

**REPORTED TO** Regional District of Thompson Nicola  
300 - 465 Victoria Street  
Kamloops, BC V2C 2A9

**TEL** 1-250-377-8673  
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**ATTENTION** Shawn Kratchmer

**WORK ORDER** 3071194

**PO NUMBER** 23929  
**PROJECT** Loon Lake CWS  
**PROJECT INFO**

**RECEIVED / TEMP** Jul-18-13 09:10 / 19.0 °C  
**REPORTED** Jul-25-13  
**COC NUMBER** 17208

**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.

Issued By:



**Jennifer Shanko, ASCT**  
Administration Coordinator, 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

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Analysis Description	Method Reference (* = modified from)		Location
	Preparation	Analysis	
Alkalinity, speciated	N/A	APHA 2320 B	Kelowna
Ammonia-N, total colorimetric	N/A	APHA 4500-NH3 G	Kelowna
Chloride in Water by IC	N/A	APHA 4110 B	Kelowna
Colour, True at 410 nm	N/A	APHA 2120 C *	Kelowna
Conductivity in Water	N/A	APHA 2510 B	Kelowna
Dissolved Metals	APHA 3030 B	APHA 3125 B	Richmond
Fluoride in Water by IC	N/A	APHA 4110 B	Kelowna
Hardness as CaCO3 (CALC)	N/A	APHA 2340 B	Richmond
Nitrate-N in Water by IC	N/A	APHA 4110 B	Kelowna
Nitrite-N in Water by IC	N/A	APHA 4110 B	Kelowna
Orthophosphate as P by IC	N/A	APHA 4110 B	Kelowna
Sulfate in Water by IC	N/A	APHA 4110 B	Kelowna
Total Dissolved Solids	N/A	APHA 2540 C	Kelowna
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	Richmond
Transmissivity at 254nm	N/A	APHA 5910 B	Kelowna
Trihalomethanes	EPA 5030B / 5021A	APHA 6200 B	Richmond

*Note: The numbers in brackets represent the year that the method was published/approved*

**Method Reference Descriptions:**

APHA Standard Methods for the Examination of Water and Wastewater, American Public Health Association  
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-related guideline)  
% Percent W/W  
Color Unit Colour referenced against a platinum cobalt standard  
mg/L Milligrams per litre  
uS/cm Microsiemens per centimeter

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Analyte	Result / Recovery	Canadian DW Guideline	MRL / Limit	Units	Prepared	Analyzed	Notes
<b>Anions</b>							
<b>Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00</b>							<b>FILT, PRES</b>
Alkalinity, Total as CaCO <sub>3</sub>	384		1	mg/L	N/A	Jul-18-13	
Alkalinity, Phenolphthalein as CaCO <sub>3</sub>	< 1		1	mg/L	N/A	Jul-18-13	
Alkalinity, Carbonate as CaCO <sub>3</sub>	< 1		1	mg/L	N/A	Jul-18-13	
Alkalinity, Bicarbonate as CaCO <sub>3</sub>	384		1	mg/L	N/A	Jul-18-13	
Alkalinity, Hydroxide as CaCO <sub>3</sub>	< 1		1	mg/L	N/A	Jul-18-13	
Chloride	20.0	AO ≤ 250	0.10	mg/L	N/A	Jul-20-13	
Fluoride	0.30	MAC = 1.5	0.10	mg/L	N/A	Jul-20-13	
Nitrogen, Nitrate as N	0.534	MAC = 10	0.010	mg/L	N/A	Jul-20-13	
Nitrogen, Nitrite as N	0.161	MAC = 1	0.010	mg/L	N/A	Jul-20-13	
Sulfate	9.3	AO ≤ 500	1.0	mg/L	N/A	Jul-20-13	

**General Parameters**

<b>Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00</b>							<b>FILT, PRES</b>
Colour, True	< 5	AO ≤ 15	5	Color Unit	N/A	Jul-19-13	
Conductivity (EC)	773		2	uS/cm	N/A	Jul-18-13	
Nitrogen, Ammonia as N, Total	0.023		0.020	mg/L	N/A	Jul-19-13	
Solids, Total Dissolved	430	AO ≤ 500	5	mg/L	N/A	Jul-22-13	
UV Transmittance @ 254nm	81.8		0.1	%	N/A	Jul-24-13	

**Calculated Parameters**

<b>Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00</b>							<b>FILT, PRES</b>
Total Trihalomethanes	0.081	0.1	0.004	mg/L	N/A	N/A	
Total Trihalomethanes (as CHCl <sub>3</sub> )	0.077		0.003	mg/L	N/A	N/A	
Hardness, Total (Total as CaCO <sub>3</sub> )	310		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO <sub>3</sub> )	320		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.695		0.020	mg/L	N/A	N/A	

**Dissolved Metals**

<b>Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00</b>							<b>FILT, PRES</b>
Aluminum, dissolved	< 0.05		0.05	mg/L	N/A	Jul-19-13	
Antimony, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	
Arsenic, dissolved	< 0.005		0.005	mg/L	N/A	Jul-19-13	
Barium, dissolved	< 0.05		0.05	mg/L	N/A	Jul-19-13	
Beryllium, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	
Bismuth, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	
Boron, dissolved	< 0.04		0.04	mg/L	N/A	Jul-19-13	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	N/A	Jul-19-13	
Calcium, dissolved	31		2	mg/L	N/A	Jul-19-13	
Chromium, dissolved	< 0.005		0.005	mg/L	N/A	Jul-19-13	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	N/A	Jul-19-13	
Copper, dissolved	< 0.002		0.002	mg/L	N/A	Jul-19-13	
Iron, dissolved	< 0.1		0.1	mg/L	N/A	Jul-19-13	

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<i>Dissolved Metals, Continued</i>							
Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00, Continued							FILT, PRES
Lead, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	
Lithium, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	
Magnesium, dissolved	59.1		0.1	mg/L	N/A	Jul-19-13	
Manganese, dissolved	0.105		0.002	mg/L	N/A	Jul-19-13	
Mercury, dissolved	0.0002		0.0002	mg/L	N/A	Jul-19-13	
Molybdenum, dissolved	0.006		0.001	mg/L	N/A	Jul-19-13	
Nickel, dissolved	0.002		0.002	mg/L	N/A	Jul-19-13	
Phosphorus, dissolved	0.3		0.2	mg/L	N/A	Jul-19-13	
Potassium, dissolved	10.6		0.2	mg/L	N/A	Jul-19-13	
Selenium, dissolved	< 0.005		0.005	mg/L	N/A	Jul-19-13	
Silicon, dissolved	18		5	mg/L	N/A	Jul-19-13	
Silver, dissolved	< 0.0005		0.0005	mg/L	N/A	Jul-19-13	
Sodium, dissolved	68.5		0.2	mg/L	N/A	Jul-19-13	
Strontium, dissolved	0.05		0.01	mg/L	N/A	Jul-19-13	
Sulfur, dissolved	< 10		10	mg/L	N/A	Jul-19-13	
Tellurium, dissolved	< 0.002		0.002	mg/L	N/A	Jul-19-13	
Thallium, dissolved	< 0.0002		0.0002	mg/L	N/A	Jul-19-13	
Thorium, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	
Tin, dissolved	< 0.002		0.002	mg/L	N/A	Jul-19-13	
Titanium, dissolved	< 0.05		0.05	mg/L	N/A	Jul-19-13	
Uranium, dissolved	0.0041		0.0002	mg/L	N/A	Jul-19-13	
Vanadium, dissolved	< 0.01		0.01	mg/L	N/A	Jul-19-13	
Zinc, dissolved	< 0.04		0.04	mg/L	N/A	Jul-19-13	
Zirconium, dissolved	< 0.001		0.001	mg/L	N/A	Jul-19-13	

**Total Recoverable Metals**

Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00							FILT, PRES
Aluminum, total	< 0.05	AO ≤ 0.1	0.05	mg/L	Jul-19-13	Jul-20-13	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Jul-19-13	Jul-20-13	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Jul-19-13	Jul-20-13	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Jul-19-13	Jul-20-13	
Beryllium, total	< 0.001		0.001	mg/L	Jul-19-13	Jul-20-13	
Bismuth, total	< 0.001		0.001	mg/L	Jul-19-13	Jul-20-13	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Jul-19-13	Jul-20-13	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	Jul-19-13	Jul-20-13	
Calcium, total	29		2	mg/L	Jul-19-13	Jul-20-13	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Jul-19-13	Jul-20-13	
Cobalt, total	< 0.0005		0.0005	mg/L	Jul-19-13	Jul-20-13	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	Jul-19-13	Jul-20-13	
Iron, total	< 0.1	AO ≤ 0.3	0.1	mg/L	Jul-19-13	Jul-20-13	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Jul-19-13	Jul-20-13	
Lithium, total	< 0.001		0.001	mg/L	Jul-19-13	Jul-20-13	
Magnesium, total	57.4		0.1	mg/L	Jul-19-13	Jul-20-13	
Manganese, total	0.200	AO ≤ 0.05	0.002	mg/L	Jul-19-13	Jul-20-13	

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<b>Total Recoverable Metals, Continued</b>							
<b>Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00, Continued</b>							FILT, PRES
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Jul-19-13	Jul-20-13	
Molybdenum, total	0.005		0.001	mg/L	Jul-19-13	Jul-20-13	
Nickel, total	0.002		0.002	mg/L	Jul-19-13	Jul-20-13	
Phosphorus, total	0.4		0.2	mg/L	Jul-19-13	Jul-20-13	
Potassium, total	10.2		0.2	mg/L	Jul-19-13	Jul-20-13	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Jul-19-13	Jul-20-13	
Silicon, total	17		5	mg/L	Jul-19-13	Jul-20-13	
Silver, total	< 0.0005		0.0005	mg/L	Jul-19-13	Jul-20-13	
Sodium, total	66.3	AO ≤ 200	0.2	mg/L	Jul-19-13	Jul-20-13	
Strontium, total	0.05		0.01	mg/L	Jul-19-13	Jul-20-13	
Sulfur, total	< 10		10	mg/L	Jul-19-13	Jul-20-13	
Tellurium, total	< 0.002		0.002	mg/L	Jul-19-13	Jul-20-13	
Thallium, total	< 0.0002		0.0002	mg/L	Jul-19-13	Jul-20-13	
Thorium, total	< 0.001		0.001	mg/L	Jul-19-13	Jul-20-13	
Tin, total	< 0.002		0.002	mg/L	Jul-19-13	Jul-20-13	
Titanium, total	< 0.05		0.05	mg/L	Jul-19-13	Jul-20-13	
Uranium, total	0.0042	MAC = 0.02	0.0002	mg/L	Jul-19-13	Jul-20-13	
Vanadium, total	< 0.01		0.01	mg/L	Jul-19-13	Jul-20-13	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Jul-19-13	Jul-20-13	
Zirconium, total	< 0.001		0.001	mg/L	Jul-19-13	Jul-20-13	

**Volatile Organic Compounds (VOC)**

<b>Sample ID: Loon Lake Pumphouse (3071194-01) [Water] Sampled: Jul-17-13 10:00</b>							FILT, PRES
Bromodichloromethane	0.013		0.001	mg/L	N/A	Jul-23-13	
Bromoform	< 0.001		0.001	mg/L	N/A	Jul-23-13	
Chloroform	0.067		0.001	mg/L	N/A	Jul-23-13	
Dibromochloromethane	0.001		0.001	mg/L	N/A	Jul-23-13	
Surrogate: Toluene-d8	90 %		80-120		N/A	Jul-23-13	
Surrogate: 4-Bromofluorobenzene	89 %		80-120		N/A	Jul-23-13	

**Sample / Analysis Qualifiers:**

FILT Sample has been filtered for Dissolved Metals in the laboratory.  
PRES Sample has been preserved for Dissolved Metals in the laboratory and the holding time has been extended.