

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

**TEL** (250) 547-2554  
**FAX** -

**ATTENTION** Russ Collins

**WORK ORDER** 5090964

**PO NUMBER**

**RECEIVED / TEMP** Sep-14-15 10:30 / 4°C

**PROJECT** Analytical Testing

**REPORTED** Sep-21-15

**PROJECT INFO**

**COC NUMBER** 40837.5581

**General Comments:**

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition 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.



Authorized By:

**Ed Hoppe, B.Sc., P.Chem.**  
Division Manager, Kelowna

**If you have any questions or concerns, please contact your Account Manager:**  
**Bryan Shaw, Ph.D. (bshaw@caro.ca)**

**Locations:**

#110 4011 Viking Way  
Richmond, BC V6V 2K9  
Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N  
Kelowna, BC V1X 5C3  
Tel: 250-765-9646 Fax: 250-765-3893

17225 109 Avenue  
Edmonton, AB T5S 1H7  
Tel: 780-489-9100 Fax: 780-489-9700

[www.caro.ca](http://www.caro.ca)

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Analytical Testing

**WORK ORDER REPORTED** 5090964  
Sep-21-15

Analysis Description	Method Reference	Technique	Location
Ammonia-N in Water (total)	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions in Water by IC	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
E. coli (Partition)	APHA 9222 G	Membrane Filtration / Nutrient Agar with MUG	Kelowna
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Total Kjeldahl Nitrogen in Water	APHA 4500-Norg D*	Block Digestion and Flow Injection Analysis	Kelowna
Total Phosphorus in Water	APHA 4500-P B.5 / APHA 4500-P F	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Total Phosphorus, dissolved	APHA 4500-P B.5 / APHA 4500-P F	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Turbidity	APHA 2130 B	Nephelometry	Kelowna

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

**Method Reference Descriptions:**

APHA Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Association/American Water Works Association/Water Environment Federation

**Glossary of Terms:**

MRL Method Reporting Limit  
 < Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences  
 CFU/100 mL Colony Forming Units per 100 millilitres  
 mg/L Milligrams per litre  
 NTU Nephelometric Turbidity Units  
 pH units pH < 7 = acidic, pH > 7 = basic  
 µS/cm Microsiemens per centimetre

**Standards / Guidelines Referenced in this Report:**

Guidelines for Canadian Drinking Water Quality (Oct 2014)

Website: [http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/pdf/pubs/water-eau/sum\\_guide-res\\_recom/sum\\_guide-res\\_recom-eng.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom-eng.pdf)

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

**SAMPLE ANALYTICAL DATA**

**REPORTED TO PROJECT** Mid Shuswap Lumby Water Stewards  
Analytical Testing

**WORK ORDER REPORTED** 5090964  
Sep-21-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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**Sample ID: Harris Creek (Hwy 6) (5090964-01) [Water] Sampled: Sep-13-15 11:00**

**PRES**

**Anions**

Chloride	2.19	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	0.019	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	19.9	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	245	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	0.10	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	8.03	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	0.028	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	0.022	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	0.9	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	0.019	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.114	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	73	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample ID: Duteau Creek (Hwy 6) (5090964-02) [Water] Sampled: Sep-13-15 11:05**

**PRES**

**Anions**

Chloride	6.55	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	0.236	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	14.7	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	199	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	0.24	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	7.92	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	0.027	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	0.015	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	1.6	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	0.236	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.480	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	180	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample ID: Mid Bessette Creek (5090964-03) [Water] Sampled: Sep-13-15 10:16**

**PRES**

**SAMPLE ANALYTICAL DATA**

**REPORTED TO PROJECT** Mid Shuswap Lumby Water Stewards  
Analytical Testing

**WORK ORDER REPORTED** 5090964  
Sep-21-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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**Sample ID: Mid Bessette Creek (5090964-03) [Water] Sampled: Sep-13-15 10:16, Continued**

**PRES**

**Anions**

Chloride	6.49	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	0.119	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	24.2	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	278	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	0.18	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	8.14	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	0.035	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	0.020	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	1.7	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	0.119	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.296	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	120	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample ID: Lower Bessette Creek (5090964-04) [Water] Sampled: Sep-13-15 10:00**

**PRES**

**Anions**

Chloride	6.60	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	0.056	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	25.6	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	287	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	0.022	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	0.19	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	8.27	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	0.024	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	0.014	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	1.6	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	0.056	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.246	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	64	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample ID: Shuswap River (Wilsey Dam) (5090964-05) [Water] Sampled: Sep-13-15 09:45**

**PRES**

**SAMPLE ANALYTICAL DATA**

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Analytical Testing

**WORK ORDER REPORTED** 5090964  
Sep-21-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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**Sample ID: Shuswap River (Wilsey Dam) (5090964-05) [Water] Sampled: Sep-13-15 09:45, Continued** PRES

**Anions**

Chloride	0.28	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	5.3	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	92	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	< 0.05	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	7.87	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	0.007	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	0.005	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	0.5	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	< 0.010	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	< 0.050	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	15	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample ID: Shuswap River (Odd Fellows) (5090964-06) [Water] Sampled: Sep-13-15 09:15** PRES

**Anions**

Chloride	0.48	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	6.2	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	104	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	0.022	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	< 0.05	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	7.85	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	0.008	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	0.005	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	0.8	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	< 0.010	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	< 0.050	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	19	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample ID: Vance Creek (Mabel Lake Road) (5090964-07) [Water] Sampled: Sep-13-15 10:30** PRES

**REPORTED TO PROJECT** Mid Shuswap Lumby Water Stewards  
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Sep-21-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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**Sample ID: Vance Creek (Mabel Lake Road) (5090964-07) [Water] Sampled: Sep-13-15 10:30, Continued**

**PRES**

**Anions**

Chloride	<b>3.69</b>	AO ≤ 250	0.10	mg/L	N/A	Sep-16-15	
Nitrate as N	<b>0.064</b>	MAC = 10	0.010	mg/L	N/A	Sep-16-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-16-15	
Sulfate	<b>35.4</b>	AO ≤ 500	1.0	mg/L	N/A	Sep-16-15	

**General Parameters**

Conductivity (EC)	<b>407</b>	N/A	2	µS/cm	N/A	Sep-15-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Sep-17-15	
Nitrogen, Total Kjeldahl	< 0.05	N/A	0.05	mg/L	Sep-15-15	Sep-17-15	
pH	<b>8.29</b>	6.5-8.5	0.01	pH units	N/A	Sep-15-15	HT2
Phosphorus, Total as P	<b>0.005</b>	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Phosphorus, Total Dissolved	<b>0.004</b>	N/A	0.002	mg/L	Sep-17-15	Sep-18-15	
Turbidity	<b>0.2</b>	OG < 0.1	0.1	NTU	N/A	Sep-16-15	

**Calculated Parameters**

Nitrate+Nitrite as N	<b>0.064</b>	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	<b>0.064</b>	N/A	0.050	mg/L	N/A	N/A	

**Microbiological Parameters**

E. coli	<b>11</b>	MAC = None Detected	1	CFU/100 mL	Sep-14-15	Sep-15-15	
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**Sample / Analysis Qualifiers:**

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
PRES Sample has been preserved for NUTRIENTS in the laboratory and the holding time has been extended.