members harvest kokanee in the Nautley River. Kokanee populations are widespread through the Nechako basin, occurring in all sockeye nursery lakes.	NIA	NIA	NIA	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	NIA	Multiple fish catch sites used to harvest rainbow trout are found in the Stellaquo area, the Eastern end of François Lake, and along the Holy Cross Road (commonly referred to as the 100 road) (Olson, et al. 2016). Rainbow trout are also harvested from the Sutherland River and the Nautley River.	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Whitefish	Fishing camps for whitefish take place in the fall.	Multiple fish catch sites used to harvest whitefish are found on the Eastern end of François Lake.	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA
Wildlife								
General Wildlife	In 2016, 96% of on-reserved surveyed NWFN households used traditional game.	NWFN members generally hunt for wildlife in areas north of Highway 16, including Ormond Lake (adjacent to the FUP monitoring area.	NIA	The construction of the northern 48km of the transmission line which pass through NWFN territory could impede access to hunting areas on either side of the proposed ROW.	NIA	NIA	NIA	NIA
Beaver	Consumed as a traditional food.	Hunted at the eastern end of François Lake.	NIA	NIA	NIA	NIA	NWFN members are concerned about the risk of a tailings spill contaminating beaver populations.	NIA
Black bear (including fat)	NWFN members hunt black bear. In 2016, 19% of 155 surveyed NWFN members consumed bear, and 32% consumed bear grease.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	NWFN members hunt grouse.	Grouse is hunted opportunistically across NWFN territory.	NIA	NWFN members have raised concerns that grouse will avoid the upgraded Kluskus FSR because of increased traffic on the road.	NIA	NIA	NIA	NIA
Moose	Moose harvesting takes place year-round, but especially in the fall. Moose is eaten fresh, dried, and frozen. NWFN members have expressed preference for moose meat over store-bought meats. Sharing moose meat is a common practice. Reliance on moose hunting has increased in recent years. In 2016, 75% of	NWFN members hunt moose in the Stellaquo IR area, the Nithi Mountain area, surrounding the Holy Cross Binta Forest Service Road and 215 Road, along the Holy Cross Road (commonly referred to as the 100 road), Holy Cross Tahultzu Forest Service Road, east of Tahultzu Lake, the northern portion of the Kluskus FSR, and the area around Corkscrew Creek. Harvest preparation sites were also recorded in the Nithi Mountain area, Holy Cross Tahultzu	NWFN members have reported "little" to "very little" moose available for harvesting. Logging, increased predation from wolves and non-resident hunters, traffic and roads, herbicides and pesticides, and recent forest fires are all current barriers to access (by increasing distances required to hunt) and	The vegetation clearance necessary for transmission line construction may open access for hunters and/or predators of moose, potentially reducing moose availability for NWFN members. Increased traffic on the Kluskus FSR may drive moose away from the area, increasing distance to access moose and decreasing availability of moose in the area. NWFN has raised concerns regarding the	NIA	Moose population health in NWFN territory is currently viewed as variable and declining. NWFN participants in a 2016 study identified moose health as ranging from "very good" to "very bad". NWFN members have reported finding moose with very little fat, as well as moose with growths that render the meat inedible. Ticks are also noted as currently affecting moose health.	NWFN has raised concerns that moose will be contaminated by tailings pond water and herbicide and pesticide-sprayed plant consumption. Concerns have also been raised about the project adding to cumulative effects on moose health being observed currently,	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
	155 surveyed NWFN members consumed moose.	Forest Service Road, and East of Tahultzu Lake. Moose kill sites, preparation sites (including gutting, skinning, butchering), rutting habitats, and migration routes were all recorded within the project footprint and the LSA. A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	availability of moose. Moose habitat is also impacted by agriculture and farmland, as well as fences and private property limit corridors for moose.	impact of habitat fragmentation on access and availability of moose.			including growths, ticks, and other effects.	

Sources used for Table 6-1 include: *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Nadleh Whut'en First Nation Socio-economic Study for New Gold Inc.'s Proposed Blackwater Gold Project* (The Firelight Group with NWFN 2016), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Nadleh Whut'en First Nation Knowledge and Use Study - New Gold's Proposed Blackwater Gold Project* (The Firelight Group & Nadleh Whut'en First Nation 2016).

Note: NIA = No information available

6.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine. The following summary of information regarding the access, availability and quality of drinking water has been included as a current context references to support FUP monitoring.

- Spring water is used for drinking and making medicines.
- Spring water is used in cultural ceremonies, with certain sources being considered sacred (including Fraser Mountain[12]) (Olson, et al. 2016).
- Spring water is collected at Fraser Mountain and other sources (Olson, et al. 2016).
- Many springs used by NWFN for drinking water are no longer in use due to disruption from other developments (Olson, et al. 2016).
- Drinking water is collected in the Project footprint, therefore there may be a loss of access (Olson, et al. 2016).
- Water quality varies between different bodies of water in NWFN traditional territory. Multiple bodies of water have become contaminated by the Endako mine (Olson, et al. 2016).
- NWFN members have expressed concern regarding potential contamination of drinking water by the Project, specifically from tailings and other chemicals. Spring waters under transmission lines are considered contaminated by NWFN members, resulting in a perceived impact to water quality. The upgrade of the Kluskus FSR was also noted as a potential risk to drinking water by damaging a spring (Olson, et al. 2016).
- If drinking water becomes contaminated or is perceived as such, NWFN members will likely avoid it (Olson, et al. 2016).

NWFN have been involved in the establishment of the Yinka Dene 'Uza'hné Surface Water Management Policy and Yinka Dene 'Uza'hné Guide to Surface Water Quality Standards.

6.3 Socio-economic Conditions

6.3.1 Food Security Conditions

Almost all NWFN households continue to consume traditional foods (CSFNs, BC EAO, & CEAA 2019).

NWFN members continue to rely on country foods and other traditional resources for "cultural continuity, physical and mental health, and food and income security" (CSFNs, BC EAO, & CEAA 2019). Hunting, fishing, and harvesting of berries and other plans are fundamental to the continued practice of NWFN culture and livelihoods (Olson, et al. 2016). Almost all NWFN households consume traditional foods, which are accessed by direct harvesting as well as sharing and trading (CSFNs, BC EAO, & CEAA 2019). Sharing is key to community members' food security, as well as supports community well-being (Olson, et al. 2016).

NWFN members have raised concerns that increasing reliance on store-bought foods as a result of decreasing quantities of moose and other game is detrimental to members', particularly Elders', health.

[12] Fraser Mountain is not located within the FUP monitoring area, however, it is not far outside and has therefore been mentioned to account for the possibility that nearby sites may overlap with the monitoring area.

NWFN members raised overarching concerns related to the perceived risks and socio-cultural stigma of harvesting under the Project's transmission line. NWFN have expressed concerns related to the use of pesticides and herbicides for vegetation control along the transmission line (ERM 2016). As part of the Application review process, NWFN (and CSFNs) participated in the realignment of the transmission line to identify a route that would avoid impacts to Aboriginal rights, including harvesting rights.

While general in nature to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Although still not NWFN specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were "sometimes" or "often" unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

6.3.2 Health Conditions

The 2016 NWFN Socio-Economic Study discusses various aspects of health including health conditions and perceived health, barriers to better health, diet, and other factors in NWFN member health. This 2016 survey found that most participating households perceived their health as good or excellent. This 2016 study found that more than half of the 155 surveyed households did not report any major health conditions, while 3% were reported to have been diagnosed with cancer and 7% diagnosed with high blood pressure. 21% of on-reserve NWFN members described insufficient local access to healthy food as a barrier to improved health in the community (The Firelight Group with NWFN 2016).

6.3.3 Cultural Conditions

A 2016 socio-economic study for the Project surveyed 133 NWFN members regarding participation in cultural practices. Within the 12 months prior to the survey, 67% of those surveyed reported participating in balhats (potlatch), 38% participated in traditional ceremonies, 31% reported use of traditional medicines, 24% reported harvesting traditional medicines, and 6% participated in harvesting medicines. The majority of NFWN members reported interest in learning more about balhats (potlatch), hunting and trapping, traditional plant gathering, food fishing, traditional ceremonies, and trading foods or goods (The Firelight Group with NWFN 2016).

Many species are important to NWFN culture. NWFN have indicated that berries are used for "potlatch, for the berry dance" or Balhats (Olson, et al. 2016), and that sharing moose meat is a common practice in the community.

7. NAZKO FIRST NATION

As of April 2023, CIRNAC reported that Nazko First Nation (NFN) had a total registered population of 430, with 114 members living on NFN reserves (CIRNAC 2023). NFN has twenty-two reserves located around the community of Nazko. NFN harvesting activities are understood to take place in the northwest corner of their traditional territory, although it is not limited to this area (ERM 2016). Appendix A-6 provides a map of NFN traditional territory with the FUP Monitoring Area.

7.1 Country Foods Conditions

Table 7-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on information provided by NFN and complemented by BW Gold data.

A 2017 letter from NFN to BW Gold provides the following high-level description of current country foods conditions: “Due to various factors, Nazko’s current ability to meaningfully exercise its harvesting rights has been assessed as being significantly adversely effected.” (BR Law 2017). No information was available for the following species: Mushrooms, poplar bark, beaver, Black bear, Grouse, Kokanee salmon, Rainbow trout and Whitefish. Additionally, for the species where information was available and are being monitored as part of the FUP, there was limited or no information from NFN related to harvest quantity, existing barriers to access, and anticipated changes to consumption. Notwithstanding, the fields have been retained in the draft Current Conditions Report in the case NFN is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 7-1: Summary of Nazko First Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Harvested for medicinal purposes.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	NFN has raised concerns regarding dust emissions impact on medicinal plants.	NIA
Black huckleberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	NIA	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General Aquatic Species	NFN members fish year-round. NFN is currently prioritizing management and recovery objectives for key fish species and fisheries.	NFN members fish across their traditional territories, including at the Euchiniko and Blackwater watersheds.	NIA	NIA	NIA	NIA	NFN has expressed concern regarding dust emissions impacting watersheds and fish, as well as concerns related to water flow. NFN has also expressed concern related to contamination of watersheds through accidental spills of hazardous materials and dangerous goods.	NIA
Kokanee salmon	Kokanee is a key species.	NIA	NIA	NIA	NIA	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	NIA	NIA	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Whitefish	NIA	NIA	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA
Wildlife								
General Wildlife	NIA	NFN members hunt and trap throughout their traditional territory.	NIA	NFN has raised concerns regarding the Project's potential effects on wildlife movement and mortality.	NIA	NIA	NIA	NIA
Beaver	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose	NFN members note that the moose population is declining, and that health of moose populations is of fundamental importance to NFN.	Hunted throughout NFN traditional territories. A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	NIA	NFN members have raised concerns about the potential effects of the Project on moose health, movement, and mortality.	A 2015 survey of NFN members found that 84% of surveyed members made efforts to hunt moose, with 24% of respondents successfully harvesting moose, and 16% meeting their family's needs.	NIA	NIA	NIA

Sources used for Table 7-1 include: *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Letter to Tavis McDonald Re: The Impacts from the Blackwater Gold Project on Nazko First Nation's Aboriginal Title and Rights* (BR Law 2017), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022).

Note: NIA = No information available

7.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine.

No information is available about drinking water and its relation to country food harvesting in the FUP Monitoring Area from the perspective of NFN.

7.3 Socio-economic Conditions

7.3.1 Food Security Conditions

No secondary information has been presented in relation to NFN's views on or community-specific data related to food security conditions.

While general in nature to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). This study reported that First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were "sometimes" or "often" unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of NFN members has been shared with BW Gold.

7.3.2 Health Conditions

No secondary information has been presented in relation to NFN's health and the relationship between country food harvesting and health (including level of physical activity to undertake harvesting in the FUP Monitoring Area).

7.3.3 Cultural Conditions

NFN shared in a 2017 letter to BW Gold that losing access to traditional foods means losing "cultural connection to the waters and lands and the ability to pass down traditional practices to younger and future generations". This letter also specifically notes that large game remains critical to cultural and community events (BR Law 2017). No further information has been presented in relation to country food harvesting and cultural practices or priorities within the FUP Monitoring Area from the perspective of NFN.

8. SKIN TYEE FIRST NATION

As of April 2023, CIRNAC reported that Skin Tyee First Nation (Skin Tyee) had a total registered population of 197, with 52 members living on Skin Tyee reserves (CIRNAC 2023). Skin Tyee has seven IRs, with the most members living on Skins Lake 16A (Statistics Canada 2022).

Appendix A-7 provides a map of Skin Tyee traditional territory with the FUP Monitoring Area.

8.1 Country Foods Conditions

Table 8-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on information provided by Skin Tyee and complemented by BW Gold data.

No information was available regarding the harvest of mushrooms for country foods, and limited information was available in relation to kokanee salmon, bear and grouse as country foods. The following fields had limited or no information pertaining to the species that are being monitored as part of the FUP: harvest quantity; anticipated changes or barriers in access/availability; and anticipated changes to consumption. Notwithstanding, the fields have been retained in the draft Current Conditions Report in the case Skin Tyee is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 8-1: Summary of Skin Tyee First Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Harvested in the summer, from mid-July to September.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	Skin Tyee First Nation has expressed concern regarding the impacts of the Project on plant and berry quality, including contamination or change in soil structure or composition.	NIA
Black huckleberry (Digi)	NIA	Harvested in the Bulkley and Nechako watersheds.	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	Used as a food source.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	Used medicinally.	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Poplar bark (Ts'ootsun)	Harvested in the spring and summer and used medicinally as well as materially.	Found in the Bulkley/Nechako region.	NIA	NIA	NIA	NIA	NIA	NIA
Soapberry (Nuwus)	Used as both a food source and medicinal source, and is harvested in the summer.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General Aquatic Species	NIA	NIA	NIA	Skin Tyee members have indicated that the Project has the potential to increase fish mortality.	NIA	NIA	NIA	NIA
Kokanee salmon (Giis)	Harvested year round for subsistence purposes.	NIA	NIA	NIA	NIA	Samples of giis collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	Harvested year-round for subsistence purposes and is eaten fresh or dried for storage. Caught using harpooning, hook, or net fishing techniques.	Multiple species of trout are caught in Owen Lake, Owen Creek, Morice River, and Nadina River, which are located outside of the FUP area.	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Whitefish	Harvested year-round for subsistence purposes using harpooning, hook, or net fishing techniques.	NIA	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA
Wildlife								
General Wildlife	NIA	Skin Tyee members hunt around Davidson Creek, Chedakuz Creek, Tatelkuz Lake, Tsacha Lake, Top Lake, Laidman Lake, and Kluskus Lake.	NIA	Skin Tyee First Nation has indicated that the Project has the potential to shift the behaviour of wildlife populations.	NIA	NIA	NIA	NIA
Beaver (Tsa)	Trapped in the spring and winter for furs.	Trapped at Owen Lake and the surrounding area, which is outside of the FUP area.	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	Hunted in the spring, summer, and fall for meat, with bear grease also used for trading.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	Hunted for subsistence purposes.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose	Hunted year-round for meat and skins.	Hunted in the region between Tatelkutz Lake and Laidman Lake. A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	NIA	NIA	NIA	NIA	NIA	NIA

Sources used for Table 8-1 include: *Skin Tyee First Nation Traditional Land Use Study for New Gold Inc's Proposed Blackwater Project* (DM Cultural Services Ltd. and Skin Tyee First Nation 2015), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022).

Note: NIA = No information available

8.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine.

No information is available about drinking water and its relation to country food harvesting in the FUP Monitoring Area from the perspective of Skin Tyee.

8.3 Socio-economic Conditions

8.3.1 Food Security Conditions

Skin Tyee has noted that trapping is no longer an economically viable livelihood, due to the decline of furbearer populations (ERM 2016).

While general in nature to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Still not Skin Tyee specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were "sometimes" or "often" unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of Skin Tyee members has been shared with BW Gold.

8.3.2 Health Conditions

No secondary information has been presented in relation to Skin Tyee's health and the relationship between country food harvesting and health (including level of physical activity to undertake harvesting in the FUP Monitoring Area).

8.3.3 Cultural Conditions

Skin Tyee holds an annual culture camp at Ootsa Lake Spillway for five days at the beginning of August, where Elders teach youth and other members about plants, medicines, beading, drum making, hunting, fishing, and telling their stories (Burns Lake Lakes District News 2022).No further information is available from Skin Tyee regarding the cultural context and relationship between country foods and culture.

9. NEE-TAHI-BUHN BAND

Nee-Tahi-Buhn Band (NTBB) has ancestry from the Babine-Witsuwit'en ethnolinguistic group, which share similar social structures and subsistence economies with Dakelh people (ERM 2016). Nee-Tahi-Buhn is the name for Fancois Lake, meaning "it fills at one end and empties at the other" (Office of the Wet'suwet'en n.d.). Through intermarriage and trade with Gitxsan peoples, Babine-Witsuwit'en speakers adopted Gitxsan social structures and the potlach system. As of April 2023, CIRNAC reported that NTBB had a total registered population of 139, with 35 members living on NTBB reserves, primarily at Uncha Lake 13A (CIRNAC 2023). Appendix A-8 provides a map of NTBB traditional territory with the FUP Monitoring Area.

9.1 Country Foods Conditions

Table 9-1 provides a summary of the conditions of harvested species within the FUP monitoring area, based on secondary information provided by NTBB and complemented by BW Gold data.

Limited to no information about species uses or values was available from NTBB. Additionally, limited to no information was available for the following fields for any of the species that are being monitored as part of the FUP: Harvest quantity, existing barriers to access, anticipated changes or barriers in access/ availability, anticipated changes to quality, and anticipated changes to consumption. Notwithstanding, these fields have been retained in the draft Current Conditions Report in the case NTBB is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 9-1: Summary of Nee-Tahi-Buhn Band Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Plants are harvested for food and medicinal purposes over the spring, summer, and fall.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	NIA	NIA
Black huckleberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	Mushrooms are harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	Hudson bay tea/Labrador tea is harvested.	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark	Poplar bark is harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Soapberry	Soapberry is harvested.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General	NIA	NTBB members fish year-round along the Morice River, which is outside of the FUP area.	NIA	NIA	NIA	NIA	NIA	NIA
Kokanee salmon	Kokanee salmon is harvested.	NIA	NIA	NIA	NIA	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	Rainbow trout is harvested.	NIA	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Whitefish	Whitefish is harvested.	NIA	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Wildlife								
General Wildlife	NTBB members hunt year-round and trap in the winter.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Beaver	One of the NTBB clans is Beaver (Tsayu) Beaver is harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	Black bear is harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose	NIA	A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	NIA	NIA	NIA	NIA	NIA	NIA

Sources used for Table 9-1 include: *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), B*lackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022).

Note: NIA = No information available

9.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine.

No information is available about drinking water and its relation to country food harvesting in the FUP Monitoring Area from the perspective of NTBB.

9.3 Socio-economic Conditions

9.3.1 Food Security Conditions

While general in nature to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). Still not NTBB specific, First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were “sometimes” or “often” unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of NTBB members has been shared with BW Gold.

No further information was found in secondary sources regarding NTBB’s socio-economic context for country foods.

9.3.2 Health Conditions

No secondary information has been presented in relation to NTBB’s health and the relationship between country food harvesting and health (including level of physical activity to undertake harvesting in the FUP Monitoring Area).

9.3.3 Cultural Conditions

NTBB members participate in the balhats (potlatch) system organized by matrilineal clans. NTBB clans include Gilseyhu (Big Frog), Laksilyu (Small Frog), Gitdumden (Wolf/Bear), Laksamashu (Fireweed), and Tsayu (Beaver) (Office of the Wet'suwet'en n.d.).

10. TŜILHQOT'IN NATION

Tŝilhqot'in Nation (TN) is represented by the Tŝilhqot'in National Government (TNG), which represents the communities of Tl'etinqox (Anaham), ?Esdilagh (Alexandria), Yunesit'in (Stone), Tsi Deldel (Alexis Creek), Tl'esqox (Toosey) and Xeni Gwet'in (Nemiah) (ERM 2016). The Tŝilhqot'in (Chilcotin) are known as People of the River, in reference to salmon being their main food source.

There are more than 4,000 TN members, largely based in the Cariboo Chilcotin central interior region (Tŝilhqot'in National Government n.d.). Appendix A-9 provides a map of TN traditional territory with the FUP Monitoring Area.

10.1 Country Foods Conditions

Table 10-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on information provided by TN and complemented by BW Gold data.

Limited to no information about country foods use, access, availability or quality was available from TN. Limited to no information was available for the following fields for any of the species that are being monitored as part of the FUP: anticipated changes or barriers in access/availability, anticipated changes to quality and anticipated changes to consumption. In the case TN is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 10-1: Summary of Tŝilhqot'in Nation Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Plant foods are used as "important diet supplements".	Harvested across TN traditional territory.	NIA	NIA	Berries and roots are gathered in "sufficient quantities" for winter storage.	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	NIA	NIA
Black huckleberry	Huckleberries are harvested.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	Blueberries are harvested.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	Mushrooms are harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	Hudson Bay / Labrador tea is harvested.	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Soapberry	Soapberries are harvested.	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Aquatic Species								
General Aquatic Species	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Kokanee salmon	Kokanee salmon are harvested.	NIA	NIA	NIA	NIA	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	Rainbow trout are harvested.	NIA	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Whitefish	Whitefish are harvested.	NIA	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Wildlife								
General Wildlife	NIA	Hunted and trapped throughout TN traditional territory.	NIA	NIA	NIA	NIA	NIA	NIA
Beaver	Beaver are harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	Black bear are harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	Grouse are harvested.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose	Moose are harvested.	A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including 4 bulls, 6 cows, and 2 calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	TN has raised concerns regarding the ability to hunt moose as a result of the MPB epidemic.	NIA	NIA	NIA	NIA	NIA

Sources used for Table 10-1 include: *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022).

Note: NIA = No information available

10.2 Drinking Water

10.3 Socio-economic Conditions

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine.

No information is available about drinking water and its relation to country food harvesting in the FUP Monitoring Area from the perspective of TN.

10.3.1 Food Security Conditions

While general in nature to BC First Nations, the 2011 FNFNES reported 59% of First Nations living on reserve indicated they were food secure, while 8% indicated they were severely food insecure (Figure B-1) (Chan, Receveur and Sharp 2011). First Nations in ecozones 4 and 5, which overlap the FUP monitoring area, indicated that 21% and 37% felt moderately food insecure (ecozone 4 and ecozone 5 respectively), while 4% and 8% indicated they were severely food insecure (ecozone 4 and ecozone 5, respectively).

Since 2008-2010, there has been a decline in the percentage of on-reserve households in Interior and Northern BC who reported food insecurity. In 2008-2010, 46.7% of on-reserve households studied could not afford to eat balanced meals in the past 12 months, with this figure dropping to 43.5% in 2015-2017. However, in the Northern region (which overlaps the communities potentially affected by the Project), 47.3% of surveyed on-reserve households were "sometimes" or "often" unable to afford balanced meals in the past 12 months as of 2015-2017 (Beck and Bonfonti 2021).

No specific information regarding the rate of food security or insecurity of Skin Tyee members has been shared with BW Gold.

No further information was found in secondary sources regarding TN's socio-economic context for country foods.

10.3.2 Health Conditions

No secondary information has been presented in relation to TN's health and the relationship between country food harvesting and health (including level of physical activity to undertake harvesting in the FUP Monitoring Area).

10.3.3 Cultural Conditions

No information is available from TN regarding the cultural context and relationship between country foods and culture.

11. MÉTIS NATION BRITISH COLUMBIA

Métis people are of mixed First Nations and European ancestry who trace their descent to the 18th century fur trade. The Métis population in BC is approximately 59,000, with the majority residing in urban areas. Métis Nation British Columbia (MNBC) is the governing organization for Métis people living in BC, providing governance and support for 35 Chartered Communities in seven Regions. There are four Métis Chartered Communities in the North Central Region of BC where the project is located, including the Cariboo Chilcotin Métis Association, North Cariboo Métis Association, Prince George Métis Community Association, and the New Caledonia Métis Association (ERM 2016).

11.1 Country Foods Conditions

Table 11-1 provides a summary of the current conditions of harvested species within the FUP monitoring area, based on information provided by MNBC and complemented by BW Gold data. Limited to no information was available regarding Metis access, availability or quality of country foods s for any of the species that are being monitored as part of the FUP. Notwithstanding, the fields have been retained in the draft Current Conditions Report in the case MNBC is able to provide additional context information to support BW Golds understanding of current conditions for species and their harvest.

Table 11-1: Summary of Métis Nation British Columbia Country Foods Current Context

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Plants and Berries								
General Plants and Berries	Used for medicinal purposes.	MNBC indicated in a 2016 letter that members use the Project area to gather plants for sustenance and medicinal purposes.	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Dustfall, Soil, and Plant Metal Concentration Baseline Report provide the analytical results for vegetation samples collected in August 2021 and 2022. These results are not indicative of how Indigenous groups experience the quality of country foods but are considered in this Current Conditions Report as an approach for understanding metal concentrations in country foods. Changes to metal concentrations may result in changes to the experience of country food quality by Indigenous groups who consume these foods. Plant-specific details from these reports are available below.	NIA	NIA
Black huckleberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Blueberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.	NIA	NIA
Mushrooms	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Hudson Bay Tea / Labrador Tea	NIA	NIA	NIA	NIA	NIA	Based on the analytical results for vegetation samples, concentrations of metals in leafy vegetation tissues (including Labrador tea) in the study area were less than the MTLs, except for manganese and potassium (in samples collected in August 2021) and manganese only (in samples collected in August 2022). The concentrations of bismuth and zirconium in leafy vegetation samples were below their respective DLs. Arsenic speciation typically yielded concentrations below DLs for each of the arsenic species. No individual arsenic species were detected in Labrador tea.	NIA	NIA
Poplar bark	NIA	NIA	NIA	NIA	NIA	NIA	*NIA*	*NIA*
Soapberry	NIA	NIA	NIA	NIA	NIA	The 2021 Cumulative Soil and Vegetation Baseline Report and the 2021-2022 Cumulative Dustfall, Soil, and Plant Metal Concentration Baseline Report found that	*NIA*	*NIA*

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
						average concentrations of all tested metals in 2021 berry samples from the study area (huckleberries, blueberries, and soapberries) were below the MTLs (National Research Council 2005) and that concentrations of beryllium, bismuth, lithium, and tellurium were less than their respective DLs. Maximum concentrations of aluminum, manganese, molybdenum, and potassium in berry samples collected in 2021 were higher than the MTLs, whereas maximum concentrations of manganese and potassium only were higher than the MTLs in berry samples collected in 2022. Total arsenic and inorganic arsenic were detected in only 6 out of 41 berry samples and at concentrations only slightly higher than the DL.		
Aquatic Species								
General Aquatic Species	NIA	MNBC indicated in a 2016 letter that members use the Project area for fishing.	NIA	MNBC has expressed concerns regarding potential impacts of the Project to fisheries, including Davidson Creek.	NIA	NIA	MNBC has expressed concerns regarding potential impacts of the Project to fisheries, including Davidson Creek.	NIA
Kokanee salmon	NIA	NIA	NIA	NIA	NIA	Samples of kokanee collected in 2021 from Tatelkuz Lake ranged in length from 192 mm to 258 mm (median of 229 mm) and ranged in weight from 103 g to 219 g (median of 159 g). In 2022, length ranged from 190 to 242 mm (median of 224 mm), and weight ranged from 82 to 147 g (median of 128 g). Concentrations of selenium were below the human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Rainbow trout	NIA	NIA	NIA	NIA	NIA	Samples of rainbow trout collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 164 mm to 405 mm (median of 303 mm) and ranged in weight from 65 g to 749 g (median of 291 g). In 2022, samples from these lakes ranged in length from 179 to 410 mm (median of 342 mm) and in weight from 59 to 613 g (median of 382 g). Samples of rainbow trout from creeks in the study area were juveniles only. Samples collected in 2021 from Davidson Creek, Creek 661, and Creek 705 ranged in length from 57 mm to 195 mm (median of 93 mm) and ranged in weight from 3 g to 81 g (median of 10 g). Samples collected in 2022 from Davidson Creek, Creek 661, Creek 705, Fanny Creek, and Turtle Creek ranged in length from 4.4 to 219 mm (median of 85 mm) and in weight from 0.1 to 122 g (median of 7.8 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014).	NIA	NIA
Whitefish	NIA	NIA	NIA	NIA	NIA	Samples of whitefish collected in 2021 from Tatelkuz Lake and Kayakuz Lake ranged in length from 175 mm to 347 mm (median of 296 mm) and ranged in weight from 67 g to 558 g (median of 289 g). In 2022, length ranged from 289 to 340 mm (median of 320 mm), and weight ranged from 297 to 512 g (median of 428 g). Concentrations of selenium were below the Human consumption screening value for high fish intake from BC ENV (Beatty and Russo 2014). Speciation of arsenic showed that although total arsenic was detected, only arsenobetaine and dimethylarsinic acid was above method detection limits in 2 and 5 fish (out of 20), respectively.	NIA	NIA

Species	Context and Use	Harvest Location and Access Routes within the FUP Monitoring Area	Existing Barriers to Access	Anticipated Changes or Barriers in Access/Availability	Harvest Quantity	Species or Harvest Quality	Anticipated Changes to Quality	Anticipated Changes to Consumption
Wildlife								
General Wildlife	MNBC members hunt and trap wildlife.	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Beaver	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Black bear (including fat)	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Grouse	NIA	NIA	NIA	NIA	NIA	NIA	NIA	NIA
Moose	Moose is hunted.	A 2018 aerial survey observed 12 moose in the Mt. Davidson area, including four bulls, six cows, and two calves. Moose were observed near Tatelkuz Lake and Davidson Creek, in addition to other locations within the FUP monitoring area.	NIA	NIA	NIA	NIA	NIA	NIA

Sources used for Table 11-1 include: *Blackwater Gold Project: Further Assessment of Potential Effects on Current Aboriginal Use* (ERM 2016), *Blackwater Gold Project - Wildlife Mitigation and Monitoring Plan* (ERM 2022c), *Blackwater Gold Project - 2022 Cumulative Aquatic Effects Monitoring Program Baseline* (ERM 2022), and *Blackwater Gold Project - Country Foods Monitoring Plan* (Entia 2022).

Note: NIA = No information available

11.2 Drinking Water

BW Gold's MSDP provides monitoring program for surface water, groundwater, and seepage water quantity and quality within the proposed permitted area and discharge points over the Life of Mine.

No information is available about drinking water and its relation to country food harvesting in the FUP Monitoring Area from the perspective of MNBC.

11.3 Socio-economic Conditions

11.3.1 Food Security Conditions

No information was found in secondary sources regarding Métis' food security status or the socio-economic context for country foods.

11.3.2 Health Conditions

No secondary information has been presented in relation to Métis health and the relationship between country food harvesting and health (including level of physical activity to undertake harvesting in the FUP Monitoring Area).

11.3.3 Cultural Conditions

No information was available in secondary sources regarding MNBC's cultural context or relationship with country foods.

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APPENDIX A MAPS OF TRADITIONAL TERRITORIES AND THE FUP MONITORING AREA

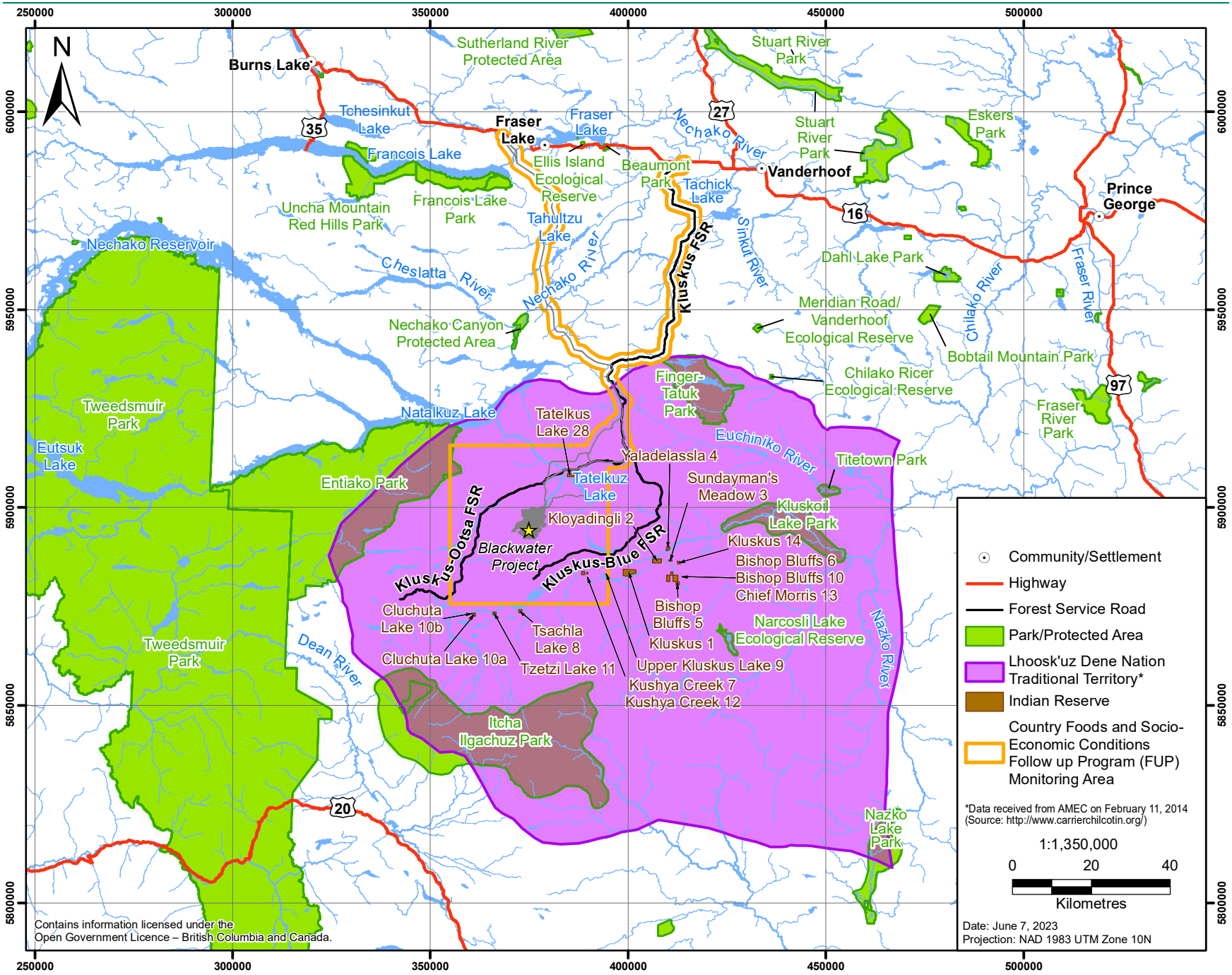


Figure A-1: Lhoosk'uz Dené Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

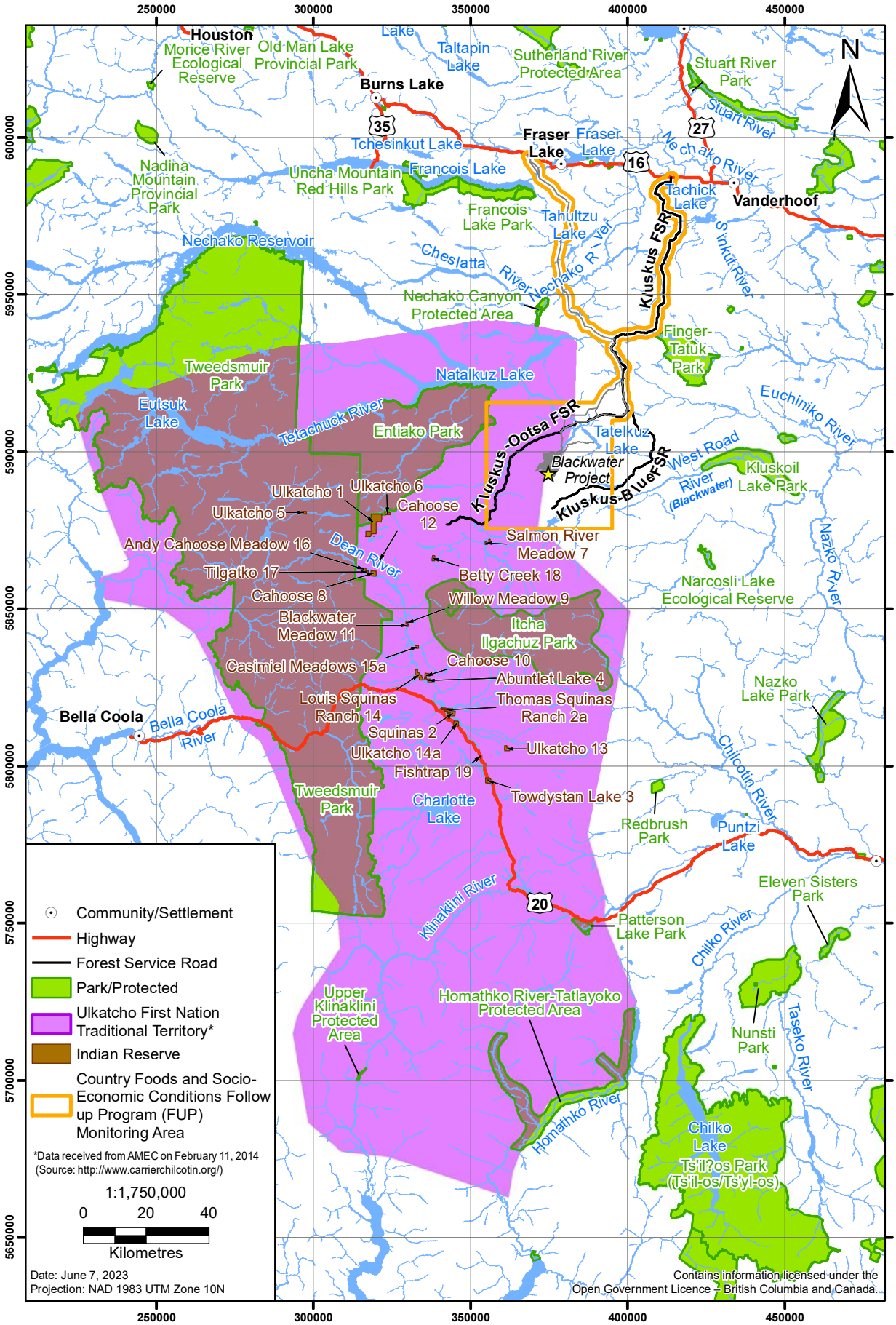


Figure A-2: Ulkatcho First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

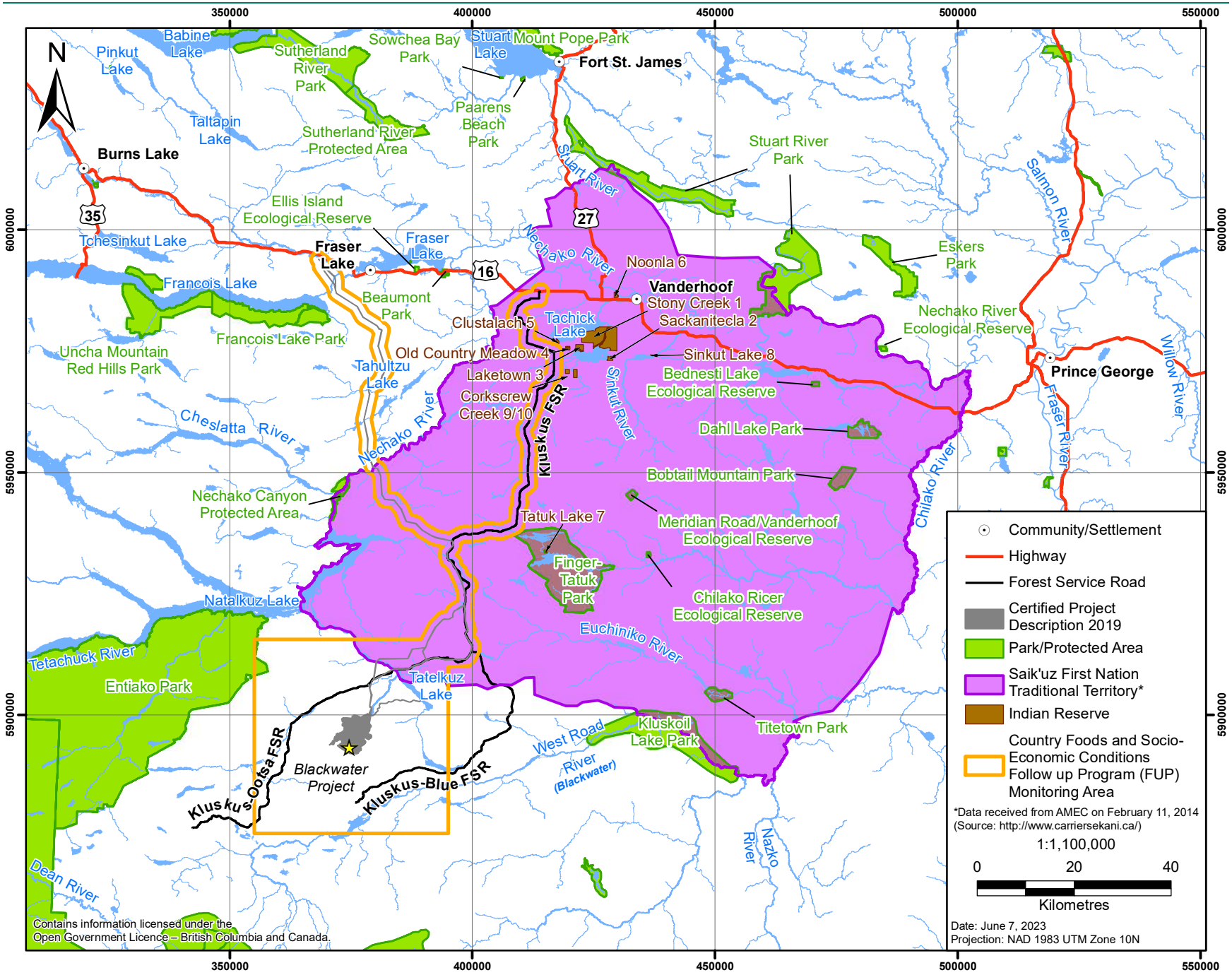


Figure A-3: Saik'uz First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

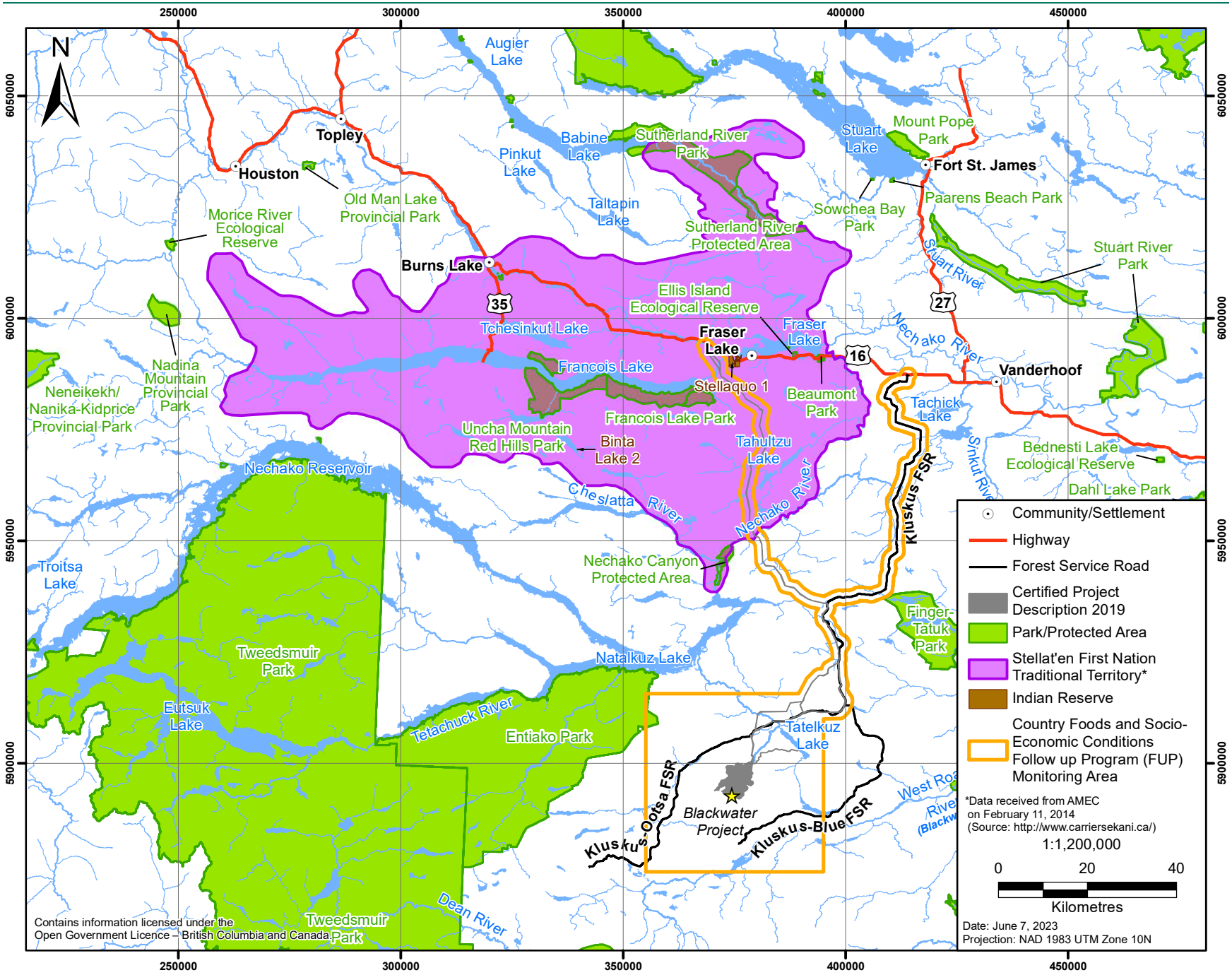


Figure A-4: Stellat'en First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

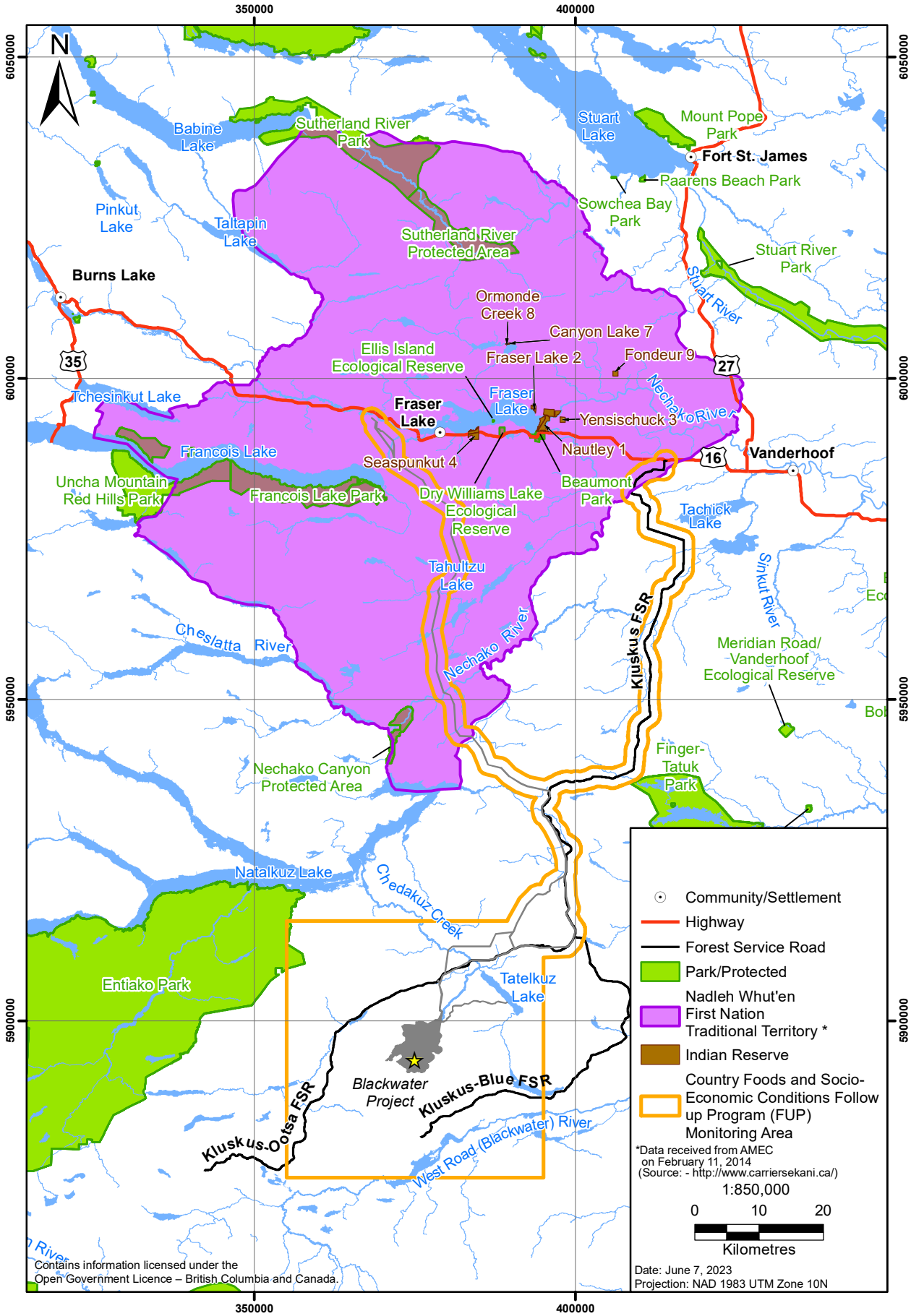


Figure A-5: Nadleh Whut'en First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

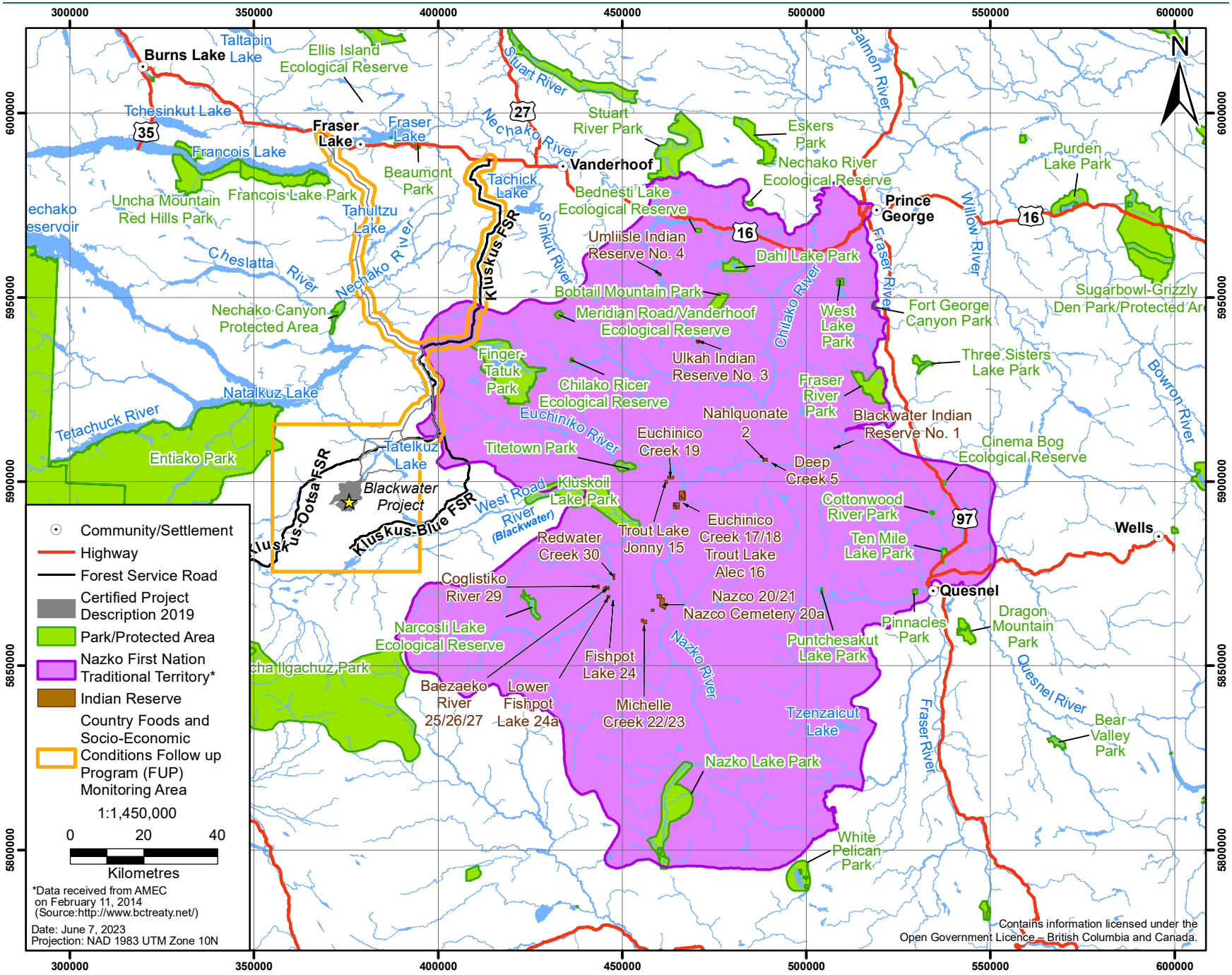


Figure A-6: Nazko First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

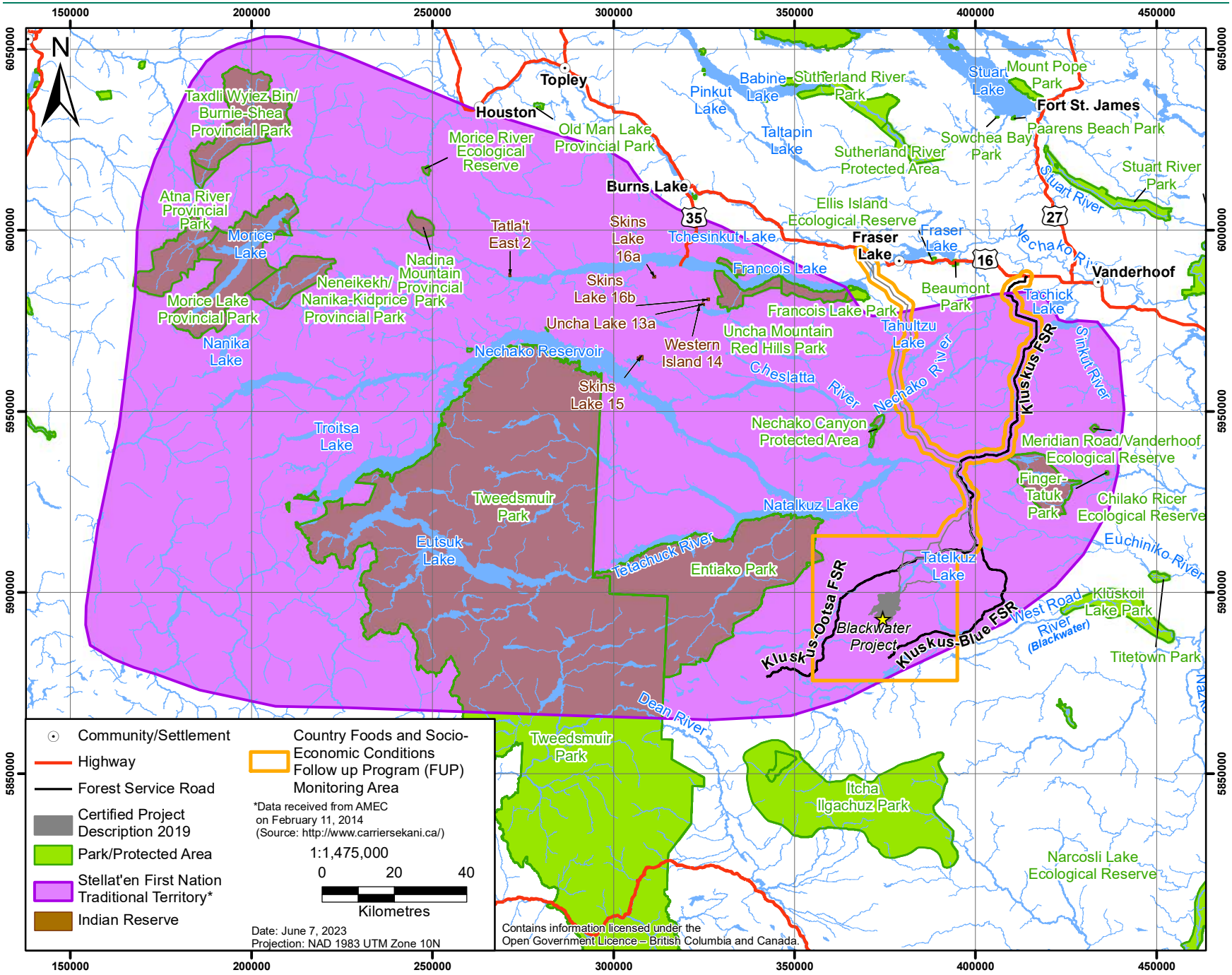


Figure A-7: Skin Tyee First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

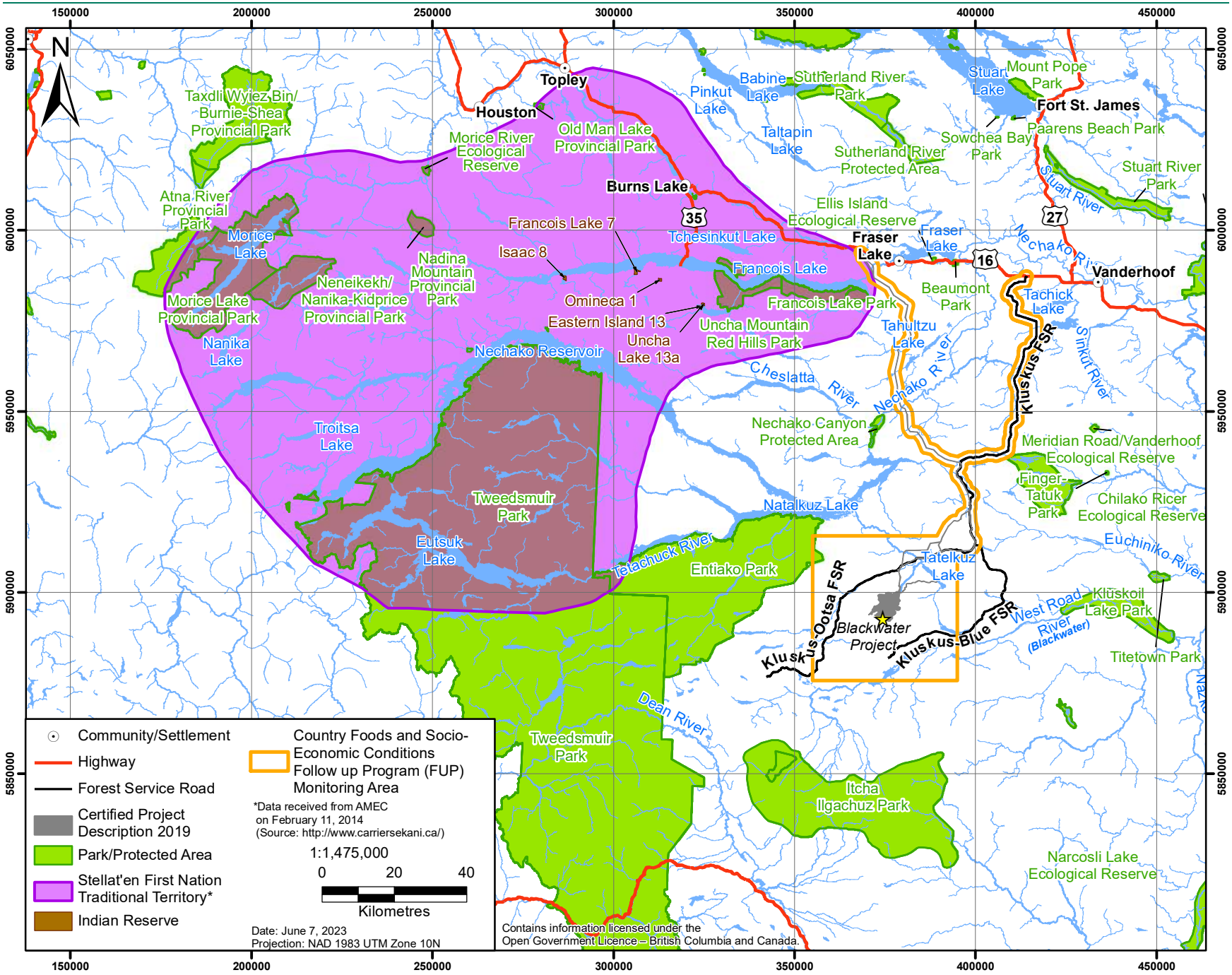


Figure A-8: Nee-Tahi-Buhn First Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

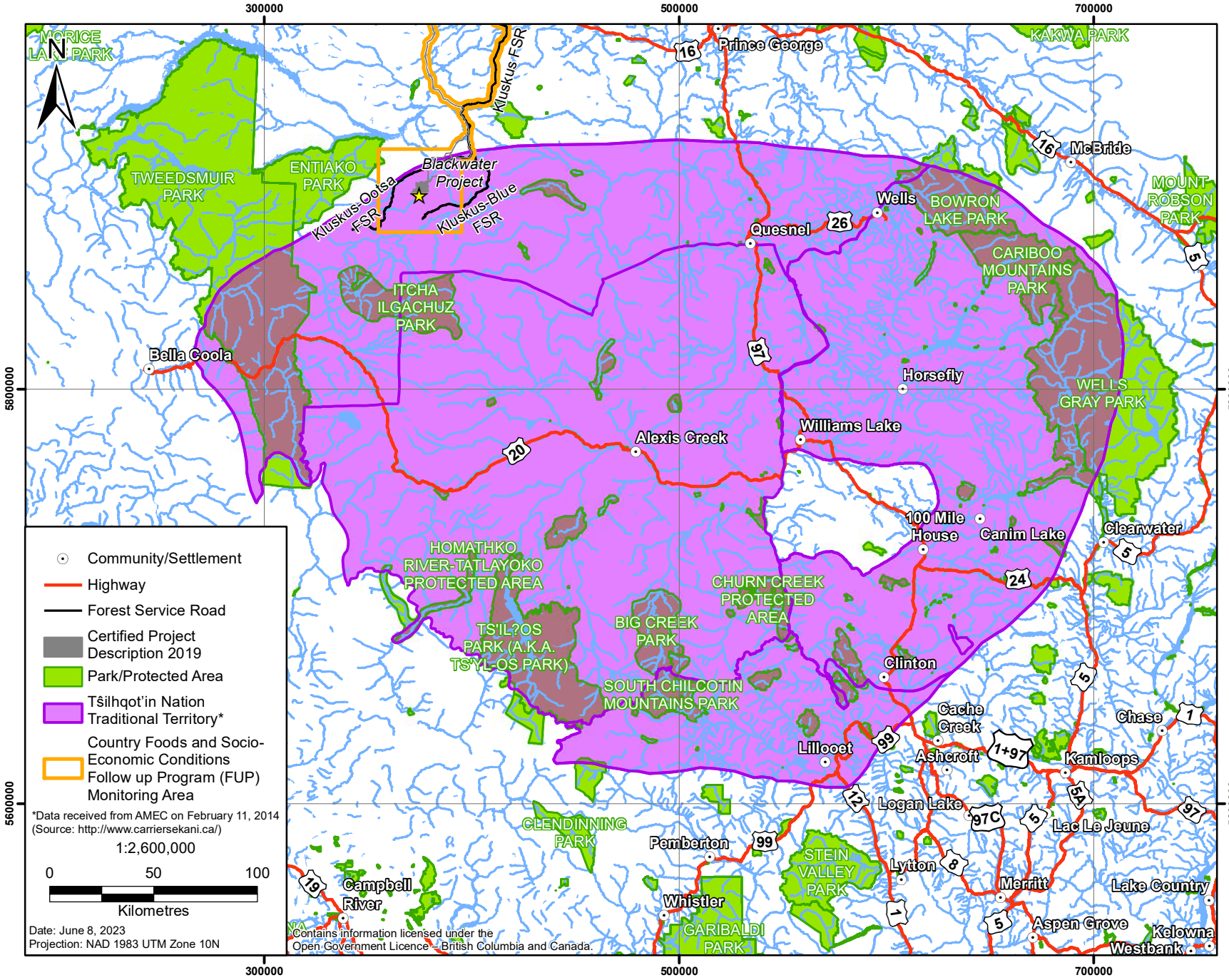
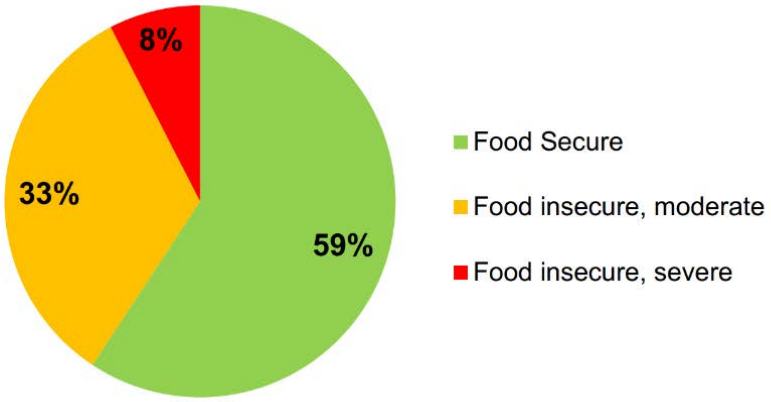


Figure A-9: Tŝilhqot'in Nation Traditional Territory Map with Follow-Up Plan Monitoring Area

APPENDIX B ON-RESERVE FOOD INSECURITY



Source: Chan, Receveur and Sharp 2011

Figure B-1: Degree of Food Insecurity in BC First Nations Living On-Reserve[13] (n = 1065)

[13] Classification of food security scale based on CCHS 2.29. Canadian Community Health Survey Cycle 2.2, Nutrition, H. Canada, Editor. 2004, Her Majesty the Queen in Right of Canada: Ottawa.

Appendix 9: Wetland Mapping and Assessment Baseline

Blackwater Gold Project
Wetland Mapping and Assessment Baseline

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March 28, 2023

EXECUTIVE SUMMARY

The Blackwater Gold Project (the Project) is a gold and silver open pit mine located in central British Columbia (BC), approximately 112 kilometres (km) southwest of Vanderhoof, and 160 km southwest of Prince George.

New Gold Inc. (New Gold) received Environmental Assessment Certificate M19-01 (EAC) on June 21, 2019 under the 2002 *Environmental Assessment Act* and a Decision Statement (DS) on April 15, 2019 under the *Canadian Environmental Assessment Act*, 2012 (CEA Agency 2019). In August 2020, Artemis Gold Inc. (Artemis) acquired the mineral tenures, assets and rights in the Blackwater Project that were previously held by New Gold Inc. On August 7, 2020, the Certificate was transferred to BW Gold LTD. (BW Gold), a wholly-owned subsidiary of Artemis, under the 2018 *Environmental Assessment Act*.

A first draft of the Wetland Management and Offsetting Plan (WMOP) was completed in September 2021 and engagement with Lhoosk'uz Dené Nation (LDN) and Ulkatcho First Nation (UFN) was initiated. The plan was revised in December 2021 and incorporated comments specifically addressing the lack of recent and accurate baseline data. Additional comments were received and incorporated into a draft that was submitted to the Environmental Assessment Office in March 2022. Throughout the summer of 2022, baseline data on the location, type, and function of wetlands potentially affected by the Project were collected. In a letter dated 22 September 2022, EAO indicated that BW Gold may proceed to implement the draft WMOP, including construction disturbance limited to plant site early works. However, the draft WMOP was not approved, and changes were required to fully meet the requirements of Condition 24 in EAC M19-01 for the Blackwater Gold Project. Engagement continued with LDN and UFN specifically regarding how wetland function data were collected and used to evaluate the loss of wetland function due to Project development and offsetting requirements. The field work provided in this report was the primary source of data used to update the March 2022 WMOP, which provided revisions and additional information to meet the requirements of M19-01 EAC Condition 24 and federal DS Condition 5, including the offsetting of lost wetland function through Project construction completion at Year 23.

This report provides a summary of the wetland mapping and assessment completed in 2022 by EcoLogic Consultants Ltd. (EcoLogic), Chu Cho Environmental Ltd. (Chu Cho), and Palmer Environmental Consulting (Palmer). Specifically, assessments involved the collection of spatial data to complete an accurate map of all wetlands to the 1:5,000 scale within the mine site and transmission line footprints; collection of wetland health and function attributes, including wildlife habitat function, to inform baseline description of wetland type and function; and collection of wetland carbon sequestration data, specifically through an assessment of the peat layer. Field surveys were also completed to confirm wetland classification and status (red or blue-listed wetlands) within the mine site, including the proposed plant site, to support early works construction.

All five wetland classes, bog, fen, marsh, swamp and shallow open water, along with floodplains and ponds, were mapped with the Project area and encompassed a total of 983.3 hectares (ha). Of the wetlands assessed, there were 7 bog site associations (384.2 ha), 10 fen site associations (122.6 ha), 2

marsh site associations (18.0 ha), 6 swamp associations (435.3 ha) and 1 open water class (23.2 ha). The most abundant wetland association was the Ws07 Spruce – Common horsetail – Leafy moss swamp, followed by the Wb05 Black spruce – Water sedge – Peat-moss bog, and then the Wb08 Black spruce – Soft-leaved sedge – Peat-moss. Eight of the site associations mapped are blue-listed, including 2 bogs (Wb10 Lodgepole pine - Few-flowered sedge - Peat-moss Bog/Poor Fen, Wb13 and Wb13 Shore sedge - Buckbean - Peat-moss Bog), 4 fens (Wf06 Slender sedge – Buckbean, Wf08 Shore sedge – Buckbean – Hook-moss, Wf11 Tufted clubrush – Star moss, Wf13 Narrow-leaved cotton-grass – Shore sedge), and 2 swamps (Ws05 MacCalla's willow – Beaked sedge and Ws07 Spruce – Common horsetail – Leafy moss).

Data to inform the four primary wetland functions (hydrological, biochemical, habitat and ecosystem) were collected and are being used to inform the analysis for each wetland class (bog, fen, marsh, swamp and shallow open water) based on the methods provided in Hanson et al. (2008). Shallow groundwater wells were installed to provide continuous data on ground and surface water within Matthews Creek and four reference wetlands.

Wetland Health assessments were completed at 96 full plots. Of these, 77% (74/96) were properly functioning, 8% (8/96) were functioning at risk, 8% (8/96) were functioning at high risk, and 6% (6/96) were not properly functioning. Wetlands that were not properly functioning were primarily bogs and swamps, with partial to 100% impact from logging.

Wildlife health assessments were completed at 70 full plots. Bogs and swamps represented the most suitable habitat, providing food, thermal cover and security cover to the wildlife species that were assessed. Suitable habitat was identified for all species assessed except for muskrat.

Wetlands with potential to store carbon were assessed during the field work. These were bogs and fen wetland classes. Eight fen and bog wetlands were sampled for peat depth and bulk density. These data were used to estimate total carbon for each sampled wetland.

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1. INTRODUCTION

1.1 PURPOSE

This report provides a summary of the wetland mapping and assessment completed in 2022 by EcoLogic Consultants Ltd. (EcoLogic), Chu Cho Environmental Ltd (Chu Cho), and Palmer Environmental Consulting (Palmer). The mapping and assessment focused on the following:

- Collection of spatial data to complete an accurate map of all wetlands to the 1:5,000 scale within the mine site and transmission line footprints, and the two compensation areas;
- Collection of wetland health and function attributes, including wildlife habitat function and hydrology, to inform baseline descriptions of wetland type (and classification) and function; and
- Collection of wetland carbon sequestration data, specifically through an assessment of the peat layer.

1.2 REGULATORY REQUIREMENTS

The wetland mapping and assessment was completed to inform the Wetland Management and Offsetting Plan (WMOP) as required by provincial and federal environmental assessments; Condition 24 of the provincial Environmental Assessment Certificate (M19-01) and Section 5 of the of Decision Statement (DS) under Section 54 of the *Canadian Environmental Assessment Act.*

In order to ensure planned early works construction activities were completed in accordance with Condition 5.2 of the DS, all wetlands within the proposed plant site clearing area were assessed in the field using the methodology presented in Section 2. The two wetlands mapped in the vicinity of the plant site were classified, determined to not be ecosystems-at-risk, and the spatial accuracy confirmed to ensure the required 30m setbacks were correctly applied (Appendix A).

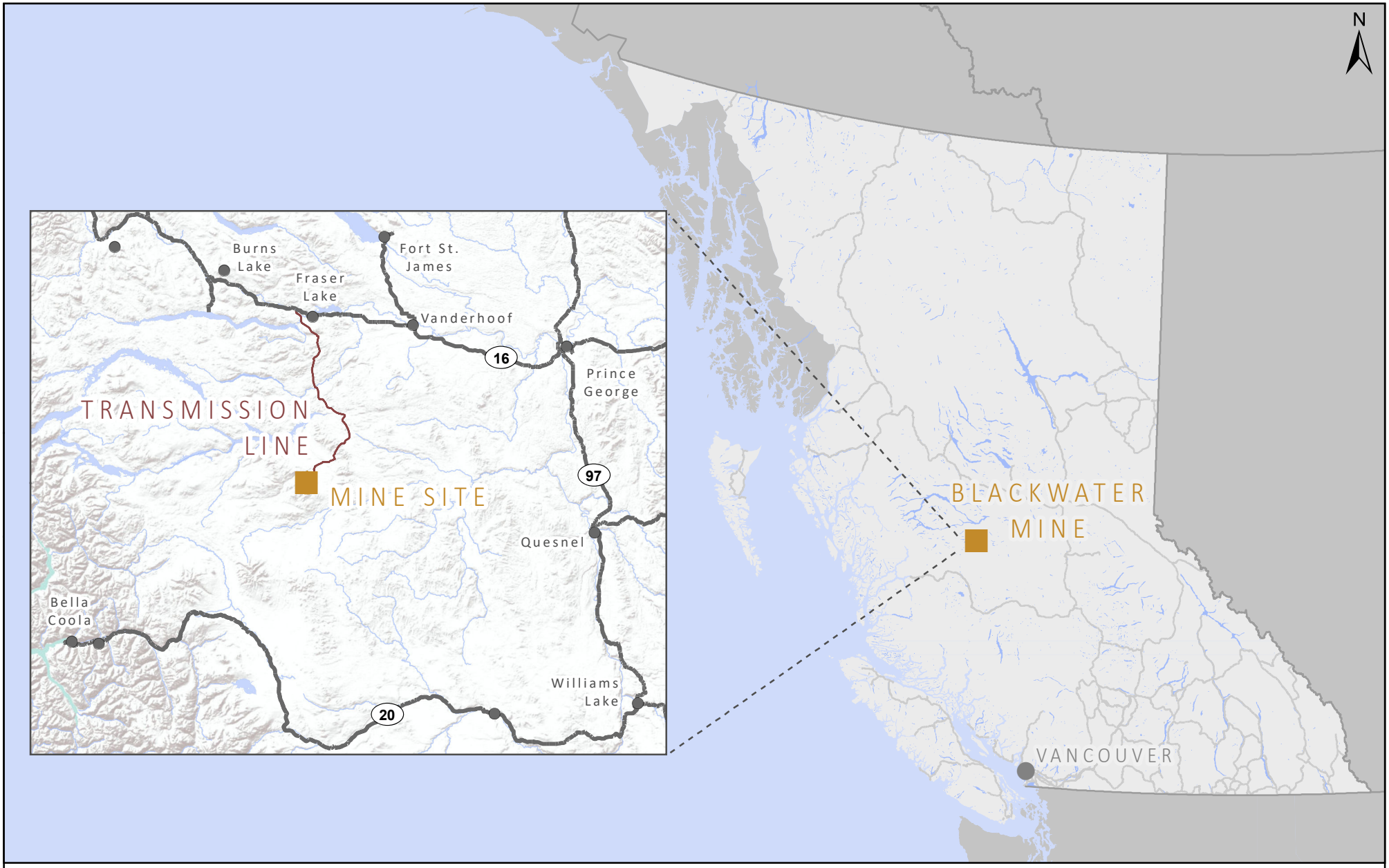
Pre-construction surveys were completed within the Project site to classify and map all red and blue-listed wetlands as per Condition 5.5.1 of the DS. The results of the surveys were compiled in a memo and distributed to Lhoosk'uz Dené Nation (LDN), Ulkatcho First Nation (UFN) and Federal agencies (Appendix B).

1.3 CONSULTATION ON WETLAND BASELINE MAPPING METHODS

The scope of work for the baseline mapping and assessment was developed in collaboration with LDN/UFN. From February 2022 to June 2022, LDN/UFN reviewed and provided comments on the wetland mapping and assessment workplans, data collection and mapping methods (including red and blue-listed wetlands), carbon storage, and focal wildlife species selection. Regular meetings were held throughout 2022 to provide updates to the wetland mapping progress and functional assessments using the field data.

1.4 PROJECT LOCATION

The Blackwater Gold Project (the Project) is a gold and silver open pit mine located in central British Columbia (BC), approximately 112 kilometers (km) southwest of Vanderhoof, and 160 km southwest of Prince George (Figure 1.4-1). The Project is presently accessed via the Kluskus Forest Service Road (FSR), the Kluskus-Ootsa FSR, and an exploration access road, which connects to the Kluskus-Ootsa FSR at km 142. The Kluskus FSR joins Highway 16 approximately 10 km west of Vanderhoof. A new, approximately 13.8 km road (Mine Access Road) will be built to replace the existing exploration access road, which will be decommissioned. The new planned access is at km 124.5. Driving time from Vanderhoof to the Mine Site is approximately 2.5 hours.



Blackwater Project

Figure 1.4-1
Project Location

Date: 2/24/2023
Map Number: BLW-091
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

- Transmission Line
- Mine Site
- City
- Lake
- River
- Highway

0 20 40 60 80
1:2,900,000 km

1.5 ECOLOGICAL SETTING

The Project is located in the Bulkley-Nechako Regional District within the Nechako River Watershed on the Nechako Plateau within the interior of BC. This area is mostly low rolling hills with elevations ranging from 700 to 2100 m. The landscape is comprised of a diverse arrangement of glaciolacustrine, glaciofluvial, and morainal deposits. The climate is sub-continental with long, cold, winters, and warm summers. Precipitation during the growing season is highly variable with some years having high precipitation and other years experiencing drought. The maximum annual precipitation falls in the late spring and early summer months. Precipitation, coupled with a late season snowmelt, is vital in recharging the many wetlands, streams, and rivers that occur within the watershed. Wetlands are very common in many landscape positions within the area. Starting at around 14,000 years ago, the vast glaciers that had been dominant for tens of thousands of years began to melt and retreat. As the underlying topography of the Nechako Plateau is quite subdued, many recessional lakes were established. These were, for the most part, relatively shallow in nature. Overtime, many of these lakes were infilled with decomposing aquatic vegetation, resulting in the establishment of peat wetlands (including bogs and fens). Low gradient meandering streams connected these water bodies, along which marshes and swamps established. Floodplain vegetation and riparian ecosystems are also common, being associated with streams of higher gradient (and higher hydrodynamism) than those streams where marshes and swamps form.

The area is dominated by vast tracts of forests. At higher elevations, Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) are dominant. At lower elevations, subalpine fir, white spruce (*Picea* glauca), as well as hybrid white spruce (*P. x albertiana*), are common. Lodgepole pine (*Pinus contorta*) occupies pioneer stands and sites with rapidly drained soils such as glacio-fluvial benches. Trembling aspen (*Populus tremuloides)* often occurs throughout the landscape on previously disturbed sites. Black spruce (*Picea mariana*) and balsam poplar (*Populus balasamifera*) occur on wetter sites, many of which are wetlands. Due to disturbances such as the mountain pine beetle (*Dendroctonus ponderosae*) outbreak, frequent forest fires, and removal of trees by industry, the resulting forested ecosystems are of a mixed age.

1.6 PROJECT AREA

The Project area consists of the footprint for the open pit mine, ore processing facility, tailings and waste rock storage facilities, low-grade ore storage facility, ancillary facilities (e.g. mine maintenance shop), a camp and a 135 km 230kv transmission line, as well as two compensation areas, Mathews Creek, and Dykam Ranch (Figure 1.6-1).



Blackwater Project

Figure 1.6-1

Study Areas

Date: 2023-02-28

Map Number: BLW-092

Coordinate System: NAD 1983 UTM Zone 10N

Projection: Transverse Mercator

Datum: North American 1983

ECOLOGIC environmental consulting

- Compensation Areas
- City
- Highway
- Transmission Line
- Mine Site
- Lake
- River

0 4 8 12

1:600,000 Kilometers

2. METHODOLOGY

2.1 WETLAND MAPPING

Bioterrain and wetland mapping were completed in 2022 by qualified professionals in accordance with provincial methodologies. All mapping generally followed provincial methodologies, including:

- Standards for Terrestrial Ecosystem Mapping in BC (RIC 1998);
- Terrain Classification System for BC, Version 2.0 (Howes and Kenk 1997);
- Biogeoclimatic Ecosystem Classification of Non-Forested Ecosystems in British Columbia (MacKenzie 2012);
- Wetlands of British Columbia: a Guide to Identification (MacKenzie and Moran 2004);
- Field Manual for Describing Terrestrial Ecosystems; 2nd Edition (BC Ministry of Forests and Range and BC Ministry of Environment 2010);
- Land Management Handbook 26: A Field Guide to Site Identification and Interpretation for the Prince Rupert Forest Region (Part 1, Part 2, and Supplement No. 1) (Banner et al. 1993); and
- Land Management Handbook 24: A Field Guide for Site Identification and Interpretation for the Southwest Portion of the Prince George Forest Region (DeLong et al. 1993).

Bioterrain mapping was completed in 2022 at a scale of 1:5 000 overall. Digital aerial photographs were used to map terrain using Summit 3D/ArcGIS mapping software. BC mapping standards for TEM followed Howes and Kenk 1997 and RISC 2010. Features were mapped to reflect considerations for both ecological applications (e.g., drainage, aspect for bioterrain/terrestrial ecosystem mapping) and stability/infrastructure applications (e.g., slope steepness, stability class).

Wetland mapping followed the Standards for Terrestrial Ecosystem Mapping in British Columbia (RIC 1998). Polygons were attributed as per provincial standards (TEI 2021) using previous TEM from 2017 and 2022 field data. Relevant 2017 mapping was reviewed, and the legend was updated to 2022 standards. To the extent possible, wetlands were mapped as pure units, as opposed to complex ecosystem types with up to three site series or associations described within a single polygon. Mapping was generally completed at a scale of 1:5 000 overall; as scale is a relative term using digital imagery, where the user can readily zoom in and out to identify features.

Air photo interpretation and LiDAR were used to identify wetland size, with field checks to ensure accuracy. The use of plots and air photo interpretation to establish the wetland extents and classification is generally, the accepted method. Internal QA/QC of both bioterrain and wetland mapping was performed to ensure that the mapping was spatially accurate, correctly classified, and the attribute data were accurate and complete.

2.2 FIELD VERIFICATION

A combination of full and visual plots was completed during the 2022 field surveys. Full plots used modified FS882 cards from the Field Manual for Describing Terrestrial Ecosystems, 2nd Edition (BC MoFR and MoE 2010) for the site, vegetation, and soils component. Modifications were made to include water chemistry (e.g., pH, colour), hydrodynamics, and the wetland moisture regimes as presented in MacKenzie and Moran 2004. All plot data were collected using the ESRI Survey123 app, and the ESRI Field Maps app was used for mapping.

Two levels of data collection were used: Full and Visuals. Full inspections (FS882) are the most detailed consisting of detailed site, soil, and vegetation data. Visual checks were the least detailed plots and included, at minimum, a Global Positioning System (GPS) location and ecosystem classification.

Full plots were used to describe the site conditions in accordance with the guidance outlined in Land Management Handbook 25 (BC MOFR and BC MOE 2010) and soil conditions according to the Soil Inventory Method of BC (RISC 1995). Wetlands were classified using the provincial biogeoclimatic classification system, and local field guides including LHM 24 (DeLong et al. 1993), LHM 26 (Banner et al. 1993), and Wetlands of British Columbia: A Guide to Identification (MacKenzie and Moran 2004). Wetlands that could not be classified in the field beyond the level of class (i.e., bog, fen, marsh, swamp, and flood) were described to enable future classification. In addition to the FS882 site conditions, pH of standing water was recorded. The inclusion of these additional data enabled classification of all wetlands as per MacKenzie and Moran (2004) and was used to inform the wildlife habitat assessment.

Visual plots were used to perform quick assessments of wetlands or other ecosystem types that were readily identifiable in the field. These plots were only used after enough full plots were completed to accurately describe the ecosystem type, with the purpose of covering more ground and ground-truth as many mapped polygons as possible. Visual plots were used to supplement the field data and record all wetland types that were traversed while moving from one targeted polygon to the next.

Each full and visual plot included representative photographs. Photos were taken from the plot center at each cardinal direction, with additional photos obtained of soil profiles (auger cores), vegetation communities, wildlife evidence, and other subjects that were deemed important. The main site photos (cardinal directions and soil profiles) were taken using the Solocator App, producing images that contain the project name, unique plot ID, compass direction, elevation, date, and UTMs such that the locational data is permanently embedded on each photo (georeferenced).

Vegetation was identified to the species level (when possible), with photographs and/or samples collected of the species that were not readily identifiable in the field (such as most *Sphagnum* mosses, which require microscopic analysis to identify to the species level). Soils were described up to a depth of 1.2 m (or restrictive layer) using a hand-held auger and classified using the Canadian System of Soil Classification (Soil Classification Working Group 1998).

All field data were entered into an Excel database, and internal QA/QC was completed to ensure data accuracy and completeness. Spatial files of each plot location were saved in ESRI shapefile or geodatabase format.

2.2.1 Wetland Health Assessment

Wetland Health Assessments were completed in conjunction with full plots using an amended version of the Protocol for Evaluating the Health of Wetlands (Figure 2.2-1; Fletcher et al. 2021). All collected data were exported, entered into an Excel database, and internally QA/QC'd.

Sample No. _____

SUMMARY WETLAND ASSESSMENT HEALTH FORM	Y	N	NA
Question 1. Vegetative Cover of the Polygon > 85%?	☐	☐	☐
Question 2. Invasive Plant Species are not well established and not threatening the site?	☐	☐	☐
Question 3. Coverage of disturbance-caused undesirable species <25%?	☐	☐	☐
Question 4. Is the wetland vegetation generally characteristic of what the healthy unmanaged wetland plant communities are normally?	☐	☐	☐
Question 5. Has sufficient vegetation been retained to reduce windthrow, maintain adequate screening, visual cover and an LWD supply?	☐	☐	☐
Question 6. Is heavy browse and grazing absent?	☐	☐	☐
Question 7. % Bare and compacted ground from a disturbance is less than 5%	☐	☐	☐
Question 8. Less than 15% of wetland polygon is physically altered with noticeable impacts to vegetative communities and hydrologic function?	☐	☐	☐
Question 9. Are wetland woody debris processes intact?	☐	☐	☐
Question 10. Has the vegetation retained in the RMA been sufficiently protected from windthrow?	☐	☐	☐
Question 11. Is vegetation in the wetland and its riparian area free of any impacts due to changes in the hydrologic regime?	☐	☐	☐
Question 12. Is there an absence of significant threats to water levels in the wetland?	☐	☐	☐
Question 13. Does the water quality of the wetland appear to be within reasonable range of natural variation?	☐	☐	☐
Question 14: Wetland is well connected with adjacent habitat?	☐	☐	☐
Question 15. Are surface and subsurface flows to the wetland intact?	☐	☐	☐

of "No" Answers: _____

Conclusion on Functioning Condition:

☐ 0 to 2 No's = Properly Functioning
☐ 3 to 4 No's = Functioning, but at risk
☐ 5 to 6 No's = Functioning, but at high risk
☐ >6 No's = Not Properly Functioning

Figure 2.2-1. Wetland Assessment Health Form.

2.2.2 Wetland Function Assessment

Baseline data were collected to describe four primary wetland functions (hydrological, biochemical, habitat and ecosystem):

- Hydrodynamic indicator observations, and shallow groundwater wells, for hydrological function;
- Water and carbon sampling for biochemical function;
- Wildlife observations for habitat function; and
- Wetland classification and connectivity for ecosystem function;

The standard wetland data collection process, as described in the sections above and below, captures most of the data required for wetland function assessments. The data include hydrogeomorphic systems, hydrodynamic indices, soil moisture regimes, soil nutrient regimes, pH, soil drainage classes, soil moisture subclasses, and vegetation inventories. The ESRI Survey123 digital data collection form includes fields for these values to ensure accurate and complete data collection. Vegetation inventories focused on the indicator species required to accurately classify wetlands to the provincial site association level, rather than a comprehensive inventory of all species. Plant species names used for this data collection were consistent with the provincial standards provided by the British Columbia Conservation Data Centre (CDC) (BC CDC 2022). An experienced botanist performed QA/QC of species lists to confirm the identification of any potential species-at-risk.

In addition to descriptions of the hydrogeomorphic and hydrodynamic processes, shallow groundwater wells were installed in Matthews Creek and four reference wetlands within the mine site. At each site, a number of wells (mini-piezometers) were installed both perpendicular and parallel to the assumed direction of flow to create a longitudinal cross-section of each wetland. In addition to the groundwater wells, surface stills were installed to measure the true wetland surface water level. Continuous monitoring occurred from May 2022 (Matthews Creek) and June 2022 (reference wetlands) to November 2022 using Solinst Levelogger M5 automatic dataloggers.

2.2.3 Wildlife Habitat Assessment

Wildlife assessments used the standard wildlife habitat assessment, tree attributes, and coarse woody debris forms. Targeted species and life requisites were developed for the project (Table 2.2-1). A sample of representative wetlands were assessed. Tree and coarse woody debris surveys were completed for at least three of each wetland type that contains trees and woody debris. These surveys were typically conducted for swamps and bogs and were not conducted for wetlands that lacked trees or large woody debris (typically marshes, shallow water, and herbaceous or shrub-dominated fens and bogs). All incidental wildlife observations (e.g., evidence of wildlife use, habitat values, evidence of use by key species such as moose and western toad) were recorded within Survey123 digital field forms, as well as incidental observation forms for non-targeted wildlife, at-risk species, or significant features.

Table 2.2-1. Target Wildlife Species and Requisites.

Species	Life Requisite	Season	Months	Ratings
Western Toad	Reproducing- Eggs	Growing	(April) May- June	Suitable / Not Suitable
	Hibernating	Winter	(April) May- June	Suitable / Not Suitable
Ring-necked Duck	Living	Growing	May - September	High / Moderate / Low / Nil
Olive-sided Flycatcher	Living	Growing	June - August	High / Moderate / Low / Nil
Moose	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Winter	November - April	Very High / High / Moderate / Low / Very Low / Nil
Caribou	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Winter	November - April	Very High / High / Moderate / Low / Very Low / Nil
Grizzly Bear	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil

Species	Life Requisite	Season	Months	Ratings
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
Muskrat	Living	Growing	May - September	Suitable / Not Suitable
	Living	Winter	October - April	Suitable / Not Suitable
Little Brown Myotis	Living	Growing	May - September	High / Moderate / Low / Nil

2.3 CARBON ANALYSIS

Generally, carbon is readily decomposed in terrestrial systems due to the activities of fungi, soil fauna, and bacteria. These primary and secondary decomposers are highly active in oxygenated conditions. In wetlands, organic matter tends to accumulate due to the absence of oxygen (required for respiration) in the pores and surfaces of water-saturated soils (where decomposing reactions occur). Degradation does occur, but with reactions resulting in sulfur as the end-point electron receptor instead of oxygen. The decomposition process slows to a point where accumulation exceeds degradation, resulting in peat formation.

Peat is a stable long-term form of carbon that continues to form under the proper conditions (saturated soils). Any disturbance that has the potential to change the hydraulic regime may result in the drying of the wetland surface tiers leading to rapid organic matter degradation and release of CO_2. To determine the potential of the Project to affect carbon storage, the amount of carbon in the Project footprint was estimated using a Russian peat bore.

Wetlands with potential to store carbon were assessed during the field work. These wetlands were bogs and fen wetland classes. Of the 21 wetlands identified during the desktop exercise, 8 were assessed in the field using the following process:

- Establish a transect across the wetland at a bearing generally set to traverse the wetland along its maximum width;
- Using a peat probe, obtain peat depths at ten sample points evenly-spaced along the transect to develop a cross-section of peat depth for volume calculation (Figure 2.3-1);
- Obtain peat samples in the mesic tier (1.5 m) using a Russian peat probe sampler (which is used to collect uncompressed peat samples at a set volume; Plate 2.3-1);
- Calculate peat bulk density per wetland using the dry mass and volume of peat samples (dry mass determined by GeoNorth Engineering Ltd. in Prince George, BC);

- Calculate peat volume using bulk density, site association area, and cross section data;
- From the field measured peat depths and the estimated peat depths, generate a surface file (TIN) in ArcGIS and estimate volume (assuming that peat depth is zero along the margin of each wetland (Figure 2.3-1); and
- Use bulk density and volume estimates to calculate kg of carbon in each sampled wetland.

The equation used to calculate carbon per wetland is:

$$Total\ Carbon\ (Tonne) = vP(m^3)\ x\ dP\left(\frac{g}{m^3}\right)\ x\ \frac{1\ Tonne}{1x10^6 g}\ x\ pC\ (\%)$$

Where:

vP = volume of peat in a wetland as determined through spatial analysis of wetland areas and peat transects in ArcGIS 10.

dP = density of peat as determined through field measurements of peat density

pC = Percent carbon (mass/mass) in a sample of peat

Total carbon estimates were obtained for fen wetlands and bog wetlands. The other wetland types either contain very little carbon (as in the case of shallow open water wetlands and marsh wetlands), or in the case of swamps, contain a measurable amount of carbon, but with carbon sequestration occurring in the mineral soil solum (or occasionally in coarse woody layers entrained by flood events), thus, making the carbon a part of the wetland biochemical cycle instead of being stored as peat.

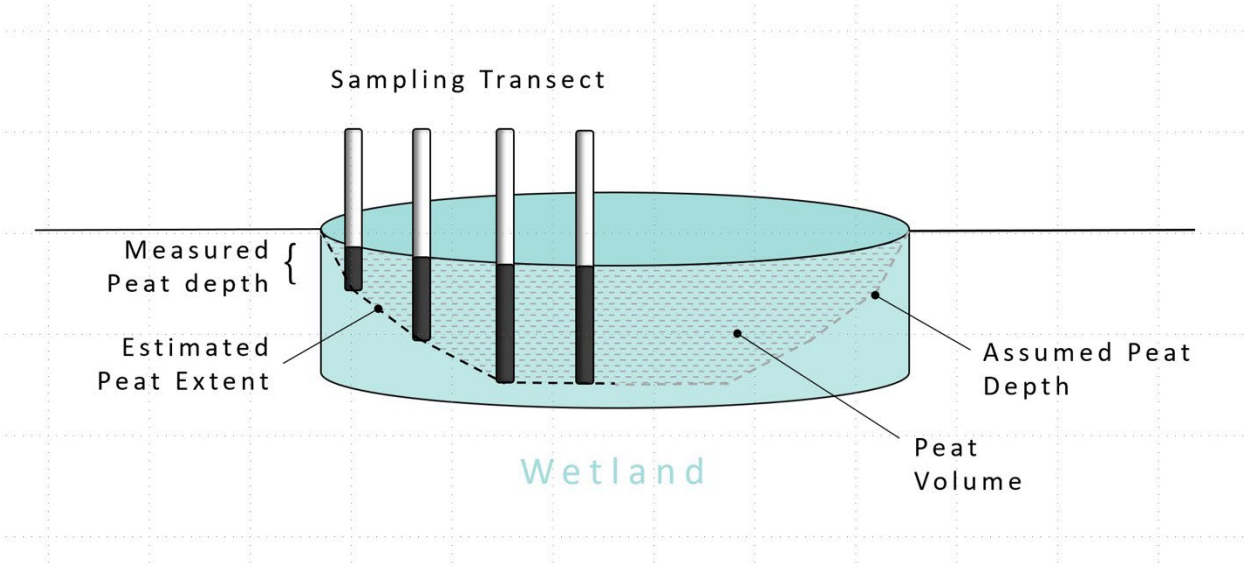


Figure 2.3-1. Method used to estimate peat depths in the field.



Plate 2.3-1. Russian Peat Sampler.

3. RESULTS

3.1 WETLAND MAPPING

All five wetland classes (bog, fen, marsh, swamp and shallow open water), along with floodplains and ponds, were mapped within the Project area, encompassing a total of 983.3 hectares (ha; Table 3.1-1; Figure 3.1-1 to 3.1-8). Of these wetlands, there were seven bog site associations (384.2 ha), ten fen site associations (122.6), two marsh site associations (18.0 ha), six swamp associations (435.3 ha), and one open water class (23.2 ha). The most abundant wetland association was the Spruce – Common horsetail – Leafy moss swamp (Ws07), followed by the Black spruce – Water sedge – Peat-moss bog (Wb05), and then the Black spruce – Soft-leaved sedge – Peat-moss (Wb08).

Eight of the mapped site associations are blue-listed, including:

- Two bogs: Lodgepole pine - Few-flowered sedge - Peat-moss Bog/Poor Fen (Wb10) and Shore sedge - Buckbean - Peat-moss Bog (Wb13);
- Four fens: Slender sedge – Buckbean (Wf06), Shore sedge – Buckbean – Hook-moss (Wf08), Tufted clubrush – Star moss (Wf11), and Narrow-leaved cotton-grass – Shore sedge (Wf13); and
- Two swamps: MacCalla's willow – Beaked sedge (Ws05), and Spruce – Common horsetail – Leafy moss (Ws07).

The following sections provide the general characteristics of each wetland site association mapped within the Project area.

Table 3.1-1. Summary of Mapped Wetland Classes and Site Associations.

Wetland Class	Site Association	BC CDC Listing	Area (ha)
Bog	Wb01 Black spruce - Creeping snowberry - peatmoss bog		8.0
	Wb05 Black spruce – Water sedge – Peat-moss		242.2
	Wb08 Black spruce – Soft-leaved sedge – Peat-moss		119.7
	Wb10 Lodgepole pine – Few-flowered sedge – Peat-moss	Blue	4.1
	Wb11 Black spruce – Buckbean – Peat-moss		10.0
	Wb13 Shore sedge – Buckbean – Peat-moss	Blue	0.2
Bog Total			**384.2**

Wetland Class	Site Association	BC CDC Listing	Area (ha)
Fen	Wf01 Water sedge – Beaked sedge		33.5
	Wf02 Scrub birch – Water sedge		60.6
	Wf03 Water sedge – Peat-moss		3.4
	Wf04 Barclay's willow – Water sedge – Glow moss		1.6
	Wf05 Slender sedge – Common hook-moss		0.4
	Wf06 Slender sedge – Buckbean	Blue	0.2
	Wf07 Scrub birch – Buckbean – Shore sedge	-	3.5
	Wf08 Shore sedge – Buckbean – Hook-moss	Blue	14.6
	Wf11 Tufted clubrush – Star moss	Blue	2.8
	Wf13 Narrow-leaved cotton-grass – Shore sedge	Blue	2.0
Fen total			**122.6**
Marsh	Wm00 Undescribed Marsh		0.9
	Wm01 Beaked sedge – Water sedge		17.1
Marsh Total			**18.0**
Swamp	Ws00 Undescribed Swamp		1.1
	Ws02 Mountain alder – Pink spirea – Sitka sedge		3.1
	Ws04 Drummond's willow – Beaked sedge		71.0
	Ws05 MacCalla's willow – Beaked sedge	Blue	25.4
	Ws07 Spruce – Common horsetail – Leafy moss	Blue	269.9
	Ws08 Subalpine fir – Sitka valerian – Common horsetail		64.8
Swamp Total			**435.3**
	Ww Shallow Open Water		23.2

Wetland Class	Site Association	BC CDC Listing	Area (ha)
Shallow Open Water Total	Fl05 Drummond's willow – Bluejoint		30.2
	PD Pond		9.6
Grand Total			**983.3**

Blackwater Project

Figure 3.1-1

Map A: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033a
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

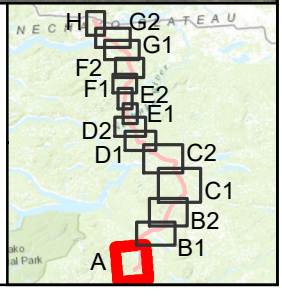
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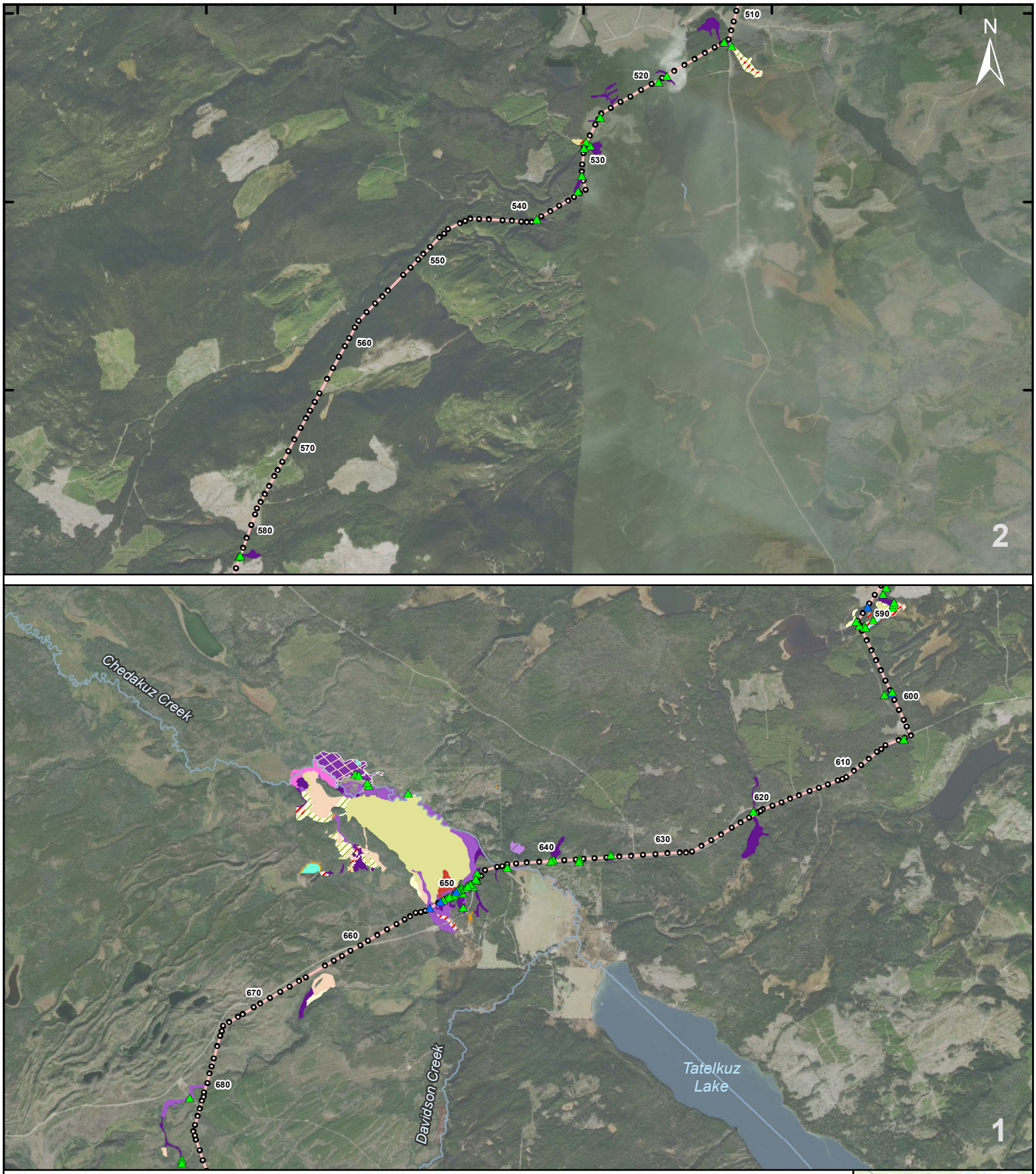
- PD
- Wb05
- Wb08
- Wb10
- Wb11
- Wb13
- Wf01
- Wf02
- Wf03
- Wf04
- Wf06
- Wf07
- Wf08
- Wf11
- Wf13
- Wm00
- Wm01
- Ws04
- Ws07
- Ws08
- Ww

Field Plots

- Visual
- Full
- Mine Footprint
- Transmission Line
- Transmission Line Pole

0 500 1,000 1,500
1:59,000 Meters





Blackwater Project

Figure 3.1-2

Map B: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033b
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

Site Series

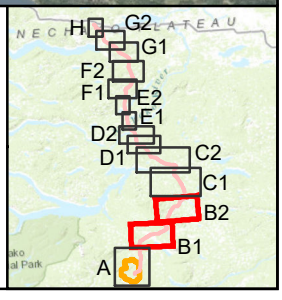
- Fl05
- Wb01
- Wb05
- Wb08
- Wf01
- Wf02
- Wf05
- Wf08
- Wm01
- Ws02
- Ws04
- Ws05
- Ws07
- Ww

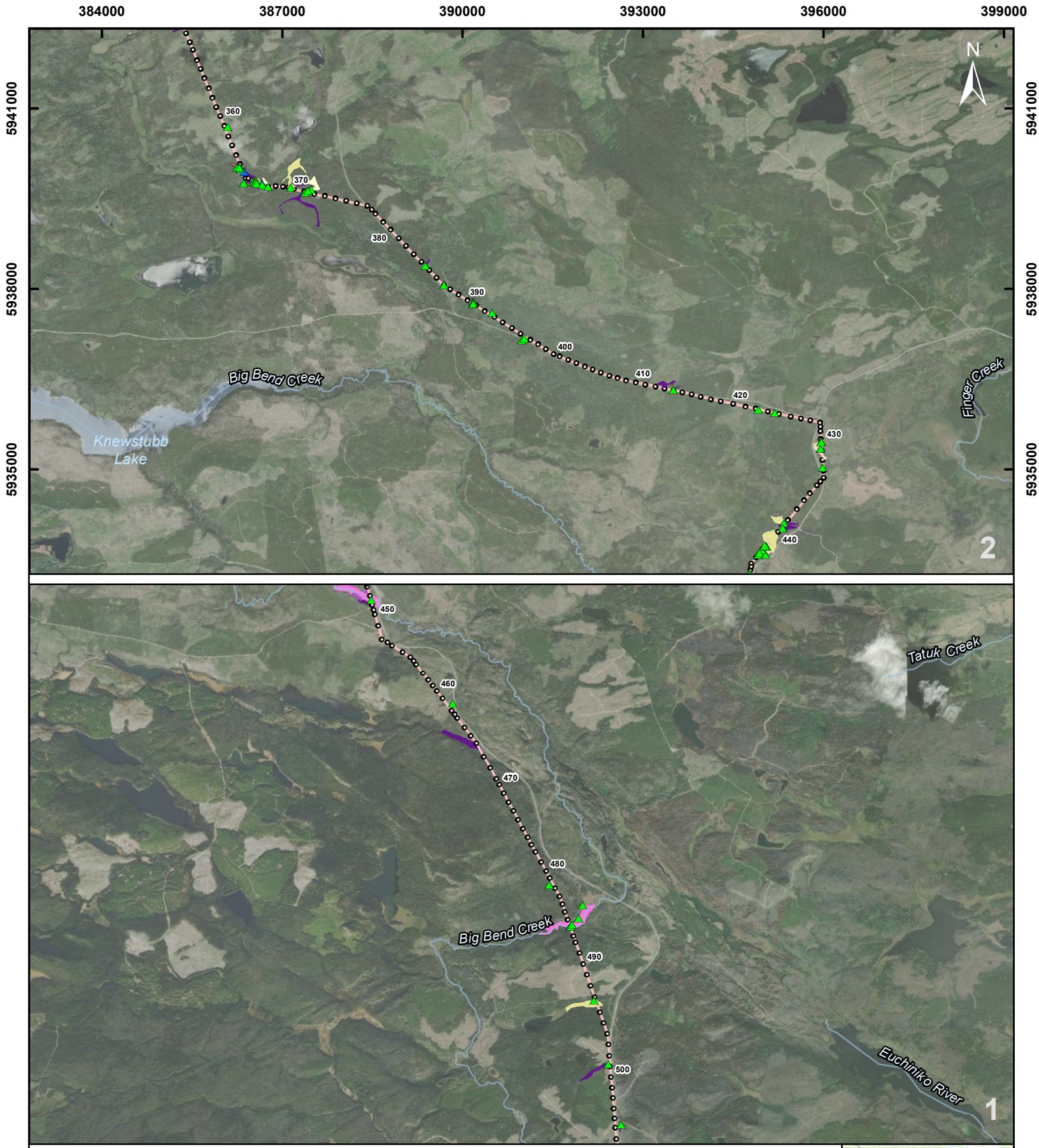
Field Plots

- Visual
- Full
- Transmission Line Pole
- Transmission Line
- Streams

0 0.5 1 1.5 2

1:80,000 Kilometers





Blackwater Project

Figure 3.1-3

Map C: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033c
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

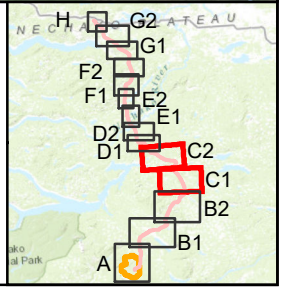
Site Series

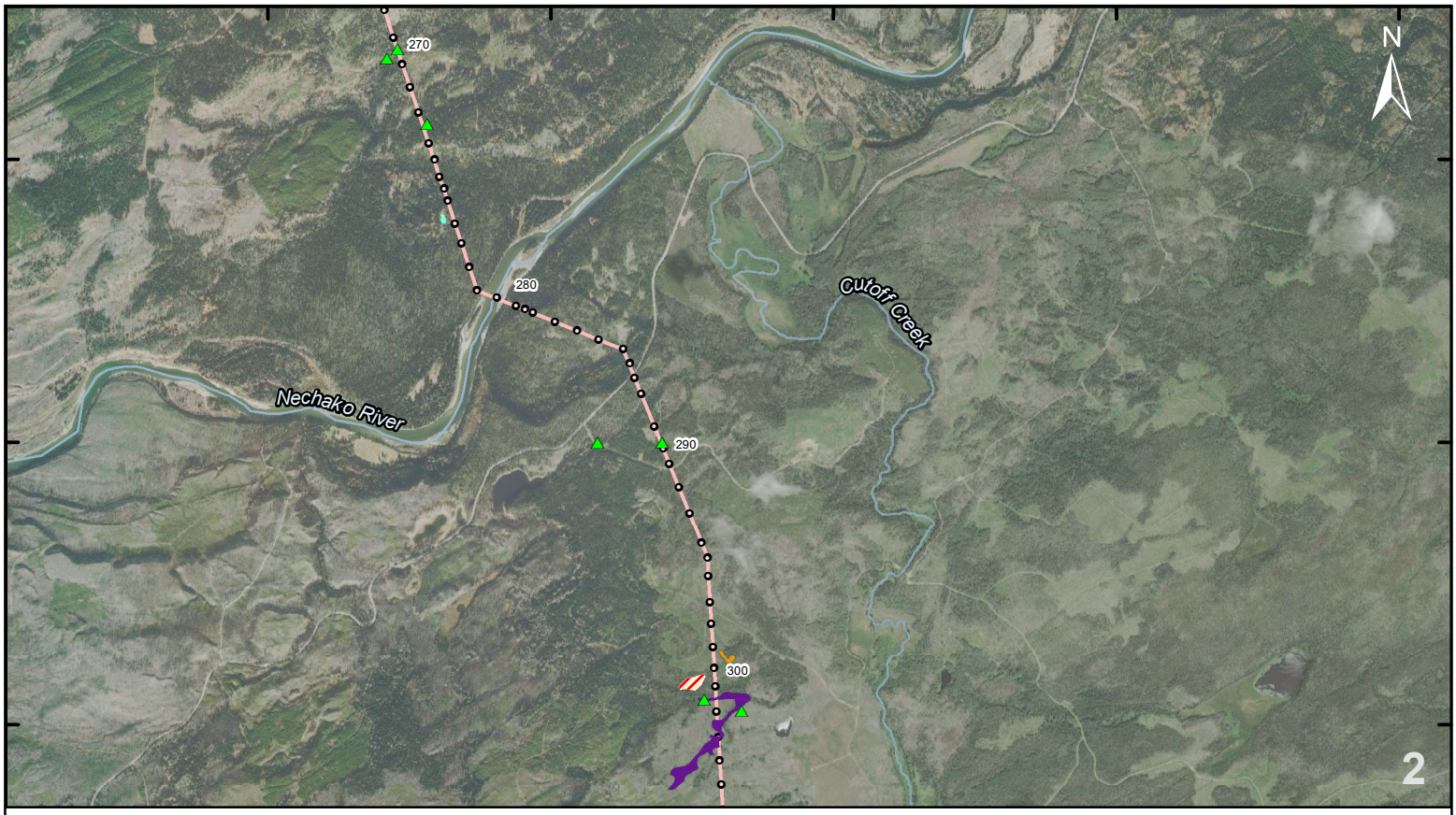
- Fl05
- Wb01
- Wb05
- Wb08
- Wf02
- Wm01
- Ws04
- Ws07

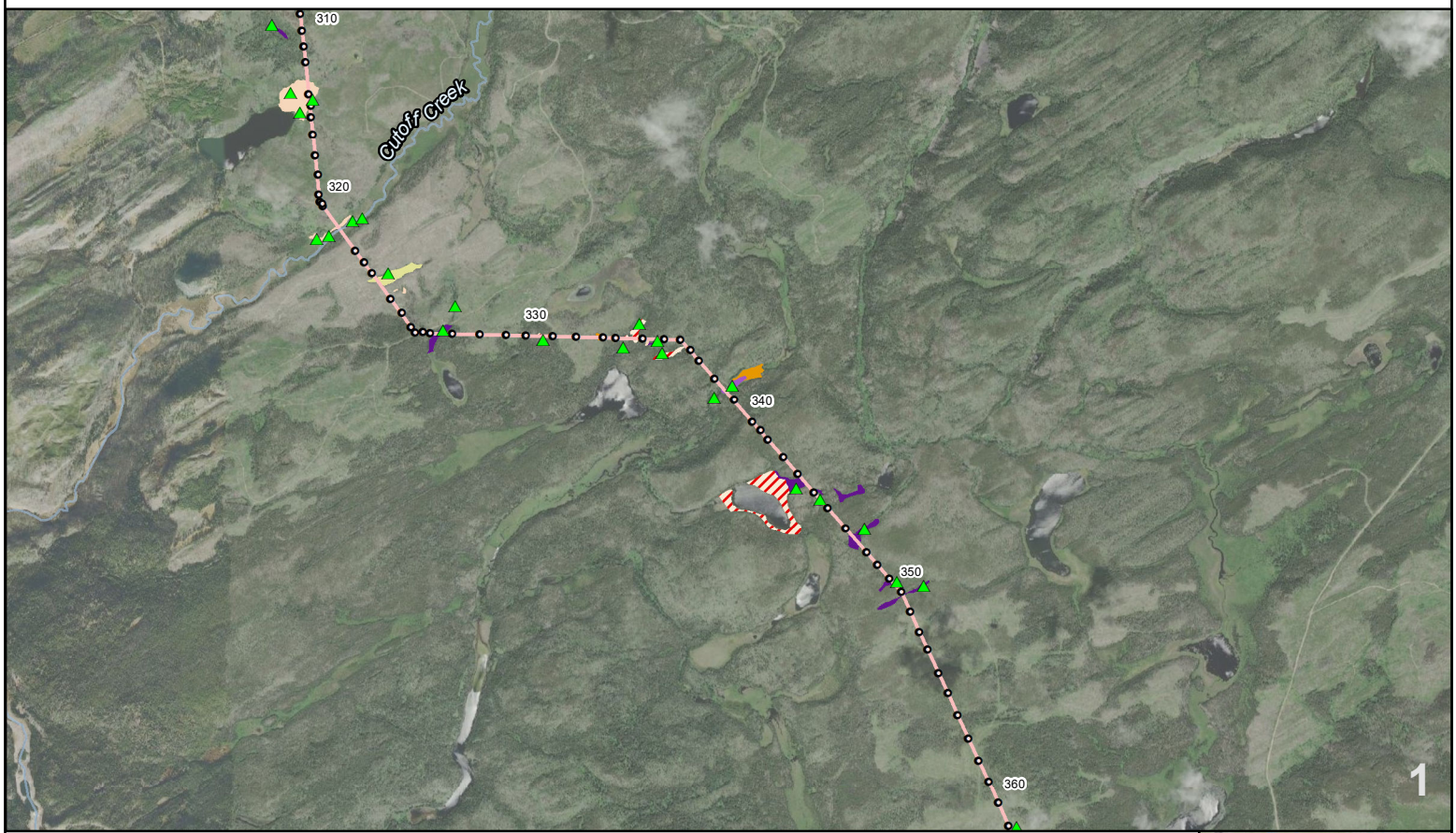
Field Plots

- Visual
- Full
- Transmission Line Pole
- Transmission Line
- Streams

0 0.5 1 1.5 2
1:80,000 Kilometers







Blackwater Project

Figure 3.1-4

Map D: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033d
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

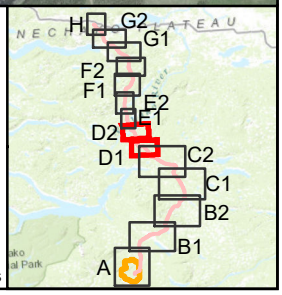
Site Series

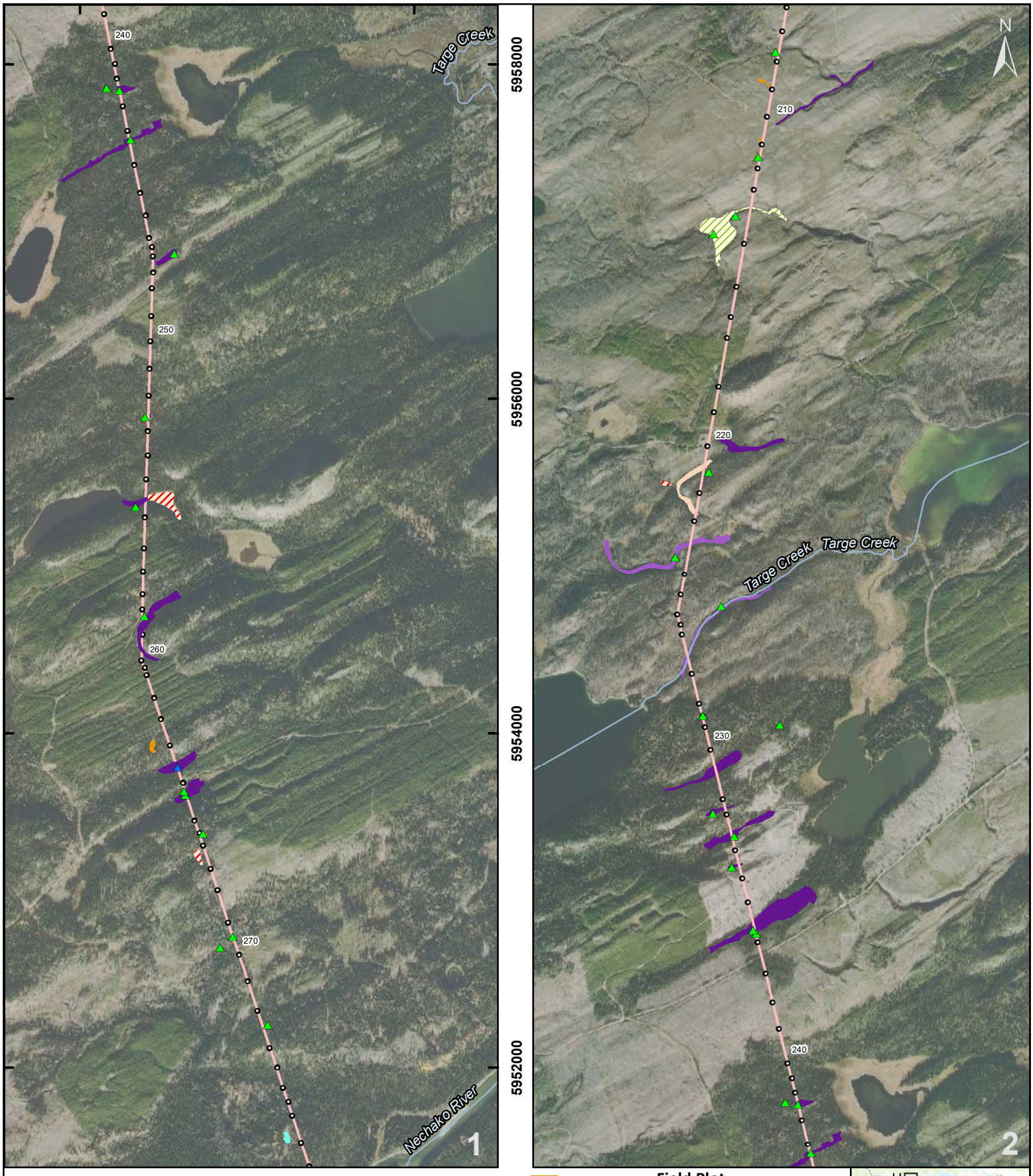
- Wb05
- Wf01
- Wf02
- Wm01
- Ws04
- Ws07
- Ww

Field Plots

- Visual
- Full
- Transmission Line Pole
- Transmission Line
- Streams

0 0.5 1 1.5
1:50,000 Kilometers





Blackwater Project

Figure 3.1-5

Map E: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033e
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

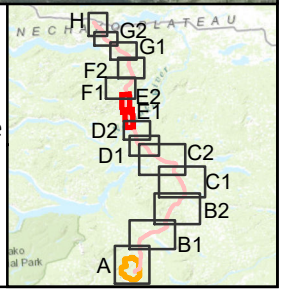
Site Series

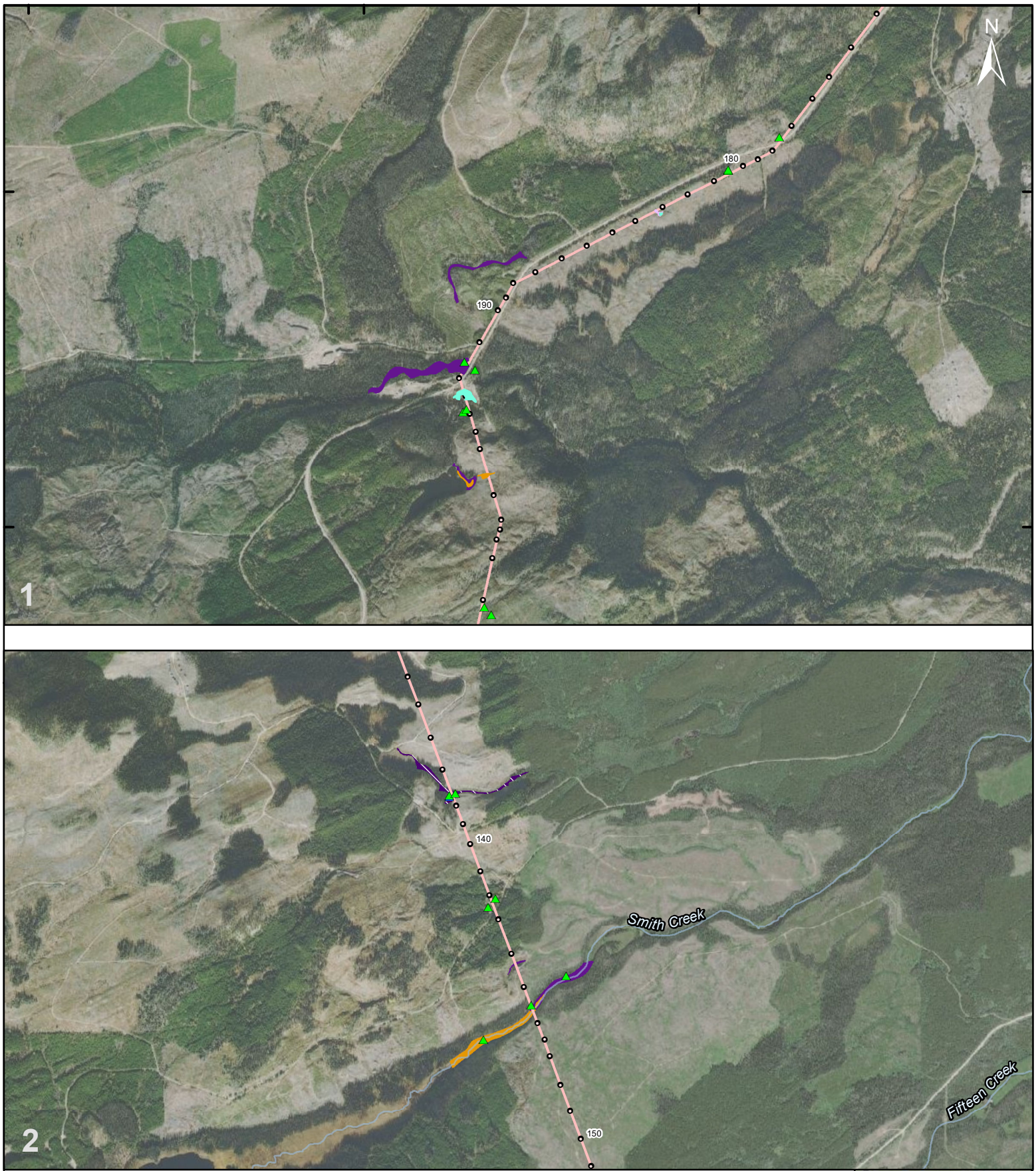
- Wb08
- Wf01
- Wf02
- Wm01
- Ws04
- Ws07
- Ww

Field Plot

- Visual
- Full
- Transmission Line Pole
- Transmission Line
- Streams

0 0.25 0.5 0.75
1:30,000 Kilometers





Blackwater Project

Figure 3.1-6

Map F: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033f
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

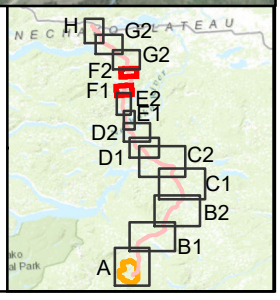
Site Series

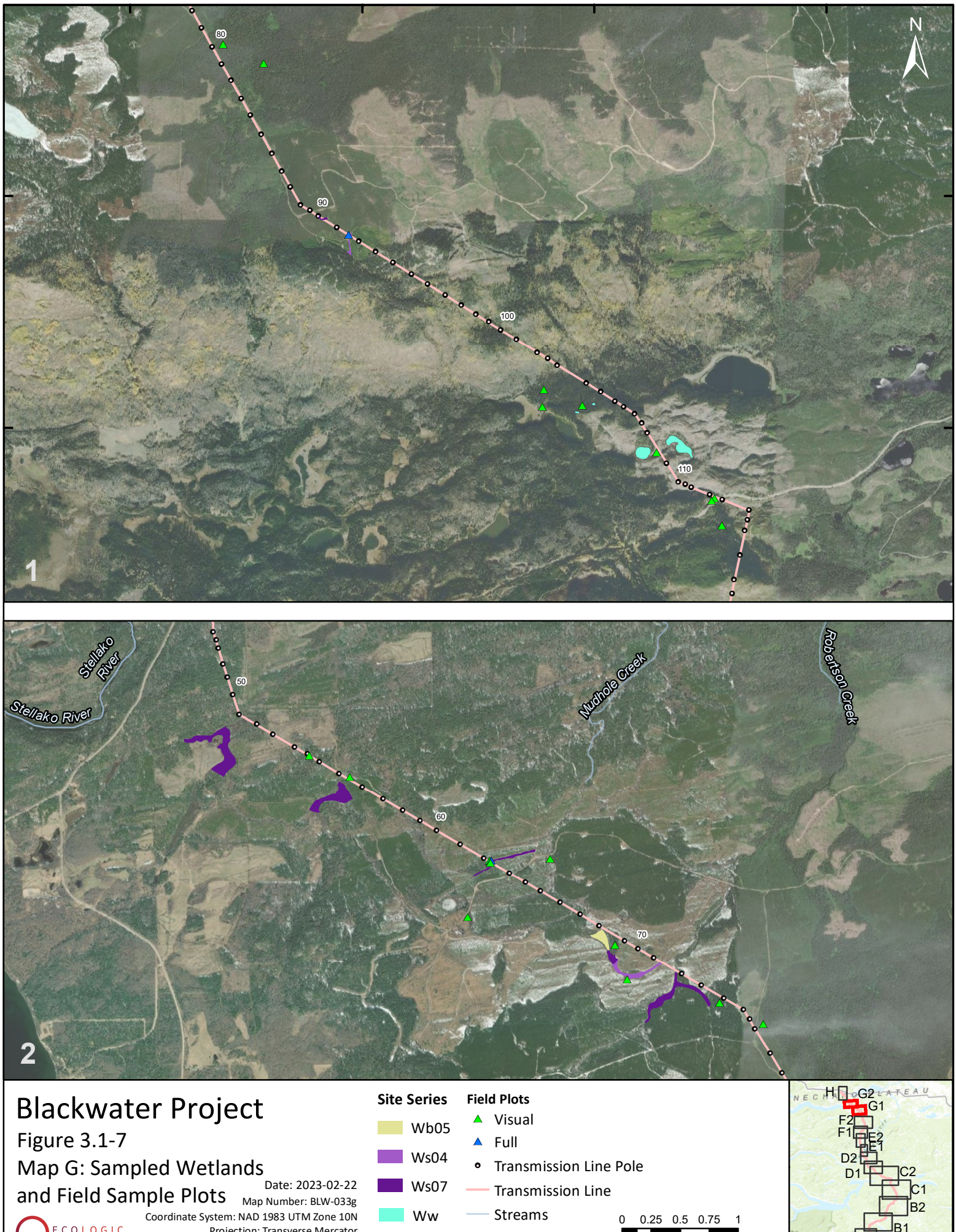
- Wm01
- Ws00
- Ws07
- Ws08
- Ww

Field Plot

- Visual
- Full
- Transmission Line Pole
- Transmission Line
- Streams

0 0.25 0.5 0.75
1:30,000 Kilometers





Blackwater Project

Figure 3.1-7

Map G: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033g
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

ECOLOGIC environmental consulting

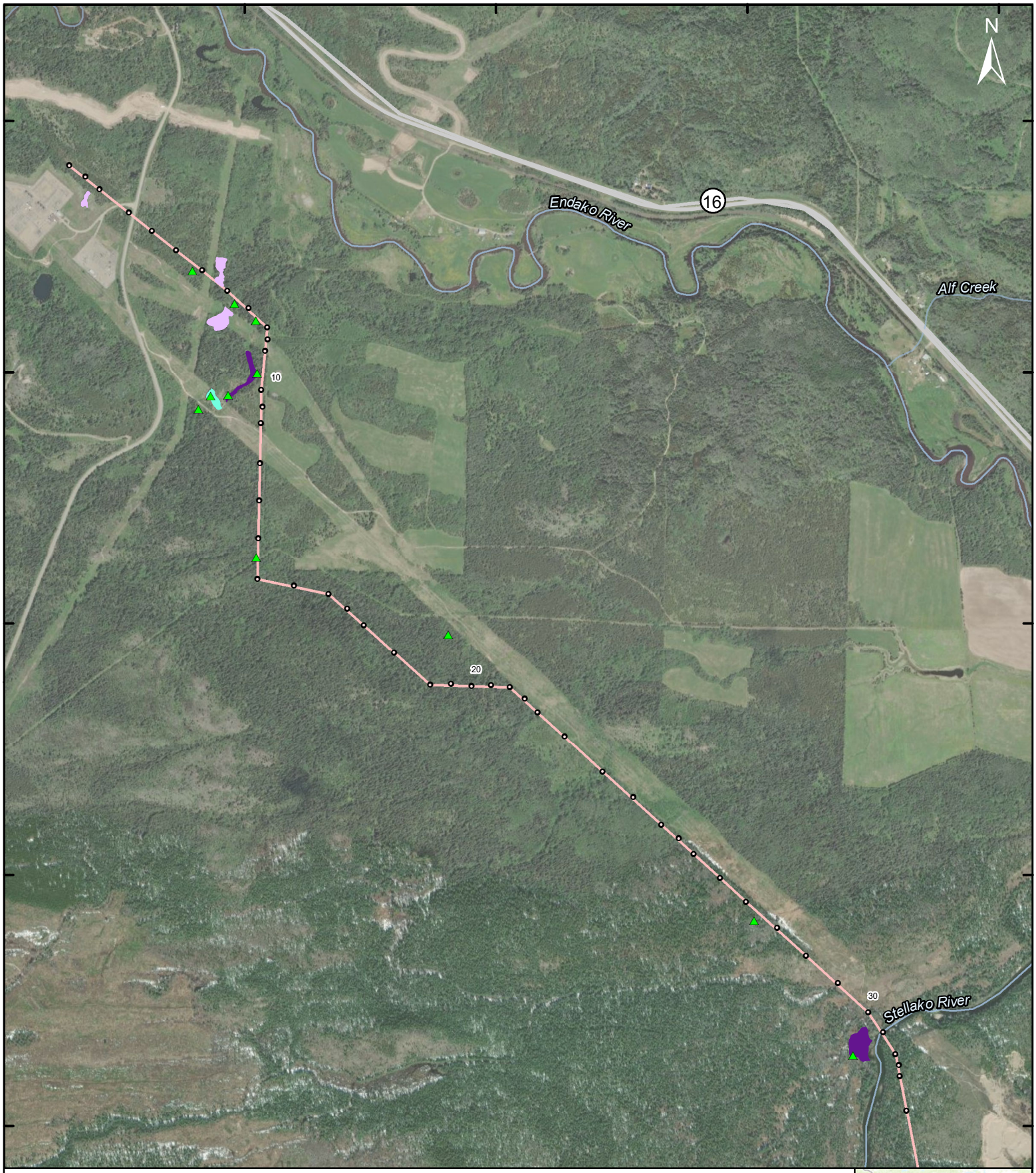
Site Series

- Wb05
- Ws04
- Ws07
- Ww

Field Plots

- Visual
- Full
- Transmission Line Pole
- Transmission Line
- Streams

0 0.25 0.5 0.75 1
1:40,000 Kilometers



Blackwater Project

Figure 3.1-8

Map H: Sampled Wetlands and Field Sample Plots

Date: 2023-02-22
Map Number: BLW-033h
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983

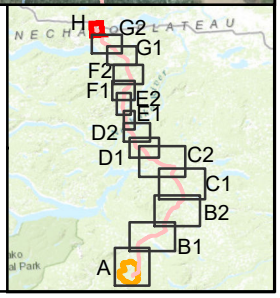
ECOLOGIC environmental consulting

Site Series
- Ws00
- Ws07
- Ww

Field Plots
- Visual
- Full

- Transmission Line Pole
- Transmission Line
- Streams
- Highway

0 150 300 450 600
1:20,000 Meters



3.2 Bog Wetlands

3.2.1 Wb01 Black spruce - Creeping snowberry - Peatmoss bog

The Black spruce - Creeping snowberry - Peatmoss bog (Wb01) is an uncommon site association in the SBS (MacKenzie and Moran 2004). Wb01 occurs in closed basins or on the periphery of larger peatlands where groundwater is not a driving factor (Mackenzie and Moran 2004). Sites are hummocked, with black spruce and Labrador tea (*Rhododendron groenlandicum*) always present, additionally, creeping-snowberry (*Gaultheria hispidula*) is prominent and characteristic (Plate 3.2-1). Dwarf woody shrubs such as bog cranberry (*Vaccinium oxycoccos*), are common. The moss layer is dominated by peat moss species (*Sphagnum* spp.); however, diverse moss layers can also occur. Soils are poorly decomposed, acidic, and organic, with peat depths of up to 100 cm.



Plate 3.2-1. Wb01 Black spruce - Creeping snowberry – Peatmoss site association.

3.2.2 Wb05 Black spruce - Water sedge - Peatmoss Bog/Poor fen

The Black spruce - Water sedge - Peatmoss Bog/Poor fen (Wb05) is a common site association occurring at elevations below 1,300 m (MacKenzie and Moran 2004). Wb05 sites occur in a variety of locations throughout the study area including small, closed basins, and edges of larger peatlands (Plate 3.2-2).

The Wb05 class occurs in areas with well-drained, deep soils, and poorly decomposed sphagnum layers. Sites are strongly hummocked, with trees and common bog species rooting in elevated mounds. Wb05 sites can have high species diversity. Stunted black spruce usually dominates the canopy layer, but this layer may vary with stunted subalpine fir, lodgepole pine, and white spruce also occurring. Shrub layers

were dominated by scrub birch and willows, the herbaceous layer was dominated by water sedge (*Carex aquatilis*), horsetails (*Equisetum* spp.), and five-leaved bramble (*Rubus pedatus*), and the moss layer was usually dominated by *Sphagnum* species.



Plate 3.2-2. Wb05 Black spruce - Water sedge - Peatmoss Bog/Poor fen site association.

3.2.3 Wb08 Spruce - Soft-leaved sedge - Peat-moss Bogs/Poor swamp

The Spruce - Soft-leaved sedge - Peat-moss Bogs/Poor swamp (Wb08) is an uncommon site association throughout the Interior below 1,700 m (MacKenzie and Moran 2004). Wb08 is often strongly hummocked, fed by slow moving groundwater, and with standing water often present between hummocks (Plate 3.2-3). Wb08 sites were commonly observed as fringe sites and occurred in old burns and previously logged sites.

Wb08 usually occurs in areas with deep, woody peat, occasionally over organic veneers. The canopy is open, with spruce (primarily black spruce) and sometimes lodgepole pine. Sites were characterized by a shrub layer dominated by Barclay's willow (*Salix barclayi*), lodgepole pine, and scrub birch, an herbaceous layer dominated by diverse sedge species, alpine bog-laurel (*Kalmia microphylla*), and bluejoint reedgrass (*Calamagrostis canadensis*), and a diverse moss layer of peat moss, screw moss (*Syntrichia* spp.), red-stemmed feather moss (*Pleurozium schreberi*), and ribbed bog moss (*Aulacomium palustre*). Wetter sites can have abundant swamp horsetail (*Equisetum fluviatile*) or marsh horsetail (*Equisetum palustre)*.



Plate 3.2-3. Wb08 Spruce - Soft-leaved sedge - Peat-moss Bogs/Poor Swamp site association.

3.2.4 Wb10 Lodgepole pine - Few-flowered sedge - Peat-moss Bog/Poor fen

The Lodgepole pine - Few-flowered sedge - Peat-moss Bog/Poor fen (Wb10) site association is rare at montane elevations (MacKenzie and Moran 2004) in the Project area and is blue-listed by the BC CDC (2023). Three sites occurred within the Project area and were found in wet to very wet basins where the soil surface is saturated from seepage and slightly acidic (Plate 3.2-4).

Wb10 sites occur on soils that are saturated at the surface and are poorly decomposed sphagnum peat. The shrub layer has stunted conifers such as lodgepole pine and black spruce, with lodgepole pine always present as a sparse canopy. Shrubs such as scrub birch and Barclay's willow are also found in the shrub layer. The herb layer is usually dominated by few-flowered sedge (*Carex pauciflora*), but a diverse herb layer of other sedge species, horsetails, other graminoids, and dwarf shrubs such as Labrador tea and crowberry (*Empetrum nigrum*) are also typically present. *Sphagnum* species, particularly fine bog moss (*Sphagnum angustifolium*), dominate the moss layer.



Plate 3.2-4. Wb10 Lodgepole pine - Few-flowered sedge - Peat-moss Bog/Poor Fen site association.

3.2.5 Wb13 Shore sedge - Buckbean - Peat-moss bog

The Shore sedge - Buckbean - Peat-moss bog (Wb13) site association is uncommon below 1,600 m (MacKenzie and Moran 2004). This site association is blue-listed by the BC CDC (2023). Three Wb13 wetland sites were mapped within the Project area. These sites are typically represented by grounded, highly saturated peat blankets, or floating mats that occur as components of larger acidic peatlands and occupy the central, wettest portions of water bodies (Mackenzie and Moran 2004) (Plate 3.2-5).

Wb13 sites occur on deep organic soils that can be up to five meters deep, with a Von Post rank ranging between five to nine. Acid-tolerant species can be abundant, sparse, or absent. The shrub layer is usually sparse, with species such as Labrador tea, bog birch (*Betula pumila*), and bog willow (*Salix pedicellaris*) occurring alongside stunted lodgepole pine. Buckbean (*Menyanthes trifoliata*), creeping-snowberry, sedges (primarily shore sedge [*Carex limosa*], sparse-flowered sedge [*Carex tenuiflora*], poor sedge [*Carex magellanica*], and beaked sedge [*Carex utriculata*]), bog cranberry, and bog-laurel are common in the herb layer. The moss layer is a continuous cover of *Sphagnum* species.



Plate 3.2-5. Wb13 Shore sedge - Buckbean - Peat-moss Bog) site association.

3.3 FEN WETLANDS

3.3.1 Wf00 Undescribed Fen

The Wf00 wetlands are fens that are not currently described in MacKenzie and Moran (2004). These wetlands were common within the Project area. These sites had organic soils and open water within the rooting zone (Plate 3.3-1). Species diversity was high, with a diversity of sedges and other graminoid species. The shrub layer was sparse and composed primarily of willow species and stunted conifers, the herbaceous layer was diverse with species such as water sedge, beaked sedge, sparse-flowered sedge, marsh cinquefoil (*Comarum palustre*), buckbean, cottongrasses (*Eriophorum* sp.), horsetails, and arctic starflower (*Lysimachia europaea*). The moss layer was dominated by *Sphagnum* species.



Plate 3.3-1. Example of Wf00 site association.

3.3.2 Wf01 Water sedge - Beaked sedge fen

The Water sedge - Beaked sedge fen (Wf01) site association is the most common fen association in the province (MacKenzie and Moran 2004). Wf01 wetlands were common in the Project area and occur in complexes with other wetlands often occupying the wetter zones (Plate 3.3-2).

The Wf01 wetlands had low species diversity, with water sedge and beaked sedge having almost continuous cover at most sites. Scattered forbs, aquatics, and mosses make up the understory, including peat moss, marsh cinquefoil, western dock (*Rumex occidentalis*), arrow-leaved coltsfoot (*Petasites frigidus* var. *sagittatus*), and other sedge species. Some sites have sparse shrub cover, usually willow species such as Barclays willow.



Plate 3.3-2. Wf01 Water sedge - Beaked sedge Fen site association.

3.3.3 Wf02 Scrub birch - Water sedge fen

The Scrub birch - Water sedge fen (Wf02) site association is common throughout the interior of BC, and frequently occurs as part of larger wetland complexes (MacKenzie and Moran 2004) (Plate 3.3-3).

Soils are organic, saturated part of the year, with peat depths from one to two meters and greater peat depths to four meters, occasionally with thin organic veneers. Open water was observed in some depressions. Sites were hummocked, with birches (*Betula* spp.) and sedges dominating. Shrubs can vary, with willow species dominating and stunted trees such as white spruce occurring sporadically. Although the herb layer is generally dominated by sedges, kneeling angelica (*Angelica genuflexa*) is abundant at some sites. The moss layer was diverse and variable, with *Sphagnum* being common.



Plate 3.3-3. Wf02 Scrub birch - Water sedge Fen site association.

3.3.4 Wf03 Water sedge - Peat-moss fen

The Water sedge - Peat-moss fen (Wf03) occurs in complexes with Wf02 wetlands. Wf03 wetlands were uncommon in the Project area and were found in seepage sites and small depressions where flooding was infrequent (Plate 3.3-4).

Soils were organic and observed to reach an average of 84 cm in depth (up to 2 m in some places). Dominant species were water sedge and peat mosses. Common species included mountain marsh-marigold (*Caltha leptosepala*), Sitka burnet (*Sanguisorba stipulata*), and arrowleaf groundsel (*Senecio triangularis*). Other less common herbaceous species observed included shore sedge, cotton-grasses, small-flowered woodrush (*Luzula parviflora*), and common miterwort (*Mitella nuda*). Overall, shrubs were generally sparse, including stunted black spruce and lodgepole pine. A diversity of mosses such as ribbed bog moss, golden fuzzy fen moss (*Tomentypnum nitens*), hook-mosses (*Drepanocladus* spp.), and angled paludella moss (*Paludella squarossa*) are common.



Plate 3.3-4. Wf03 water sedge - Peat-moss Fen site association.

3.3.5 Wf04 Barclay's willow - Water sedge - Glow moss fen/swamp

The Barclay's willow - Water sedge - Glow moss fen/swamp (Wf04) association is common at subalpine elevations and occurs on subalpine seepage slopes, along glacier-fed creeks, and in frost-prone basins (MacKenzie and Moran 2004) (Plate 3.3-5). Sites are wet to very wet, with groundwater and seepage at or near the surface.

Soils are organic and peat is often shallow because of low biomass production. The shrub layer is dominated by Barclay's willow, with a scattering of other shrubs such as other willow species, scrub birch, and stunted black spruce and lodgepole pine. The herb layer is dominated by water sedge. Other herbaceous species are usually high-elevation species, such as mountain marsh-marigold, narrow-leaved cotton-grass (*Eriophorum angustifolium*), and leatherleaf saxifrage (*Leptarrhena pyrolifolia*). The moss layer can be absent or moderately well-developed with peat mosses dominating; however, a diverse number of species such as ribbed bog moss or angled paludella moss can also be observed.



Plate 3.3-5. Wf04 Barclay's willow - Water sedge - Glow moss Fen/Swamp site association.

3.3.6 Wf07 Scrub birch - Buckbean - Shore sedge fen

The Scrub birch - Buckbean - Shore sedge fen (Wf07) site association occurs throughout the Project area below 1,400m (MacKenzie and Moran 2004). Wf07 sites have a high-water table, are prominently hummocked or ribbed with elevated sites and permanent shallow-water hollows and are commonly found in complexes with Wf08 (Plate 3.3-6).

Wf07 sites were very wet, with water at the surface and organic soils greater than one meter in depth. The shrub layer is open and dominated by scrub birch or bog willow along with sparse stunted trees (black spruce and lodgepole pine). The herbaceous layer is dominated by low sedges such as pale sedge (*Carex livida*), and shore sedge, poor sedge, buckbean, sparse-flowered sedge, and marsh cinquefoil were found in depressions. The moss layer is highly variable, but *Sphagnum* dominates most sites.



Plate 3.3-6. Wf07 Scrub birch - Buckbean - Shore sedge Fen site association

3.3.7 Wf08 Shore sedge - Buckbean - Hook-moss fen

The Shore sedge - Buckbean - Hook-moss fen (Wf08) site association is uncommon and occurs mainly at high elevations (700 - 1,800 m) (MacKenzie and Moran 2004). Wf08 is a rich fen class that occurs in complexes with Wf07, where prolonged flooding of no more than several centimeters results in pond-side floating mats or flarks in patterned fens (Plate 3.3-7).

Wf08 site associations are found on sites with organic soils that vary from shallow to deep. Sites are characterized by dominant coverage of shore sedge, sparse or absent buckbean, and a diversity of species that are tolerant of permanent saturation such as water sedge, pale sedge, poor sedge, sparse-flowered sedge, cotton-grasses, and water horsetail. The moss layer is dominated by peat mosses.



Plate 3.3-7. Wf08 Shore sedge - Buckbean - Hook-moss Fen site association.

3.3.8 Wf11 Tufted clubrush - Star moss fen

The Tufted clubrush - Star moss fen (Wf11) site association is scattered at middle to subalpine elevations throughout the interior of BC (MacKenzie and Moran 2004). Wf11 was uncommon within the Project area, occurring on level, gently sloping sites with smooth, ribbed, or slightly hummocked topography and water-filled depressions (Plate 3.3-8).

Wf11 soils are deep, organic soils with depressions that are permanently saturated with groundwater. Two sites were very wet, with water at or near the surface. Wf11 sites are dominated by tufted clubrush (*Trichophorum cespitosum*), with some cotton-grasses and a diversity of sedge species present. The shrub layer is sparse but is dominated by scrub birch. The moss layer is characteristically dense peat; however, there is usually some additional moss diversity present.



Plate 3.3-8. Wf11 Tufted clubrush - Star moss Fen site association.

3.3.9 Wf13 Narrow-leaved cotton-grass - Shore sedge fen

The Narrow-leaved cotton-grass - Shore sedge fen (Wf13) site association is locally common and occurs in depressions or on seepages slopes at higher elevations (1,200 – 1,800 m; MacKenzie and Moran 2004) (Plate 3.3-9). Wf13 has been limited in samples but can be found in complexes with Wf05 wetlands.

Wf13 sites are characterized by deep organic soils. Open water varies, ranging from 1-85%, with some sites being very wet. Wf13 sites are dominated by water sedge, cotton-grasses, and shore sedge. The moss layer is dominated by peat moss but can be diverse with no one species dominating.



Plate 3.3-9. Wf13 Narrow-leaved cotton-grass - Shore sedge Fen site association.

3.4 MARSH WETLANDS

3.4.1 Wm00 Undescribed Marsh Wetlands

Wm00 are marsh site associations that are not currently described in MacKenzie and Moran (2004). They are characterized by permanent to seasonal flooding and are dominated by emergent graminoid vegetation (Plate 3.4-1). The vegetation community present on these sites is not well-defined and is often a reflection of previous disturbances (e.g., beaver activity). Graminoid vegetation includes species such as bluejoint reedgrass, grey sedge (*Carex canescens*), water sedge, and poor sedge. Shrubs may occur, with a very sparse cover of willows or mountain alder (*Alnus incana*). The moss layers are diverse and include haircap mosses (*Polytrichum* spp.), peat mosses, and leafy mosses (*Plagiomnium* spp.). Soils are mineral and often had evidence of gleying and mottling. Open water varied from 50% to 95%.



Plate 3.4-1. Wm00 marsh site association.

3.4.2 Wm01 Beaked Sedge – Water Sedge marsh

The Wm01 Beaked Sedge – Water Sedge marsh (Wm01) is the most common marsh site association in the province, occurring at low to subalpine elevations (MacKenzie and Moran 2004). Wm01 occurs throughout the Project area, including small areas along the shallow margins of creeks and streams and as small pockets interspersed within Ws04 and Ws07 swamps (Plate 3.4-2).

Wm01 occurs in areas with deep, permanently saturated mineral soils, often with a peat veneer. While soils are always wet, surface water is variable and often changes dramatically throughout the growing season. Species diversity in the Wm01 is low, with a near monoculture of beaked sedge and water sedge at most sites along with sporadic occurrences of other graminoids (e.g., bluejoint reedgrass), herbs, and occasional aquatic plants.



Plate 3.4-2. The Wm01 Beaked Sedge – Water Sedge marsh site association.

3.5 SWAMP WETLANDS

3.5.1 Ws00 under described Swamp Wetlands

Ws00 are swamp site associations that are not currently described in MacKenzie and Moran (2004). They are wetland ecosystems characterized by high cover of tall shrubs and/or trees along with a well-developed shrub layer (Plate 3.5-1). Swamps have significant groundwater inflow, but periodic aeration and elevated microsites allow for vegetation growth. Soils are mineral over occasional deep peat deposits, and some sites had distinct gleying and water at or near the surface.



Plate 3.5-1. Ws00 swamp site association along the fringe of a wetland fen site association.

3.5.2 Ws04 Drummond's Willow - Swollen Beaked Sedge swamps

The Drummond's Willow - Swollen Beaked Sedge swamps (Ws04) are common throughout the central and sub-boreal interior of BC, occurring in depressions and channel margins of small fluvial systems (MacKenzie and Moran 2004) (Plate 3.5-2). The Ws04 associations are typically flooded with standing water throughout the wetter months of the growing season and have high water tables throughout the rest of the year. Fine-textured fluvial or lacustrine silts are typical, often with a veneer of organic material on the surface. Ws04 site association can occur as complexes with Ws07.

Drummond's willow (*Salix drummondiana*) is the dominant shrub cover in the Ws04, with variable cover of Barclay's willow, grey-leaved willow (*Salix glauca*), scrub birch, and black twinberry (*Lonicera involucrata*). Herbaceous cover is generally high, with common species including bluejoint reedgrass, water sedge, beaked sedge, and wood horsetail (*Equisetum sylvaticum*).



Plate 3.5-2. Ws04 Drummond's Willow - Swollen Beaked Sedge Swamp site association.

3.5.3 Ws07 Spruce - Common horsetail - Leafy moss swamp

The Spruce - Common horsetail - Leafy moss swamp (Ws07) site associations are common throughout the Project area and occur where there is significant flow of mineral-rich groundwater, primarily on lower and toe slopes and along the margins of wetlands (MacKenzie and Moran 2004; Plate 3.5-3). Ws07 site associations are moderately productive wetlands. Ws07 soils are typically thin woody peat veneers with fine textured mineral soils and sometimes deeper peat deposits, and sites had evidence of gleying, mottling, and seepage. Some sites had evidence of recent burns or were logged. Vegetation in the Ws07 is characterized by spruce, which can be up to 25 m tall, a sparse to well-developed shrub layer, abundant common horsetail (*Equisetum arvense*) in the herb layer, and a diverse moss layer.



Plate 3.5-3. Ws07 Spruce - Common horsetail - Leafy moss Swamp Subalpine fir - Sitka valerian - Common horsetail site association.

3.5.4 Ws08 Subalpine fir - Sitka valerian - Common horsetail swamp

The Subalpine fir - Sitka valerian - Common horsetail swamp (Ws08) site associations are common throughout the Project area and occur above 110 m (MacKenzie and Moran 2004). Ws08 wetlands have significant flow of mineral-rich groundwater and are found on lower and toe slopes and margins of wetlands (Plate 3.5-4). Soils are gleysols over mineral soils, occasionally with a deeper peat deposit. Sites were in overall good condition, with some sites impacted by burns and logging.

Ws08 sites are treed swamps with an open canopy dominated by spruce and subalpine fir. The forb layer is well-developed with and abundance of forbs such as Sitka valerian (*Valerian sitchensis*) and common horsetail. The moss layer is best developed in depressions (e.g., leafy mosses, ribbed bog moss) and on raised mounds (e.g., *Barbilophozia,* feathermosses [Amblystegiaceae]).



Plate 3.5-4. Ws08 Subalpine fir - Sitka valerian - Common horsetail swamp site association.

3.6 SHALLOW WATER

3.6.1 Ww Under described Shallow Water

Ww wetlands are shallow-water wetlands that have not been fully described in Mackenzie and Moran (2004). These wetlands are found on the edges of ponds or lakes that are permanently flooded, with submerged and floating aquatic plants and grass-like plants such as sedges and cattails covering less than 10% (Plate 3.6-1). Plant communities are usually dominated by yellow pond-lily *(Nuphar polysepala*) and may contain bladderworts (*Utricularia* spp.) or pondweeds (*Potamogeton* spp.).



Plate 3.6-1. Example of Ww shallow-water wetland.

3.7 FIELD VERIFICATION

A total of 776 mapped polygons were visited (Table 3.7-1; see Figures 3.1-1 to 3.1-8). Of the total polygons, 21% (162/777) were upland sites rather than wetlands, while 74% (573/777) of the sites were verified as wetlands. All remaining non-wetland plots (6% or 41/777) were classified as Floodplain, Riparian or Ponds. A total of 106 full plots and 671 visual plots were completed to classify and assess the ecosystem types. The Ws07 wetland class was the most common wetland site association, representing 17% of the total plots (130/777). The Wb05 and Wb08 classes were the second most common wetland site associations, representing 9% of the sites visited, with one site being a complex of the two. A total of 18 sites were field verified as wetland complexes.

Table 3.7-1. Blackwater Gold Project Wetland Inspection Plots by Site Association.

Wetland Type	Site Association	Common Name	Scientific Name	No. of Plots
Floodplain	Fl	Low bench floodplain	N/A	4
	Fl/Ws*	Low bench floodplain/Swamp	N/A	1
	Fl02	Mountain alder – Red-osier dogwood – Lady fern low bench floodplain	*Alnus incana – Cornus stolonifera – Athyrium filix-femina*	1
	Fl05	Drummond's willow – Bluejoint	*Salix drummondiana – Calamagrostis canadensis*	4
	Fl05/Ws07*	Drummond's willow – Bluejoint / Spruce – Common horsetail – Leafy moss	*Salix drummondiana – Calamagrostis canadensis/ Picea X – Equisetum arvense – Mnium*	2
Pond	PD	Pond	N/A	3
Riparian	Riparian	Riparian	N/A	25
Shrub -carr	Sc03	Barclay's willow – Arrow-leaved groundsel	*Salix barclayi – Senecio triangularis*	1
Upland	Upland	Upland	N/A	162
Bog	Wb	Bog	N/A	6
	Wb/Ws*	Bog/Swamp	N/A	1
	Wb01	Black spruce – Creeping-snowberry – Peat-moss	*Picea mariana – Gaultheria hispidula – Sphagnum*	1
	Wb05	Black spruce – Water sedge – Peat-moss	*Picea mariana – Carex aquatilis – Sphagnum*	67
	Wb08	Black spruce – Soft-leaved sedge – Peat-moss	*Picea mariana – Carex disperma – Sphagnum*	67
	Wb08/Wb01*	Black spruce – Soft-leaved sedge – Peat-moss/ Black spruce – Creeping-snowberry – Peat-moss	*Picea mariana – Carex disperma – Sphagnum/ Picea mariana – Gaultheria hispidula – Sphagnum*	1
	Wb08/Wb05*	Black spruce – Soft-leaved sedge – Peat-moss/ Black spruce – Water sedge – Peat-moss	*Picea mariana – Carex disperma – Sphagnum/ Picea mariana – Carex aquatilis – Sphagnum*	1

Wetland Type	Site Association	Common Name	Scientific Name	No. of Plots
	Wb09	Black spruce – Common horsetail – Peat-moss	*Picea mariana – Equisetum arvense – Sphagnum*	1
	Wb10	Lodgepole pine – Few-flowered sedge – Peat-moss	*Pinus contorta – Carex pauciflora – Sphagnum*	4
	Wb13	Shore sedge – Buckbean – Peat-moss	*Carex limosa – Menyanthes trifoliata – Sphagnum*	4
Fen	Wf	Fen	N/A	7
	Wf/Wb	Fen/Bog	N/A	1
	Wf01	Water sedge – Beaked sedge	*Carex aquatilis – Carex utriculata*	30
	Wf01/Wf02*	Water sedge – Beaked sedge/ Scrub birch – Water sedge	*Carex aquatilis – Carex utriculate/*	1
	Wf02	Scrub birch – Water sedge	*Betula nana – Carex aquatilis*	30
	Wf02/Wb05*	Scrub birch – Water sedge/	*Betula nana – Carex aquatilis/*	3
	Wf03	Water sedge – Peat-moss	*Carex aquatilis – Sphagnum*	3
	Wf04	Barclay's willow – Water sedge – Glow moss	*Salix barclayi – Carex aquatilis – Aulacomnium palustre*	8
	Wf06	Slender sedge – Buckbean	*Carex lasiocarpa – Menyanthes trifoliata*	2
	Wf07	Scrub birch – Buckbean – Shore sedge	*Betula nana – Menyanthes trifoliata – Carex limosa*	5
	Wf07/Wf02*	Scrub birch – Buckbean – Shore sedge/ Scrub birch – Water sedge	*Betula nana – Menyanthes trifoliata – Carex limosa/ Betula nana – Carex aquatilis*	1
	Wf07/Wf08*	Scrub birch – Buckbean – Shore sedge/ Shore sedge – Buckbean – Hook-moss	*Betula nana – Menyanthes trifoliata – Carex limosa/ Carex limosa – Menyanthes trifoliata – Drepanocladus*	1

Wetland Type	Site Association	Common Name	Scientific Name	No. of Plots
	Wf08	Shore sedge – Buckbean – Hook-moss	*Carex limosa – Menyanthes trifoliata – Drepanocladus*	3
	Wf11	Tufted clubrush – Star moss	*Trichophorum cespitosum – Campylium stellatum*	4
	Wf13	Narrow-leaved cotton-grass – Shore sedge	*Eriophorum angustifolium – Carex limosa*	4
	Wf13/Wf05*	Narrow-leaved cotton-grass – Shore sedge/ Slender sedge – Common hook-moss	*Eriophorum angustifolium – Carex limosa/ Carex lasiocarpa – Drepanocladus aduncus*	1
Marsh	Wm	Marsh	N/A	6
	Wm01	Beaked sedge – Water sedge	Carex utriculata – Carex aquatilis	47
	Wm01/Ws04*	Beaked sedge – Water sedge/ Drummond's willow – Beaked sedge	Carex utriculata – Carex aquatilis / *Salix drummondiana – Carex utriculate*	1
Swamp	Ws	Swamp	N/A	27
	Ws02	Mountain alder – Pink spirea – Sitka sedge	*Alnus incana – Spiraea douglasii – Carex sitchensis*	1
	Ws04	Drummond's willow – Beaked sedge	*Salix drummondiana – Carex utriculate*	35
	Ws04/Ws07*	Drummond's willow – Beaked sedge/ Spruce – Common horsetail – Leafy moss	Salix drummondiana – Carex utriculate/ Picea X– Equisetum arvense – Mnium	4
	Ws05	MacCalla's willow – Beaked sedge	*Salix maccalliana – Carex utriculata*	1
	Ws07	Spruce – Common horsetail – Leafy moss	*Picea X– Equisetum arvense – Mnium*	130
	Ws07/Ws04*	Spruce – Common horsetail – Leafy moss	*Picea X– Equisetum arvense – Mnium*	2
	Ws08	Subalpine fir – Sitka valerian – Common horsetail	*Abies lasiocarpa – Valeriana sitchensis – Equisetum arvense*	52

Wetland Type	Site Association	Common Name	Scientific Name	No. of Plots
	Ws08/01*	Abies lasiocarpa – Valeriana sitchensis – Equisetum arvense/Zonal upland	*Abies lasiocarpa – Valeriana sitchensis – Equisetum arvense/N/A*	1
Shallow Open Water	Ww	Shallow open water	N/A	8
	Ww / Wm01*	Shallow open water/ Beaked sedge – Water sedge	N/A/ *Carex utriculata – Carex aquatilis*	1

*Sites are complexes of more than one wetland site association. The leading wetland site association is the dominant wetland site association.

3.7.1 Wetland Health Assessment

Wetland Health assessments were completed at 96 full plots (Table 3.7-2; Appendix A). Of these, 77% (74/96) were properly functioning, 8% (8/96) were functioning at risk, 8% (8/96) were functioning at high risk, and 6% (6/96) were not properly functioning. Wetlands that were not properly functioning were primarily bogs and swamps, with partial to 100% impact from logging. Four out of six of these sites represented blue-listed wetlands, Wb08 (Plot Identification: WT-22-190, WT-22-191) and WS07 (WT-22-101, WT-22-311).

Table 3.7-2. Blackwater Gold Project Wetland Health Assessment Summary.

Condition	Number of Plots	Plot Identification
Functioning At High Risk	8	WT-22-042, WT-22-148, WT-22-163, WT-22-170, WT-22-268, WT-22-353b, WT-22-517, WT-22-523
Functioning At Risk	8	WT-22-027, WT-22-099, WT-22-161, WT-22-399, WT-22-455, WT-22-519, WT-22-590, WT-22-624
Not Properly Functioning	6	WT-22-036, WT-22-069, WT-22-101, WT-22-190, WT-22-191, WT-22-311
Properly Functioning	74	WT-22-673, WT-22-543, WT-22-629, WT-22-627, WT-22-633, WT-22-569, WT-22-545, WT-22-623, WT-22-621B, WT-22-619, WT-22-620, WT-22-348, WT-22-345, WT-22-594, WT-22-367, WT-22-627A, WT-22-194, WT-22-220, WT-22-398, WT-22-424A, WT-22-504, WT-22-465, WT-22-417, WT-22-632, WT-22-636, WT-22-638, WT-22-405, WT-22-687, WT-22-373, WT-22-497, WT-22-480, WT-22-481, WT-22-332, WT-22-015, WT-22-467, WT-22-209, WT-22-201, WT-22-570, WT-22-003, WT-22-236, WT-22-011, WT-22-652, WT-22-656, WT-22-390a, WT-22-618a, WT-22-635, WT-22-391, WT-22-407, WT-22-518, WT-22-436, WT-22-538c, WT-22-443, WT-22-559, WT-22-431, WT-22-671, WT-22-670, WT-22-510a, WT-22-204, WT-22-423, WT-22-660, WT-22-422, WT-22-429. WT-22-333, WT-22-661, WT-22-669, WT-22-202, WT-22-215, WT-22-195, WT-22-449, WT-22-023, WT-22-071, WT-22-055, WT-22-284, WT-22-285

3.7.2 Wetland Function Assessment

The four primary wetland functions (hydrological, biochemical, habitat and ecosystem), the data components, and data types collected are summarized in Table 3.7.-3. The data collected are presented

throughout Appendix C to H. In addition to the field data collected in 2022, shallow groundwater monitoring wells were installed in Matthews Creek and four reference wetlands within the mine site (Appendix I). This information is being used to inform the function analysis for each wetland class (bog, fen, marsh, swamp and shallow open water) based on the methods provided in Hanson et al (2008).

Table 3.7-3 Blackwater Gold Project Summary of Wetland Functions, Key components and Data Types Collected

Wetland Function	Component/Value	Data Types Collected
Hydrological Function	Water flow	Hydrogeomorphic Unit (HGM)
	Groundwater	Hydrodynamic Index (HDI), Soil Nutrient Regime (SNR), surface shape, mesoslope position, shallow groundwater wells
	Erosion Protection	HGM, HDI
Biochemical Function	Water quality	HGM,
	Carbon storage	Soil order, great group, surface horizon
	Nutrient and Organic export	HGM, HDI, SNR
Habitat Function	Target wildlife species	List of species observed
	Wildlife use	Habitat features
	Habitat for wildlife species at risk	List of species observed
Ecosystem Function	Habitat for ecosystem at risk	Red and blue listed ecosystems mapped of field verified
	Ecosystem quality	Vegetation cover, invasive species presence and cover, indicator species presence and cover, proximity to disturbance, coarse woody debris
	Ecosystem connectivity	Wetland mapping

3.7.3 Wildlife Habitat Assessment

Wildlife health assessments were completed at 70 full plots (Table 3.7-4; Appendix E and F). Suitable wildlife habitat was observed in the following wetland site associations: Wb08 (WT-22-633), Wb05 (WT-22-627, WT-22-595), Ws08 (WT-22-453, WT-22-569), Ws (MC27), and Wf13 (WT-22-629). Bogs and swamps represented the most suitable habitat, providing food, thermal cover, and security cover to the wildlife species that were assessed. There was no suitable habitat for muskrat documented within the Project area, but suitable habitat was available for all other species.

Table 3.7-4. Blackwater Gold Project Wildlife Habitat Ratings.

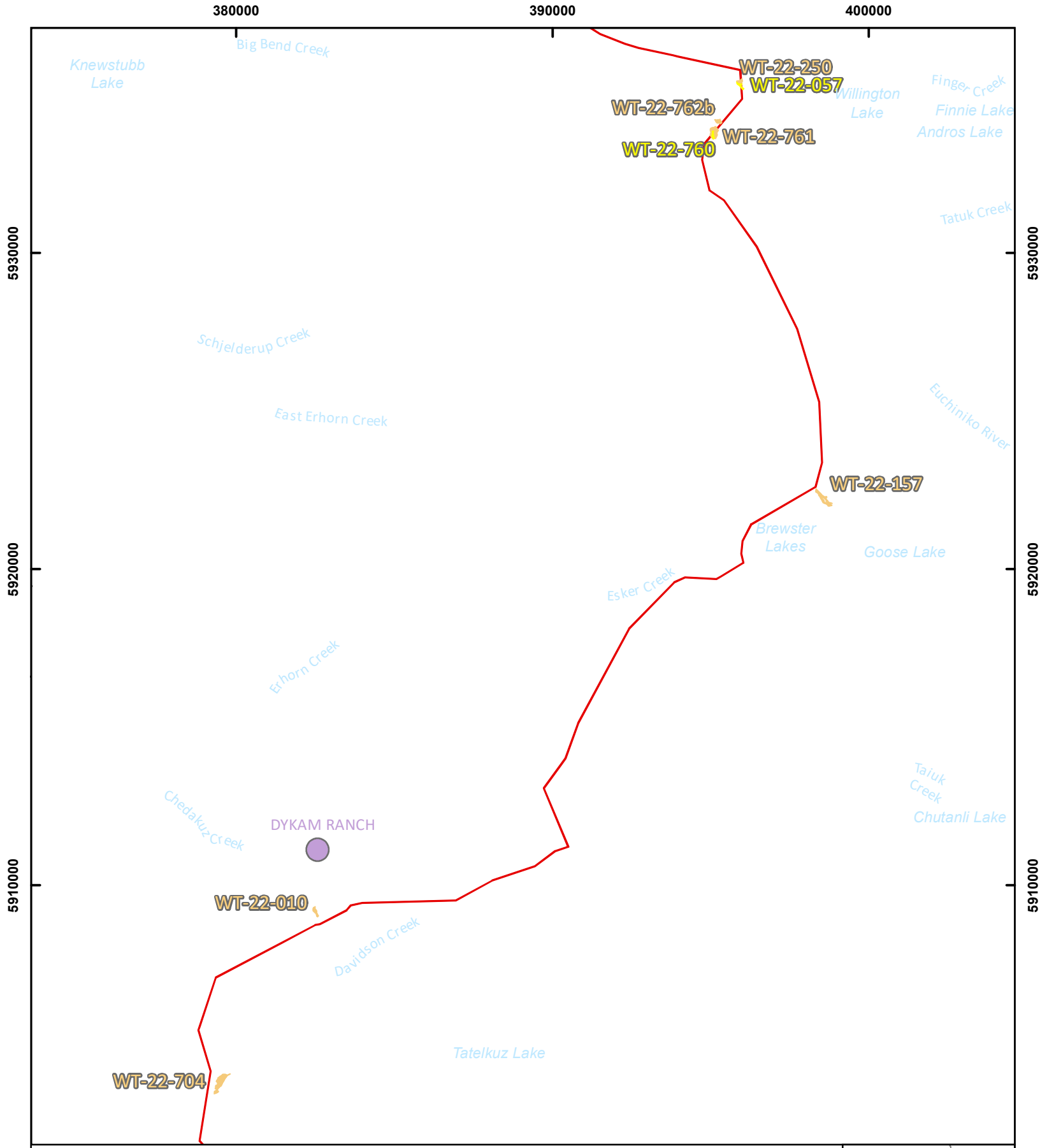
Species	Habitat Rating	Season
Caribou	Low	Fall, Spring, Summer
	Moderate	Spring, Summer, Winter
	Very Low	Fall, Spring
	Nil	Summer, Winter
Grizzly Bear	High	Spring
	Moderate	Fall, Spring, Summer
	Low	Fall, Spring, Summer
Little Brown Myotis	High	Growing
Moose	High	Winter
	Moderate	Fall, Spring, Summer, Winter
	Low	Fall, Spring, Summer, Winter
Muskrat	Not suitable	Growing, Winter
Olive-Sided Flycatcher	Very High	Growing
	High	Growing
Ring-Necked Duck	Nil	Growing
	Not suitable	Growing
Western Toad	Suitable	Growing, Winter
	Low	Winter
	Not suitable	Growing, Winter

3.8 CARBON ANALYSIS

Eight wetlands were sampled for carbon characteristics (Figure 3.8-1). Results of the carbon bulk density analysis are presented in Table 3.8-1. Both fens and bogs were identified to have significant peat stores, however, there were not enough samples to generate distinctions between these two wetland types with respect to carbon stores.

Table 3.8-1. Summary of Carbon Analysis.

Wetland	Wetland Type	Average Depth (m)	Area (m2)	Calculated Peat Volume (m3)	Average BD (kg/m3)	Average Carbon (KG)	kg C / ha
WT-22-010	Wb01	1.7	22,207.2	16,778.5	784.0	5,261,723.2	2,369,376.1
WT-22-057	Wf02	1.7	20,644.2	28,109.0	1,308.0	14,706,638.4	7,123,859.7
WT-22-157	Wb08	1.5	62,208.1	45,302.8	824.0	14,931,818.2	2,400,301.3
WT-22-250	Wb05	1.8	12,493.9	15,706.1	1,050.0	6,596,562.9	5,279,818.4
WT-22-704	Wb11	2.4	100,285.9	114,148.0	1,296.7	59,204,787.0	5,903,603.2
WT-22-761	Wb05	2.1	62,632.5	98,040.9	957.0	37,530,052.9	5,992,104.2
WT-22-760	Wf02	2.2	12,446.0	16,500.4	911.3	6,014,934.8	4,832,841.2
WT-22-762b	Wb05	2.8	21,699.9	48,575.8	1,084.0	21,062,479.5	9,706,274.4



Blackwater Project

Wetlands Sampled for Peat

Figure 3.8-1

Date: 2023-03-16

Map Number: BLW-106

Coordinate System: NAD 1983 UTM Zone 10N

Projection: Transverse Mercator

Datum: North American 1983

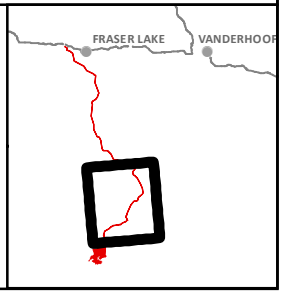
Wetland Type

- Bog
- Fen

- Transmission Line
- Lake
- River
- Stream

0 2 4 6

1:152,434 Km



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APPENDIX A. BLACKWATER GOLD PROJECT PLANT SITE WETLANDS

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PHONE: 604 803-7146

MEMORANDUM

DATE:	September 7, 2022
TO:	Travis Desormeaux, Permitting and Environmental Responsibility Manager, BW Gold Ltd.
FROM:	Ryan Durand, MSc., R.P.Bio., Danielle Mai, B.Sc., R.P.Bio.
SUBJECT:	Blackwater Gold Project Plant Site Wetlands

INTRODUCTION

This memo provides an overview of the two wetlands located adjacent to the proposed Plant Site clearing area and adjacent to the existing Blackwater Camp. This memo is being provided to supplement the interim Wetlands Management and Offsetting Plan (EAC Condition 24) submitted to EAO in March 2022 for approval. The wetlands described below have been surveyed and flagged to maintain a buffer of a minimum 30 m offset from the planned early works construction activities. The buffering of the wetland near the proposed plant site clearing was completed in alignment with condition 5.2 of the Federal Decision Statement (DS) issued to BW Gold Ltd. by thew Canadian Environmental Assessment Agency (CEAA), now the Impact Assessment Agency of Canada (IAAC). The conditions states:

> *The Proponent shall maintain, during construction and operation, a 30-metre buffer of undisturbed vegetation around wetlands located within the mine site, excluding activities required to construct project components. The Proponent shall conduct work or activity within the 30-metre buffer only to the extent necessary for safety reasons, to control invasive plants, or to install and maintain erosion or sediment run-off control measures. The Proponent shall have an independent environmental monitor observe work being done within the buffer, except when not possible for safety reasons. As part of the annual report, the Proponent shall include a summary of work or activities conducted for safety reasons within the 30-metre buffer.*

METHODS

Wetlands were assessed using the standard methodology as per the Field Manual for Describing Terrestrial Ecosystems (BC MOF and MOE 2010) and classified according to the Wetlands of British Columbia (Mackenzie and Moran, 2004). Additional data collected included water quality, hydrodynamic index, ecosystem function assessments, and a condition assessment following the Protocol for Evaluating

the Health of Wetlands (Fletcher et al, 2021). Wildlife habitat was assessed following the Wildlife Habitat Assessment procedure from the Field Manual for Describing Terrestrial Ecosystems (BC MOF and MOE 2010). Table 1 provides the target species, life requisites and rating scheme used for the assessments.

TABLE 2. HABITAT SUITABLITY RATINGS FOR THE BLACKWATER PROJECT

Species	Life Requisite	Season	Months	Ratings
Western Toad	Reproducing- Eggs	Growing	(April) May-June	Suitable / Not Suitable
	Hibernating	Winter	(April) May-June	Suitable / Not Suitable
Ring-necked Duck	Living	Growing	May - September	High / Moderate / Low / Nil
Olive-sided Flycatcher	Living	Growing	June - August	High / Moderate / Low / Nil
Moose	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Winter	November - April	Very High / High / Moderate / Low / Very Low / Nil
Caribou	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Winter	November - April	Very High / High / Moderate / Low / Very Low / Nil
Grizzly Bear	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
Muskrat	Living	Growing	May - September	Suitable / Not Suitable
	Living	Winter	October - April	Suitable / Not Suitable
Little Brown Myotis	Living	Growing	May - September	High / Moderate / Low / Nil

WETLANDS

Two wetlands were mapped and field checked in the proposed Plant Site (Figure 1). Wetland WT-22-453 was classified as swamp site association Ws08 (Subalpine fir – Sitka valerian – Common horsetail). Wetland WT-22-673 was classified as marsh Wm00, and is not currently represented in McKenzie and Moran. The wetlands are connected with each other, Wm00 was nestled within the Ws08, but otherwise isloated with no streams connected with either wetland. Each wetland is described in detail below.

WT-22-453

WT-22-453 is classified as a Ws08 subalpine fir / horsetails / leafy mosses swamp (Photo 1). It is a properly functioning shrubby wetland with a canopy dominated by sub-alpine fir (*Abies lasiocarpa*), a shrub layer with white flowered rhododendron (*Rhododenron albiflorum*), a herbecous layer dominated by wood horsetail (*Equiseteum sylvaticum.*), Sitka valerian (*Valerian sitchensis*), bluejoint reedgrass (*Calamagrostis canadensis*) and a moss layer dominated by knights plume (*Ptillium crista-castrensis*), glowmoss (*Aulcomium palustre*) and red stemmed-feather moss (*Pleurozium schreberi)*. The wetland had 5% open water and is characterized by mineral soils with silt over a silty clay loam.

The wetland provides potential habitat for Western Toad, Olive-sided Flycatcher, Little Brown Myotis, Moose, Caribou and Grizzly (Table 2). The habitat is considered suitable for Western Toad breeding as there is standing water present; however, no breeding was observed in the site.



PHOTO 1. REPRESENTATIVE PHOTO OF WT-22-453, WS08.