

<b>REPORTED TO</b>	Regional District of Thompson Nicola 300 - 465 Victoria Street Kamloops, BC V2C 2A9	<b>TEL</b>	(250) 377-6284
		<b>FAX</b>	(250) 374-6489
<b>ATTENTION</b>	Shawn Kratchmer	<b>WORK ORDER</b>	6112058
<b>PO NUMBER</b>		<b>RECEIVED / TEMP</b>	2016-11-29 09:30 / 11°C
<b>PROJECT</b>	Loon Lake CWS	<b>REPORTED</b>	2016-12-06
<b>PROJECT INFO</b>		<b>COC NUMBER</b>	B49337

**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:  
Jennifer Shanko, AScT (jshanko@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)

**REPORTED TO PROJECT** Regional District of Thompson Nicola  
Loon Lake CWS

**WORK ORDER REPORTED** 6112058  
2016-12-06

Analysis Description	Method Reference	Technique	Location
Alkalinity in Water	APHA 2320 B*	Titration with H2SO4	Kelowna
Ammonia, Total in Water	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Colour, True in Water	APHA 2120 C	Spectrophotometry (456 nm)	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
Dissolved Metals by ICPMS in Water	APHA 3030 B / APHA 3125 B	0.45 µm Filtration / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Hardness (as CaCO3) in Water	APHA 2340 B	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Hardness (as CaCO3) in Water	APHA 2340 B*	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Estimated)	N/A
Mercury, dissolved by CVAFS in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Mercury, total by CVAFS in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Solids, Total Dissolved in Water	APHA 2540 C*	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals by ICPMS in Water	APHA 3030E* / APHA 3125 B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Transmissivity at 254 nm in Water	APHA 5910 B*	Ultraviolet Absorption	Kelowna
Trihalomethanes in Water	EPA 5030B / APHA 6200 B	Purge&Trap / Purge and Trap Capillary Column GC-MSD	Richmond

*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)  
% T Percent Transmittance  
CU Colour Units (referenced against a platinum cobalt standard)  
mg/L Milligrams per litre  
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** Regional District of Thompson Nicola  
Loon Lake CWS

**WORK ORDER REPORTED** 6112058  
2016-12-06

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
---------	-------------------	----------------------	--------------	-------	----------	----------	-------

**Sample ID: Loon Lake (6112058-01) [Water] Sampled: 2016-11-28 09:45**

<i>Anions</i>							
Chloride	27.2	AO ≤ 250	0.10	mg/L	N/A	2016-11-30	
Fluoride	0.15	MAC = 1.5	0.10	mg/L	N/A	2016-11-30	
Nitrate (as N)	0.574	MAC = 10	0.010	mg/L	N/A	2016-11-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	N/A	2016-11-30	
Sulfate	12.3	AO ≤ 500	1.0	mg/L	N/A	2016-11-30	
<i>General Parameters</i>							
Alkalinity, Total (as CaCO <sub>3</sub> )	413	N/A	2	mg/L	N/A	2016-12-01	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1	N/A	2	mg/L	N/A	2016-12-01	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	413	N/A	2	mg/L	N/A	2016-12-01	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1	N/A	2	mg/L	N/A	2016-12-01	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1	N/A	2	mg/L	N/A	2016-12-01	
Ammonia, Total (as N)	0.027	N/A	0.020	mg/L	N/A	2016-11-30	
Colour, True	< 5	AO ≤ 15	5	CU	N/A	2016-12-01	
Conductivity (EC)	818	N/A	2	µS/cm	N/A	2016-12-01	
Solids, Total Dissolved	486	AO ≤ 500	10	mg/L	N/A	2016-11-30	
UV Transmittance @ 254nm	84.8	N/A	0.1	% T	N/A	2016-12-01	
<i>Calculated Parameters</i>							
Total Trihalomethanes	0.079	MAC = 0.1	0.004	mg/L	N/A	N/A	
Hardness, Total (as CaCO <sub>3</sub> )	319	N/A	0.50	mg/L	N/A	N/A	
Nitrate+Nitrite (as N)	0.574	N/A	0.020	mg/L	N/A	N/A	
<i>Dissolved Metals</i>							
Aluminum, dissolved	< 0.005	N/A	0.005	mg/L	N/A	2016-12-05	
Antimony, dissolved	0.0001	N/A	0.0001	mg/L	N/A	2016-12-05	
Arsenic, dissolved	0.0016	N/A	0.0005	mg/L	N/A	2016-12-05	
Barium, dissolved	< 0.005	N/A	0.005	mg/L	N/A	2016-12-05	
Beryllium, dissolved	< 0.0001	N/A	0.0001	mg/L	N/A	2016-12-05	
Bismuth, dissolved	< 0.0001	N/A	0.0001	mg/L	N/A	2016-12-05	
Boron, dissolved	0.027	N/A	0.004	mg/L	N/A	2016-12-05	
Cadmium, dissolved	< 0.00001	N/A	0.00001	mg/L	N/A	2016-12-05	
Calcium, dissolved	33.3	N/A	0.2	mg/L	N/A	2016-12-05	
Chromium, dissolved	< 0.0005	N/A	0.0005	mg/L	N/A	2016-12-05	
Cobalt, dissolved	0.00007	N/A	0.00005	mg/L	N/A	2016-12-05	
Copper, dissolved	0.0027	N/A	0.0002	mg/L	N/A	2016-12-05	
Iron, dissolved	< 0.010	N/A	0.010	mg/L	N/A	2016-12-05	
Lead, dissolved	< 0.0001	N/A	0.0001	mg/L	N/A	2016-12-05	
Lithium, dissolved	0.0011	N/A	0.0001	mg/L	N/A	2016-12-05	
Magnesium, dissolved	57.1	N/A	0.01	mg/L	N/A	2016-12-05	
Manganese, dissolved	0.0030	N/A	0.0002	mg/L	N/A	2016-12-05	
Mercury, dissolved	< 0.00002	N/A	0.00002	mg/L	2016-12-05	2016-12-05	
Molybdenum, dissolved	0.0068	N/A	0.0001	mg/L	N/A	2016-12-05	
Nickel, dissolved	0.0013	N/A	0.0002	mg/L	N/A	2016-12-05	
Phosphorus, dissolved	0.19	N/A	0.02	mg/L	N/A	2016-12-05	
Potassium, dissolved	10.5	N/A	0.02	mg/L	N/A	2016-12-05	
Selenium, dissolved	< 0.0005	N/A	0.0005	mg/L	N/A	2016-12-05	

**SAMPLE ANALYTICAL DATA**

REPORTED TO PROJECT Regional District of Thompson Nicola  
Loon Lake CWS

WORK ORDER 6112058  
REPORTED 2016-12-06

Analyte	Result / Recovery	Standard / Guideline	MRL / Units Limits	Prepared	Analyzed	Notes
---------	-------------------	----------------------	--------------------	----------	----------	-------

Sample ID: Loon Lake (6112058-01) [Water] Sampled: 2016-11-28 09:45, Continued

*Dissolved Metals, Continued*

Silicon, dissolved	21.2	N/A	0.5 mg/L	N/A	2016-12-05	
Silver, dissolved	< 0.00005	N/A	0.00005 mg/L	N/A	2016-12-05	
Sodium, dissolved	67.3	N/A	0.02 mg/L	N/A	2016-12-05	
Strontium, dissolved	0.052	N/A	0.001 mg/L	N/A	2016-12-05	
Sulfur, dissolved	4	N/A	1 mg/L	N/A	2016-12-05	
Tellurium, dissolved	< 0.0002	N/A	0.0002 mg/L	N/A	2016-12-05	
Thallium, dissolved	< 0.00002	N/A	0.00002 mg/L	N/A	2016-12-05	
Thorium, dissolved	< 0.0001	N/A	0.0001 mg/L	N/A	2016-12-05	
Tin, dissolved	< 0.0002	N/A	0.0002 mg/L	N/A	2016-12-05	
Titanium, dissolved	< 0.005	N/A	0.005 mg/L	N/A	2016-12-05	
Uranium, dissolved	0.00463	N/A	0.00002 mg/L	N/A	2016-12-05	
Vanadium, dissolved	0.002	N/A	0.001 mg/L	N/A	2016-12-05	
Zinc, dissolved	0.011	N/A	0.004 mg/L	N/A	2016-12-05	
Zirconium, dissolved	< 0.0001	N/A	0.0001 mg/L	N/A	2016-12-05	

*Total Metals*

Aluminum, total	0.005	OG < 0.1	0.005 mg/L	2016-12-02	2016-12-05	
Antimony, total	< 0.0001	MAC = 0.006	0.0001 mg/L	2016-12-02	2016-12-05	
Arsenic, total	0.0018	MAC = 0.01	0.0005 mg/L	2016-12-02	2016-12-05	
Barium, total	< 0.005	MAC = 1	0.005 mg/L	2016-12-02	2016-12-05	
Beryllium, total	< 0.0001	N/A	0.0001 mg/L	2016-12-02	2016-12-05	
Bismuth, total	< 0.0001	N/A	0.0001 mg/L	2016-12-02	2016-12-05	
Boron, total	0.034	MAC = 5	0.004 mg/L	2016-12-02	2016-12-05	
Cadmium, total	< 0.00001	MAC = 0.005	0.00001 mg/L	2016-12-02	2016-12-05	
Calcium, total	35.8	N/A	0.2 mg/L	2016-12-02	2016-12-05	
Chromium, total	< 0.0005	MAC = 0.05	0.0005 mg/L	2016-12-02	2016-12-05	
Cobalt, total	0.00011	N/A	0.00005 mg/L	2016-12-02	2016-12-05	
Copper, total	0.0037	AO ≤ 1	0.0002 mg/L	2016-12-02	2016-12-05	
Iron, total	0.04	AO ≤ 0.3	0.01 mg/L	2016-12-02	2016-12-05	
Lead, total	< 0.0001	MAC = 0.01	0.0001 mg/L	2016-12-02	2016-12-05	
Lithium, total	0.0012	N/A	0.0001 mg/L	2016-12-02	2016-12-05	
Magnesium, total	65.0	N/A	0.01 mg/L	2016-12-02	2016-12-05	
Manganese, total	0.0823	AO ≤ 0.05	0.0002 mg/L	2016-12-02	2016-12-05	
Mercury, total	< 0.00002	MAC = 0.001	0.00002 mg/L	2016-12-01	2016-12-01	
Molybdenum, total	0.0070	N/A	0.0001 mg/L	2016-12-02	2016-12-05	
Nickel, total	0.0015	N/A	0.0002 mg/L	2016-12-02	2016-12-05	
Phosphorus, total	0.22	N/A	0.02 mg/L	2016-12-02	2016-12-05	
Potassium, total	11.6	N/A	0.02 mg/L	2016-12-02	2016-12-05	
Selenium, total	< 0.0005	MAC = 0.05	0.0005 mg/L	2016-12-02	2016-12-05	
Silicon, total	23.8	N/A	0.5 mg/L	2016-12-02	2016-12-05	
Silver, total	< 0.00005	N/A	0.00005 mg/L	2016-12-02	2016-12-05	
Sodium, total	75.8	AO ≤ 200	0.02 mg/L	2016-12-02	2016-12-05	
Strontium, total	0.058	N/A	0.001 mg/L	2016-12-02	2016-12-05	
Sulfur, total	5	N/A	1 mg/L	2016-12-02	2016-12-05	
Tellurium, total	< 0.0002	N/A	0.0002 mg/L	2016-12-02	2016-12-05	
Thallium, total	< 0.00002	N/A	0.00002 mg/L	2016-12-02	2016-12-05	

**SAMPLE ANALYTICAL DATA**

REPORTED TO PROJECT Regional District of Thompson Nicola  
Loon Lake CWS

WORK ORDER 6112058  
REPORTED 2016-12-06

Analyte	Result / Recovery	Standard / Guideline	MRL / Units Limits	Prepared	Analyzed	Notes
---------	-------------------	----------------------	--------------------	----------	----------	-------

Sample ID: Loon Lake (6112058-01) [Water] Sampled: 2016-11-28 09:45, Continued

**Total Metals, Continued**

Thorium, total	< 0.0001	N/A	0.0001 mg/L	2016-12-02	2016-12-05	
Tin, total	< 0.0002	N/A	0.0002 mg/L	2016-12-02	2016-12-05	
Titanium, total	< 0.005	N/A	0.005 mg/L	2016-12-02	2016-12-05	
Uranium, total	0.00499	MAC = 0.02	0.00002 mg/L	2016-12-02	2016-12-05	
Vanadium, total	0.003	N/A	0.001 mg/L	2016-12-02	2016-12-05	
Zinc, total	0.011	AO ≤ 5	0.004 mg/L	2016-12-02	2016-12-05	
Zirconium, total	0.0002	N/A	0.0001 mg/L	2016-12-02	2016-12-05	

**Volatile Organic Compounds (VOC)**

Bromodichloromethane	0.015	N/A	0.001 mg/L	N/A	2016-12-03	
Bromoform	< 0.001	N/A	0.001 mg/L	N/A	2016-12-03	
Chloroform	0.061	N/A	0.001 mg/L	N/A	2016-12-03	
Dibromochloromethane	0.003	N/A	0.001 mg/L	N/A	2016-12-03	
Surrogate: Toluene-d8	107		70-130 %	N/A	2016-12-03	
Surrogate: 4-Bromofluorobenzene	100		70-130 %	N/A	2016-12-03	