CERTIFICATE OF ANALYSIS

REPORTED TO	Mid Shuswap Lumby Water Stewards 1631 Mable Lake Rd Lumby, BC V0E 2G6	**TEL** **FAX**	(250) 547-2554 -
ATTENTION	Russ Collins	**WORK ORDER**	5041653
PO NUMBER		**RECEIVED / TEMP**	Apr-27-15 09:40 / 6°C
PROJECT	Analytical Testing	**REPORTED**	May-05-15
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

Please contact CARO if more information is needed or to provide feedback on our services.

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

ANALYSIS INFORMATION

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	5041653
PROJECT	Analytical Testing	**REPORTED**	May-05-15

Analysis Description	Method Reference	Technique	Location
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 / Membrane Filtration	Kelowna
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Total Ammonia-N in Water	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Total Kjeldahl Nitrogen in Water	EPA 351.2*	Sulfuric Acid Digestion, Automated Colorimetry	Kelowna
Total Phosphorus in Water (persulfate)	APHA 4500-P B.5 / APHA 4500-P H	Persulfate Digestion / Flow Injection Analysis	Kelowna
Total Phosphorus, dissolved (persulfate)	APHA 4500-P B.5 / APHA 4500-P H	Persulfate Digestion / Flow Injection Analysis	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
EPA	United States Environmental Protection Agency Test Methods

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
AO	Aesthetic objective
MAC	Maximum acceptable concentration (health based)
OG	Operational guideline (treated water)
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

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

REPORTED TO Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

WORK ORDER 5041653
REPORTED May-05-15

Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Harris Creek (Hwy 6) (5041653-01) [Water] Sampled: Apr-26-15 11:05							PRES
Anions							
Chloride	**0.85**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.016**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**13.1**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**128**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	**0.057**	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.29**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**7.31**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.038**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	**0.021**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**1.8**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.016**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.307**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	**52**	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	
Sample ID: Duteau Creek (Hwy 6) (5041653-02) [Water] Sampled: Apr-26-15 11:14							PRES
Anions							
Chloride	**2.36**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.102**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**11.4**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**123**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.43**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**7.32**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.041**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	**0.027**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**3.5**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.102**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.532**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	**43**	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	
Sample ID: Mid Bessette Creek (5041653-03) [Water] Sampled: Apr-26-15 10:15							PRES

REPORTED TO Mid Shuswap Lumby Water Stewards
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Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Mid Bessette Creek (5041653-03) [Water] Sampled: Apr-26-15 10:15, Continued							PRES
Anions							
Chloride	**2.73**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.177**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**20.0**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**202**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	**0.059**	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.32**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**7.63**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.040**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	**0.018**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**3.5**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.177**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.493**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	**45**	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	
Sample ID: Lower Bessette Creek (5041653-04) [Water] Sampled: Apr-26-15 09:45							PRES
Anions							
Chloride	**2.84**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.174**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**21.2**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**209**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	**0.077**	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.30**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**7.74**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.039**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	**0.015**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**5.4**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.174**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.469**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	**22**	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	
Sample ID: Shuswap River (Odd Fellows) (5041653-05) [Water] Sampled: Apr-26-15 09:15							PRES

REPORTED TO Mid Shuswap Lumby Water Stewards
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WORK ORDER 5041653
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Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Shuswap River (Odd Fellows) (5041653-05) [Water] Sampled: Apr-26-15 09:15, Continued							PRES
Anions							
Chloride	**0.78**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.042**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**9.7**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**134**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	**0.033**	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.08**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**7.53**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.009**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	**0.347**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**2.0**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.042**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.123**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	**7**	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	
Sample ID: Vance Creek (Mabel Lake Road) (5041653-06) [Water] Sampled: Apr-26-15 10:35							PRES
Anions							
Chloride	**1.55**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.248**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**28.0**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**337**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	**0.058**	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.12**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**8.05**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.005**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	**0.002**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**3.3**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.248**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.365**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	< 1	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	
Sample ID: Shuswap River (Wisey Dam) (5041653-07) [Water] Sampled: Apr-26-15 09:45							PRES

SAMPLE ANALYTICAL DATA

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WORK ORDER 5041653
REPORTED May-05-15

Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Shuswap River (Wisey Dam) (5041653-07) [Water] Sampled: Apr-26-15 09:45, Continued							PRES
Anions							
Chloride	**0.39**	AO ≤ 250	0.10	mg/L	N/A	Apr-27-15	
Nitrate as N	**0.048**	MAC = 10	0.010	mg/L	N/A	Apr-27-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Apr-27-15	
Sulfate	**6.3**	AO ≤ 500	1.0	mg/L	N/A	Apr-27-15	
General Parameters							
Conductivity (EC)	**112**	N/A	2	µS/cm	N/A	Apr-28-15	
Ammonia as N, Total	**0.048**	N/A	0.020	mg/L	N/A	Apr-28-15	
Nitrogen, Total Kjeldahl	**0.28**	N/A	0.05	mg/L	Apr-29-15	May-01-15	
pH	**7.63**	6.5-8.5	0.01	pH units	N/A	Apr-28-15	HT2
Phosphorus, Total as P	**0.008**	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Phosphorus, Total Dissolved	< 0.002	N/A	0.002	mg/L	Apr-29-15	May-04-15	
Turbidity	**0.9**	OG < 0.1	0.1	NTU	N/A	Apr-28-15	
Calculated Parameters							
Nitrate+Nitrite as N	**0.048**	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	**0.330**	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	**1**	MAC = None Detected	1	CFU/100 mL	Apr-27-15	Apr-28-15	

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 NH3 in the laboratory and the holding time has been extended.