

CERTIFICATE OF ANALYSIS

REPORTED TO Mid Shuswap Lumby Water Stewards
1631 Mable Lake Rd
Lumby, BC V0E 2G6

ATTENTION Russ Collins

PO NUMBER Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

PROJECT INFO

WORK ORDER 9052351

RECEIVED / TEMP 2019-05-27 09:05 / 7°C
REPORTED 2019-06-03 13:11

COC NUMBER 40837.5581

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

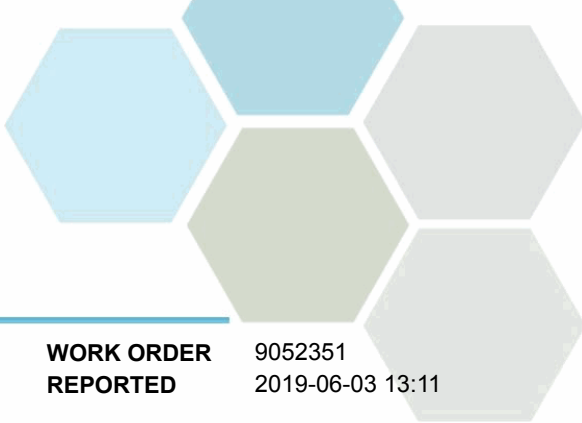
If you have any questions or concerns, please contact me at estclair@caro.ca

Authorized By:

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Client Service Representative

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TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Harris Creek (Hwy 6) (9052351-01) Matrix: Water Sampled: 2019-05-26 11:45						FILT, PRES

Anions

Chloride	0.29	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.015	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	4.8	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	22.3	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0153	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.298	N/A	0.0500	mg/L	N/A	

General Parameters

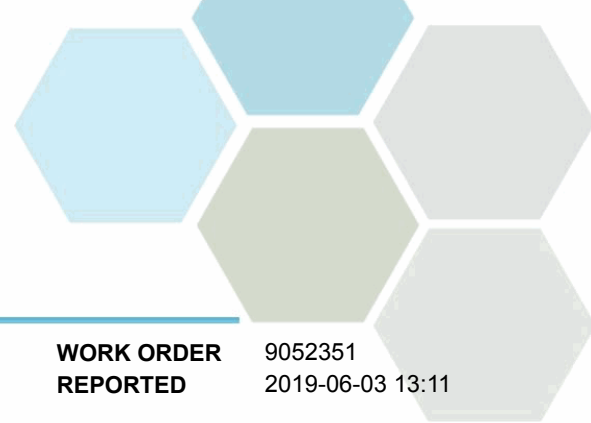
Ammonia, Total (as N)	0.035	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	49.3	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.283	N/A	0.050	mg/L	2019-05-30	
pH	7.33	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0226	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0114	N/A	0.0020	mg/L	2019-06-02	
Turbidity	2.09	OG < 1	0.10	NTU	2019-05-28	

Microbiological Parameters

Coliforms, Total	410	MAC = 0	1	CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200	CFU/100 mL	2019-05-27	
E. coli	33	MAC = 0	1	CFU/100 mL	2019-05-27	

Total Metals

Aluminum, total	252	OG < 100	2.0	µg/L	2019-05-30	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2019-05-30	
Arsenic, total	0.297	MAC = 10	0.050	µg/L	2019-05-30	
Barium, total	7.96	MAC = 1000	0.10	µg/L	2019-05-30	
Beryllium, total	0.016	N/A	0.010	µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2019-05-30	
Cadmium, total	0.0099	MAC = 5	0.0020	µg/L	2019-05-30	
Calcium, total	6200	N/A	40	µg/L	2019-05-30	
Chromium, total	0.45	MAC = 50	0.10	µg/L	2019-05-30	
Cobalt, total	0.157	N/A	0.0050	µg/L	2019-05-30	
Copper, total	1.83	AO ≤ 1000	0.20	µg/L	2019-05-30	
Iron, total	299	AO ≤ 300	2.0	µg/L	2019-05-30	
Lead, total	0.091	MAC = 5	0.050	µg/L	2019-05-30	
Lithium, total	1.46	N/A	0.050	µg/L	2019-05-30	
Magnesium, total	1650	N/A	5.0	µg/L	2019-05-30	
Manganese, total	13.7	MAC = 120	0.050	µg/L	2019-05-30	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-05-29	



TEST RESULTS

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Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Harris Creek (Hwy 6) (9052351-01) Matrix: Water Sampled: 2019-05-26 11:45, Continued						FILT, PRES

Total Metals, Continued

Molybdenum, total	0.470	N/A	0.010	µg/L	2019-05-30	
Nickel, total	4.93	N/A	0.040	µg/L	2019-05-30	
Phosphorus, total	24	N/A	10	µg/L	2019-05-30	
Potassium, total	840	N/A	10	µg/L	2019-05-30	
Selenium, total	0.13	MAC = 50	0.10	µg/L	2019-05-30	
Silicon, total	5220	N/A	100	µg/L	2019-05-30	
Silver, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Sodium, total	1760	AO ≤ 200000	20	µg/L	2019-05-30	
Strontium, total	37.8	N/A	0.10	µg/L	2019-05-30	
Sulfur, total	1500	N/A	1000	µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Thallium, total	0.0042	N/A	0.0040	µg/L	2019-05-30	
Thorium, total	0.036	N/A	0.010	µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Titanium, total	12.1	N/A	0.20	µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2019-05-30	
Uranium, total	0.198	MAC = 20	0.0010	µg/L	2019-05-30	
Vanadium, total	1.31	N/A	0.20	µg/L	2019-05-30	
Zinc, total	2.0	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.491	N/A	0.020	µg/L	2019-05-30	

Duteau Creek (Hwy 6) (9052351-02) | Matrix: Water | Sampled: 2019-05-26 11:30

Anions

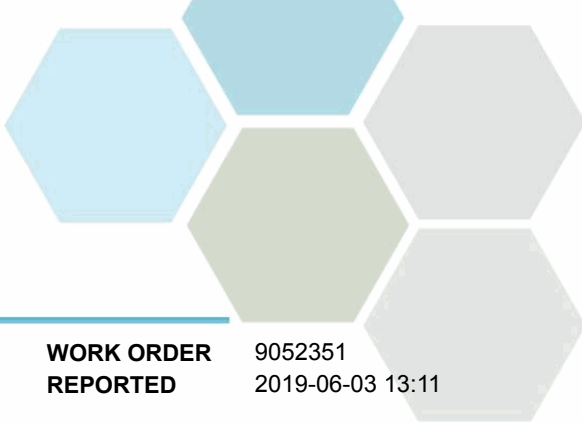
Chloride	4.30	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.471	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	18.8	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	81.1	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.471	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.865	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	0.023	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	177	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.394	N/A	0.050	mg/L	2019-05-30	
pH	7.88	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0313	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0122	N/A	0.0020	mg/L	2019-06-02	
Turbidity	2.49	OG < 1	0.10	NTU	2019-05-28	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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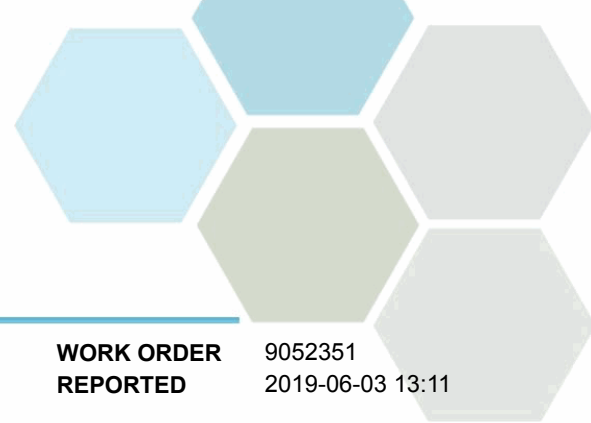
Duteau Creek (Hwy 6) (9052351-02) | Matrix: Water | Sampled: 2019-05-26 11:30, Continued

Microbiological Parameters

Coliforms, Total	2400	MAC = 0	1	CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200	CFU/100 mL	2019-05-27	
E. coli	200	MAC = 0	1	CFU/100 mL	2019-05-27	MIC15

Total Metals

Aluminum, total	122	OG < 100	2.0	µg/L	2019-05-30	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2019-05-30	
Arsenic, total	0.376	MAC = 10	0.050	µg/L	2019-05-30	
Barium, total	21.1	MAC = 1000	0.10	µg/L	2019-05-30	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Boron, total	3.9	MAC = 5000	2.0	µg/L	2019-05-30	
Cadmium, total	0.0119	MAC = 5	0.0020	µg/L	2019-05-30	
Calcium, total	24200	N/A	40	µg/L	2019-05-30	
Chromium, total	0.45	MAC = 50	0.10	µg/L	2019-05-30	
Cobalt, total	0.175	N/A	0.0050	µg/L	2019-05-30	
Copper, total	1.34	AO ≤ 1000	0.20	µg/L	2019-05-30	
Iron, total	457	AO ≤ 300	2.0	µg/L	2019-05-30	
Lead, total	0.072	MAC = 5	0.050	µg/L	2019-05-30	
Lithium, total	2.32	N/A	0.050	µg/L	2019-05-30	
Magnesium, total	5020	N/A	5.0	µg/L	2019-05-30	
Manganese, total	71.8	MAC = 120	0.050	µg/L	2019-05-30	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-05-29	
Molybdenum, total	1.79	N/A	0.010	µg/L	2019-05-30	
Nickel, total	1.03	N/A	0.040	µg/L	2019-05-30	
Phosphorus, total	36	N/A	10	µg/L	2019-05-30	
Potassium, total	1970	N/A	10	µg/L	2019-05-30	
Selenium, total	0.73	MAC = 50	0.10	µg/L	2019-05-30	
Silicon, total	5650	N/A	100	µg/L	2019-05-30	
Silver, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Sodium, total	4230	AO ≤ 200000	20	µg/L	2019-05-30	
Strontium, total	152	N/A	0.10	µg/L	2019-05-30	
Sulfur, total	6000	N/A	1000	µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2019-05-30	
Thorium, total	0.023	N/A	0.010	µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Titanium, total	8.45	N/A	0.20	µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2019-05-30	
Uranium, total	0.974	MAC = 20	0.0010	µg/L	2019-05-30	
Vanadium, total	0.87	N/A	0.20	µg/L	2019-05-30	
Zinc, total	1.6	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.288	N/A	0.020	µg/L	2019-05-30	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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Mid Bessette Creek (9052351-03) | Matrix: Water | Sampled: 2019-05-26 11:00

FILT,
PRES

Anions

Chloride	1.24	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.074	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	9.2	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	44.0	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0737	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.356	N/A	0.0500	mg/L	N/A	

General Parameters

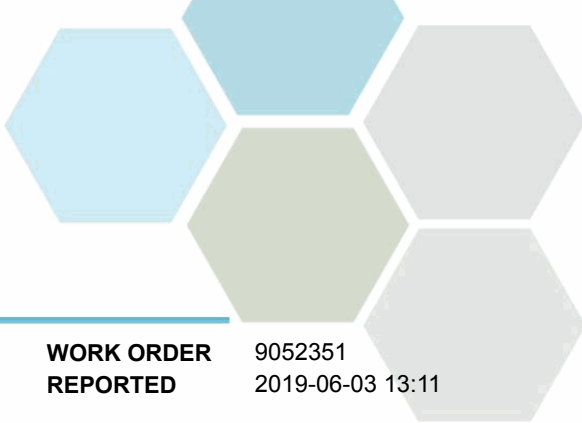
Ammonia, Total (as N)	0.044	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	97.9	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.282	N/A	0.050	mg/L	2019-05-30	
pH	7.67	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0359	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0155	N/A	0.0020	mg/L	2019-06-02	
Turbidity	4.15	OG < 1	0.10	NTU	2019-05-28	

Microbiological Parameters

Coliforms, Total	1100	MAC = 0	1	CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200	CFU/100 mL	2019-05-27	
E. coli	130	MAC = 0	1	CFU/100 mL	2019-05-27	

Total Metals

Aluminum, total	367	OG < 100	2.0	µg/L	2019-05-30	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2019-05-30	
Arsenic, total	0.421	MAC = 10	0.050	µg/L	2019-05-30	
Barium, total	14.3	MAC = 1000	0.10	µg/L	2019-05-30	
Beryllium, total	0.020	N/A	0.010	µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2019-05-30	
Cadmium, total	0.0238	MAC = 5	0.0020	µg/L	2019-05-30	
Calcium, total	13400	N/A	40	µg/L	2019-05-30	
Chromium, total	0.70	MAC = 50	0.10	µg/L	2019-05-30	
Cobalt, total	0.286	N/A	0.0050	µg/L	2019-05-30	
Copper, total	1.99	AO ≤ 1000	0.20	µg/L	2019-05-30	
Iron, total	558	AO ≤ 300	2.0	µg/L	2019-05-30	
Lead, total	0.149	MAC = 5	0.050	µg/L	2019-05-30	
Lithium, total	1.80	N/A	0.050	µg/L	2019-05-30	
Magnesium, total	2580	N/A	5.0	µg/L	2019-05-30	
Manganese, total	28.7	MAC = 120	0.050	µg/L	2019-05-30	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Mid Bessette Creek (9052351-03) Matrix: Water Sampled: 2019-05-26 11:00, Continued						FILT, PRES

Total Metals, Continued

Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-05-29	
Molybdenum, total	0.837	N/A	0.010	µg/L	2019-05-30	
Nickel, total	4.28	N/A	0.040	µg/L	2019-05-30	
Phosphorus, total	43	N/A	10	µg/L	2019-05-30	
Potassium, total	1030	N/A	10	µg/L	2019-05-30	
Selenium, total	0.54	MAC = 50	0.10	µg/L	2019-05-30	
Silicon, total	5430	N/A	100	µg/L	2019-05-30	
Silver, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Sodium, total	2280	AO ≤ 200000	20	µg/L	2019-05-30	
Strontium, total	87.8	N/A	0.10	µg/L	2019-05-30	
Sulfur, total	2900	N/A	1000	µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Thallium, total	0.0059	N/A	0.0040	µg/L	2019-05-30	
Thorium, total	0.041	N/A	0.010	µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Titanium, total	20.3	N/A	0.20	µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2019-05-30	
Uranium, total	0.402	MAC = 20	0.0010	µg/L	2019-05-30	
Vanadium, total	1.45	N/A	0.20	µg/L	2019-05-30	
Zinc, total	5.7	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.447	N/A	0.020	µg/L	2019-05-30	

Lower Bessette Creek (9052351-04) | Matrix: Water | Sampled: 2019-05-26 10:30

FILT, PRES

Anions

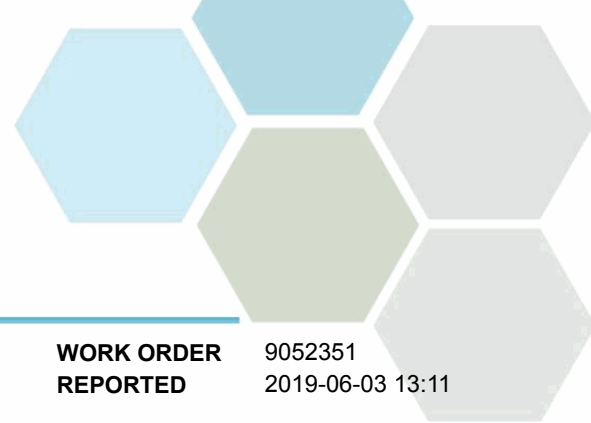
Chloride	1.30	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.087	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	10.1	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	46.9	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0869	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.455	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	0.023	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	103	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.368	N/A	0.050	mg/L	2019-05-30	
pH	7.70	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0502	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0160	N/A	0.0020	mg/L	2019-06-02	

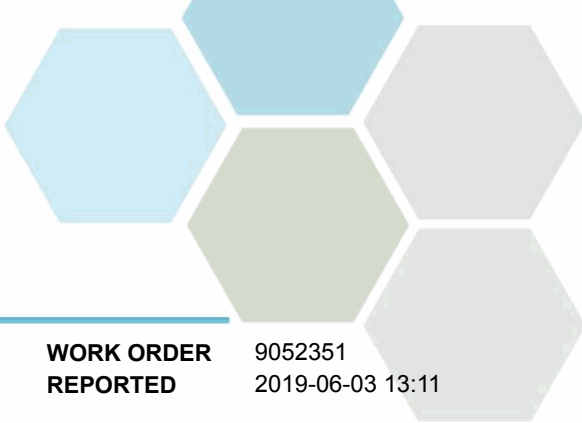


TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Lower Bessette Creek (9052351-04) Matrix: Water Sampled: 2019-05-26 10:30, Continued					FILT, PRES
<i>General Parameters, Continued</i>					
Turbidity	6.50	OG < 1	0.10 NTU	2019-05-28	
<i>Microbiological Parameters</i>					
Coliforms, Total	1300	MAC = 0	1 CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200 CFU/100 mL	2019-05-27	
E. coli	110	MAC = 0	1 CFU/100 mL	2019-05-27	
<i>Total Metals</i>					
Aluminum, total	553	OG < 100	2.0 µg/L	2019-05-30	
Antimony, total	< 0.050	MAC = 6	0.050 µg/L	2019-05-30	
Arsenic, total	0.502	MAC = 10	0.050 µg/L	2019-05-30	
Barium, total	16.8	MAC = 1000	0.10 µg/L	2019-05-30	
Beryllium, total	0.029	N/A	0.010 µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010 µg/L	2019-05-30	
Boron, total	< 2.0	MAC = 5000	2.0 µg/L	2019-05-30	
Cadmium, total	0.0364	MAC = 5	0.0020 µg/L	2019-05-30	
Calcium, total	14100	N/A	40 µg/L	2019-05-30	
Chromium, total	1.10	MAC = 50	0.10 µg/L	2019-05-30	
Cobalt, total	0.426	N/A	0.0050 µg/L	2019-05-30	
Copper, total	2.52	AO ≤ 1000	0.20 µg/L	2019-05-30	
Iron, total	844	AO ≤ 300	2.0 µg/L	2019-05-30	
Lead, total	0.249	MAC = 5	0.050 µg/L	2019-05-30	
Lithium, total	2.08	N/A	0.050 µg/L	2019-05-30	
Magnesium, total	2810	N/A	5.0 µg/L	2019-05-30	
Manganese, total	37.9	MAC = 120	0.050 µg/L	2019-05-30	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2019-05-29	
Molybdenum, total	0.897	N/A	0.010 µg/L	2019-05-30	
Nickel, total	4.65	N/A	0.040 µg/L	2019-05-30	
Phosphorus, total	49	N/A	10 µg/L	2019-05-30	
Potassium, total	1130	N/A	10 µg/L	2019-05-30	
Selenium, total	0.60	MAC = 50	0.10 µg/L	2019-05-30	
Silicon, total	5890	N/A	100 µg/L	2019-05-30	
Silver, total	0.012	N/A	0.010 µg/L	2019-05-30	
Sodium, total	2420	AO ≤ 200000	20 µg/L	2019-05-30	
Strontium, total	95.5	N/A	0.10 µg/L	2019-05-30	
Sulfur, total	3200	N/A	1000 µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050 µg/L	2019-05-30	
Thallium, total	0.0089	N/A	0.0040 µg/L	2019-05-30	
Thorium, total	0.064	N/A	0.010 µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050 µg/L	2019-05-30	
Titanium, total	32.4	N/A	0.20 µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20 µg/L	2019-05-30	
Uranium, total	0.460	MAC = 20	0.0010 µg/L	2019-05-30	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351 2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Lower Besette Creek (9052351-04) Matrix: Water Sampled: 2019-05-26 10:30, Continued						FILT, PRES

Total Metals, Continued

Vanadium, total	1.97	N/A	0.20	µg/L	2019-05-30	
Zinc, total	4.2	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.485	N/A	0.020	µg/L	2019-05-30	

Shuswap River (Wilsey Dam) (9052351-05) | Matrix: Water | Sampled: 2019-05-26 10:10

FILT, PRES

Anions

Chloride	0.23	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.081	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	4.1	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	32.5	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0807	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.271	N/A	0.0500	mg/L	N/A	

General Parameters

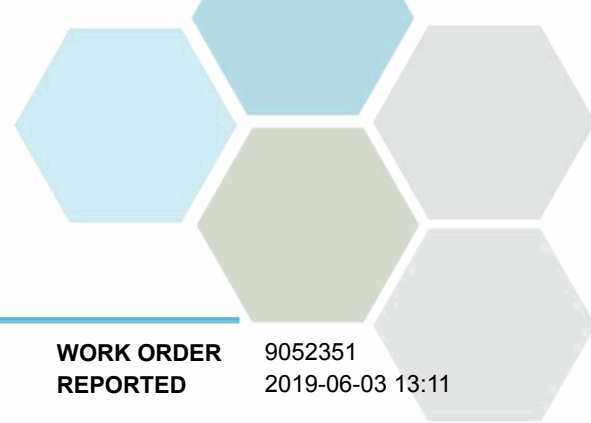
Ammonia, Total (as N)	0.022	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	68.0	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.190	N/A	0.050	mg/L	2019-05-30	
pH	7.61	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0159	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0026	N/A	0.0020	mg/L	2019-06-02	
Turbidity	2.72	OG < 1	0.10	NTU	2019-05-28	

Microbiological Parameters

Coliforms, Total	290	MAC = 0	1	CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200	CFU/100 mL	2019-05-27	
E. coli	16	MAC = 0	1	CFU/100 mL	2019-05-27	

Total Metals

Aluminum, total	190	OG < 100	2.0	µg/L	2019-05-30	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2019-05-30	
Arsenic, total	0.230	MAC = 10	0.050	µg/L	2019-05-30	
Barium, total	8.75	MAC = 1000	0.10	µg/L	2019-05-30	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2019-05-30	
Cadmium, total	0.0179	MAC = 5	0.0020	µg/L	2019-05-30	
Calcium, total	10900	N/A	40	µg/L	2019-05-30	
Chromium, total	0.59	MAC = 50	0.10	µg/L	2019-05-30	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Wilsey Dam) (9052351-05) Matrix: Water Sampled: 2019-05-26 10:10, Continued						FILT, PRES

Total Metals, Continued

Cobalt, total	0.162	N/A	0.0050	µg/L	2019-05-30	
Copper, total	0.78	AO ≤ 1000	0.20	µg/L	2019-05-30	
Iron, total	269	AO ≤ 300	2.0	µg/L	2019-05-30	
Lead, total	0.113	MAC = 5	0.050	µg/L	2019-05-30	
Lithium, total	0.679	N/A	0.050	µg/L	2019-05-30	
Magnesium, total	1270	N/A	5.0	µg/L	2019-05-30	
Manganese, total	11.6	MAC = 120	0.050	µg/L	2019-05-30	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-05-29	
Molybdenum, total	0.558	N/A	0.010	µg/L	2019-05-30	
Nickel, total	0.579	N/A	0.040	µg/L	2019-05-30	
Phosphorus, total	14	N/A	10	µg/L	2019-05-30	
Potassium, total	605	N/A	10	µg/L	2019-05-30	
Selenium, total	0.30	MAC = 50	0.10	µg/L	2019-05-30	
Silicon, total	3110	N/A	100	µg/L	2019-05-30	
Silver, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Sodium, total	775	AO ≤ 200000	20	µg/L	2019-05-30	
Strontium, total	50.1	N/A	0.10	µg/L	2019-05-30	
Sulfur, total	1300	N/A	1000	µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Thallium, total	0.0050	N/A	0.0040	µg/L	2019-05-30	
Thorium, total	0.018	N/A	0.010	µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Titanium, total	8.78	N/A	0.20	µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2019-05-30	
Uranium, total	0.281	MAC = 20	0.0010	µg/L	2019-05-30	
Vanadium, total	0.72	N/A	0.20	µg/L	2019-05-30	
Zinc, total	1.9	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.076	N/A	0.020	µg/L	2019-05-30	

Shuswap River (Odd Fellows) (9052351-06) | Matrix: Water | Sampled: 2019-05-26 09:30

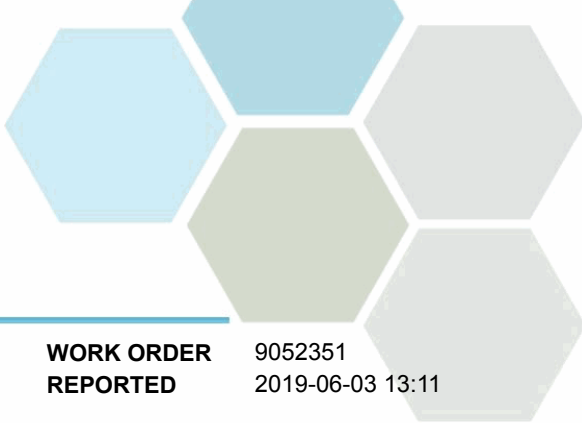
FILT, PRES

Anions

Chloride	0.41	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.072	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	5.3	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	37.6	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0721	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.217	N/A	0.0500	mg/L	N/A	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351 2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Odd Fellows) (9052351-06) Matrix: Water Sampled: 2019-05-26 09:30, Continued						FILT, PRES

General Parameters

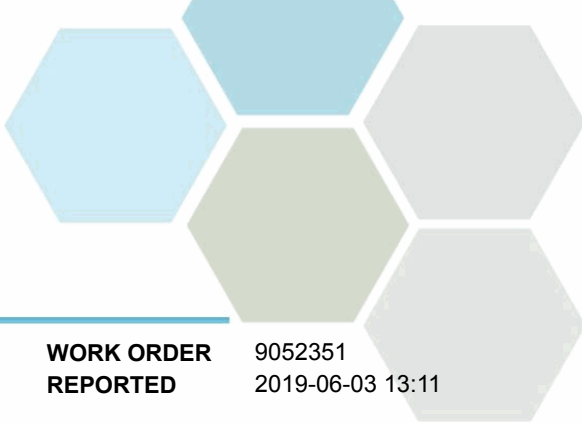
Ammonia, Total (as N)	0.021	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	78.9	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.145	N/A	0.050	mg/L	2019-05-30	
pH	7.65	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0207	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0023	N/A	0.0020	mg/L	2019-06-02	
Turbidity	3.69	OG < 1	0.10	NTU	2019-05-28	

Microbiological Parameters

Coliforms, Total	300	MAC = 0	1	CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200	CFU/100 mL	2019-05-27	
E. coli	59	MAC = 0	1	CFU/100 mL	2019-05-27	

Total Metals

Aluminum, total	212	OG < 100	2.0	µg/L	2019-05-30	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2019-05-30	
Arsenic, total	0.285	MAC = 10	0.050	µg/L	2019-05-30	
Barium, total	10.2	MAC = 1000	0.10	µg/L	2019-05-30	
Beryllium, total	0.011	N/A	0.010	µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2019-05-30	
Cadmium, total	0.0216	MAC = 5	0.0020	µg/L	2019-05-30	
Calcium, total	12400	N/A	40	µg/L	2019-05-30	
Chromium, total	0.61	MAC = 50	0.10	µg/L	2019-05-30	
Cobalt, total	0.174	N/A	0.0050	µg/L	2019-05-30	
Copper, total	0.96	AO ≤ 1000	0.20	µg/L	2019-05-30	
Iron, total	320	AO ≤ 300	2.0	µg/L	2019-05-30	
Lead, total	0.123	MAC = 5	0.050	µg/L	2019-05-30	
Lithium, total	0.871	N/A	0.050	µg/L	2019-05-30	
Magnesium, total	1580	N/A	5.0	µg/L	2019-05-30	
Manganese, total	16.3	MAC = 120	0.050	µg/L	2019-05-30	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-05-29	
Molybdenum, total	0.668	N/A	0.010	µg/L	2019-05-30	
Nickel, total	0.858	N/A	0.040	µg/L	2019-05-30	
Phosphorus, total	17	N/A	10	µg/L	2019-05-30	
Potassium, total	705	N/A	10	µg/L	2019-05-30	
Selenium, total	0.33	MAC = 50	0.10	µg/L	2019-05-30	
Silicon, total	3440	N/A	100	µg/L	2019-05-30	
Silver, total	0.012	N/A	0.010	µg/L	2019-05-30	
Sodium, total	1070	AO ≤ 200000	20	µg/L	2019-05-30	
Strontium, total	61.1	N/A	0.10	µg/L	2019-05-30	
Sulfur, total	1500	N/A	1000	µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2019-05-30	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351 2019-06-03 13:11

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Odd Fellows) (9052351-06) Matrix: Water Sampled: 2019-05-26 09:30, Continued						FILT, PRES

Total Metals, Continued

Thallium, total	0.0042	N/A	0.0040	µg/L	2019-05-30	
Thorium, total	0.020	N/A	0.010	µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Titanium, total	9.59	N/A	0.20	µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2019-05-30	
Uranium, total	0.307	MAC = 20	0.0010	µg/L	2019-05-30	
Vanadium, total	0.84	N/A	0.20	µg/L	2019-05-30	
Zinc, total	2.6	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.103	N/A	0.020	µg/L	2019-05-30	

Vance Creek (Mabel Lake Road) (9052351-07) | Matrix: Water | Sampled: 2019-05-26 11:15

FILT, PRES

Anions

Chloride	1.73	AO ≤ 250	0.10	mg/L	2019-05-27	
Nitrate (as N)	0.049	MAC = 10	0.010	mg/L	2019-05-27	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-05-27	
Sulfate	26.1	AO ≤ 500	1.0	mg/L	2019-05-27	

Calculated Parameters

Hardness, Total (as CaCO3)	146	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0490	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.127	N/A	0.0500	mg/L	N/A	

General Parameters

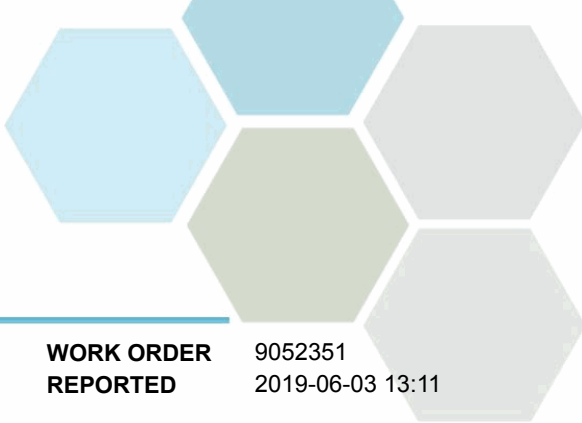
Ammonia, Total (as N)	0.028	None Required	0.020	mg/L	2019-05-29	
Conductivity (EC)	276	N/A	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	0.078	N/A	0.050	mg/L	2019-05-30	
pH	8.22	7.0-10.5	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	0.0195	N/A	0.0020	mg/L	2019-06-02	
Phosphorus, Total Dissolved	0.0038	N/A	0.0020	mg/L	2019-06-02	
Turbidity	7.24	OG < 1	0.10	NTU	2019-05-28	

Microbiological Parameters

Coliforms, Total	90	MAC = 0	1	CFU/100 mL	2019-05-27	
Background Colonies	> 200	N/A	200	CFU/100 mL	2019-05-27	
E. coli	1	MAC = 0	1	CFU/100 mL	2019-05-27	

Total Metals

Aluminum, total	206	OG < 100	2.0	µg/L	2019-05-30	
Antimony, total	0.068	MAC = 6	0.050	µg/L	2019-05-30	
Arsenic, total	0.556	MAC = 10	0.050	µg/L	2019-05-30	
Barium, total	31.3	MAC = 1000	0.10	µg/L	2019-05-30	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 9052351 2019-06-03 13:11

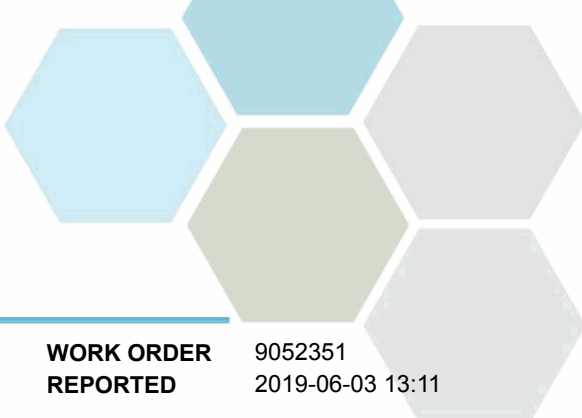
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Vance Creek (Mabel Lake Road) (9052351-07) Matrix: Water Sampled: 2019-05-26 11:15, Continued						FILT, PRES

Total Metals, Continued

Beryllium, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2019-05-30	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2019-05-30	
Cadmium, total	0.0860	MAC = 5	0.0020	µg/L	2019-05-30	
Calcium, total	50100	N/A	40	µg/L	2019-05-30	
Chromium, total	0.55	MAC = 50	0.10	µg/L	2019-05-30	
Cobalt, total	0.264	N/A	0.0050	µg/L	2019-05-30	
Copper, total	1.39	AO ≤ 1000	0.20	µg/L	2019-05-30	
Iron, total	422	AO ≤ 300	2.0	µg/L	2019-05-30	
Lead, total	0.165	MAC = 5	0.050	µg/L	2019-05-30	
Lithium, total	1.74	N/A	0.050	µg/L	2019-05-30	
Magnesium, total	4970	N/A	5.0	µg/L	2019-05-30	
Manganese, total	12.6	MAC = 120	0.050	µg/L	2019-05-30	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-05-29	
Molybdenum, total	1.61	N/A	0.010	µg/L	2019-05-30	
Nickel, total	0.731	N/A	0.040	µg/L	2019-05-30	
Phosphorus, total	20	N/A	10	µg/L	2019-05-30	
Potassium, total	1040	N/A	10	µg/L	2019-05-30	
Selenium, total	3.25	MAC = 50	0.10	µg/L	2019-05-30	
Silicon, total	5450	N/A	100	µg/L	2019-05-30	
Silver, total	0.013	N/A	0.010	µg/L	2019-05-30	
Sodium, total	2080	AO ≤ 200000	20	µg/L	2019-05-30	
Strontium, total	329	N/A	0.10	µg/L	2019-05-30	
Sulfur, total	8300	N/A	1000	µg/L	2019-05-30	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2019-05-30	
Thorium, total	0.024	N/A	0.010	µg/L	2019-05-30	
Tin, total	< 0.050	N/A	0.050	µg/L	2019-05-30	
Titanium, total	4.30	N/A	0.20	µg/L	2019-05-30	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2019-05-30	
Uranium, total	0.761	MAC = 20	0.0010	µg/L	2019-05-30	
Vanadium, total	0.72	N/A	0.20	µg/L	2019-05-30	
Zinc, total	2.9	AO ≤ 5000	1.0	µg/L	2019-05-30	
Zirconium, total	0.060	N/A	0.020	µg/L	2019-05-30	

Sample Qualifiers:

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- MIC15 Due to a high bacterial count, the final result is estimated.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 9052351
2019-06-03 13:11

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Coliforms, Total in Water	SM 9222 B (2017)	Membrane Filtration / m-Endo Agar	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
E. coli in Water	SM 9222 G (2017)	Membrane Filtration / Nutrient Agar with MUG	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Turbidity in Water	SM 2130 B (2017)	Nephelometry	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
>	Greater than the specified Result
AO	Aesthetic Objective
CFU/100 mL	Colony Forming Units per 100 millilitres
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
OG	Operational Guideline (treated water)
pH units	pH < 7 = acidic, pH > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

WORK ORDER 9052351
REPORTED 2019-06-03 13:11

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: estclair@caro.ca