

REPORTED TO Regional District of Thompson Nicola
300 - 465 Victoria Street
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ATTENTION Denise Roberts

WORK ORDER 3051709

PO NUMBER 23929

RECEIVED / TEMP May-30-13 09:25 / 10.0 °C

PROJECT Del Oro CWS

REPORTED Jun-06-13

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.



Issued By:

Jennifer Shanko, ASCT
Administration Coordinator, Kelowna

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

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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
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
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Anions

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48 F1

Alkalinity, Total as CaCO ₃	43		1	mg/L	N/A	May-30-13	
Alkalinity, Phenolphthalein as CaCO ₃	< 1		1	mg/L	N/A	May-30-13	
Alkalinity, Carbonate as CaCO ₃	< 1		1	mg/L	N/A	May-30-13	
Alkalinity, Bicarbonate as CaCO ₃	4		1	mg/L	N/A	May-30-13	
Alkalinity, Hydroxide as CaCO ₃	< 1		1	mg/L	N/A	May-30-13	
Chloride	10.2	AO ≤ 250	0.10	mg/L	N/A	May-31-13	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	N/A	May-31-13	
Nitrogen, Nitrate as N	0.056	MAC = 10	0.010	mg/L	N/A	May-31-13	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	May-31-13	
Sulfate	4.9	AO ≤ 500	1.0	mg/L	N/A	May-31-13	

General Parameters

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48 F1

Colour, True	< 5	AO ≤ 15	5	Color Unit	N/A	May-31-13	
Conductivity (EC)	124		2	uS/cm	N/A	May-30-13	
Nitrogen, Ammonia as N, Total	< 0.020		0.020	mg/L	N/A	May-31-13	
Solids, Total Dissolved	87	AO ≤ 500	5	mg/L	N/A	Jun-03-13	
UV Transmittance @ 254nm	90.1		0.1	%	N/A	May-31-13	

Calculated Parameters

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48 F1

Total Trihalomethanes	0.034	0.1	0.004	mg/L	N/A	N/A	
Total Trihalomethanes (as CHCl ₃)	0.034		0.003	mg/L	N/A	N/A	
Hardness, Total (Total as CaCO ₃)	38.8		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	37.2		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.056		0.020	mg/L	N/A	N/A	

Dissolved Metals

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48 F1

Aluminum, dissolved	< 0.05		0.05	mg/L	N/A	Jun-03-13	
Antimony, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Arsenic, dissolved	< 0.005		0.005	mg/L	N/A	Jun-03-13	
Barium, dissolved	< 0.05		0.05	mg/L	N/A	Jun-03-13	
Beryllium, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Bismuth, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Boron, dissolved	< 0.04		0.04	mg/L	N/A	Jun-03-13	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	N/A	Jun-03-13	
Calcium, dissolved	11		2	mg/L	N/A	Jun-03-13	
Chromium, dissolved	< 0.005		0.005	mg/L	N/A	Jun-03-13	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	N/A	Jun-03-13	
Copper, dissolved	< 0.002		0.002	mg/L	N/A	Jun-03-13	
Iron, dissolved	< 0.1		0.1	mg/L	N/A	Jun-03-13	

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Dissolved Metals, Continued

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48, Continued

F1

Lead, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Lithium, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Magnesium, dissolved	2.1		0.1	mg/L	N/A	Jun-03-13	
Manganese, dissolved	0.002		0.002	mg/L	N/A	Jun-03-13	
Mercury, dissolved	< 0.0002		0.0002	mg/L	N/A	Jun-03-13	
Molybdenum, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Nickel, dissolved	< 0.002		0.002	mg/L	N/A	Jun-03-13	
Phosphorus, dissolved	< 0.2		0.2	mg/L	N/A	Jun-03-13	
Potassium, dissolved	0.9		0.2	mg/L	N/A	Jun-03-13	
Selenium, dissolved	< 0.005		0.005	mg/L	N/A	Jun-03-13	
Silicon, dissolved	< 5		5	mg/L	N/A	Jun-03-13	
Silver, dissolved	< 0.0005		0.0005	mg/L	N/A	Jun-03-13	
Sodium, dissolved	11.1		0.2	mg/L	N/A	Jun-03-13	
Strontium, dissolved	0.08		0.01	mg/L	N/A	Jun-03-13	
Sulfur, dissolved	10		10	mg/L	N/A	Jun-03-13	
Tellurium, dissolved	< 0.002		0.002	mg/L	N/A	Jun-03-13	
Thallium, dissolved	< 0.0002		0.0002	mg/L	N/A	Jun-03-13	
Thorium, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Tin, dissolved	< 0.002		0.002	mg/L	N/A	Jun-03-13	
Titanium, dissolved	< 0.05		0.05	mg/L	N/A	Jun-03-13	
Uranium, dissolved	0.0003		0.0002	mg/L	N/A	Jun-03-13	
Vanadium, dissolved	< 0.01		0.01	mg/L	N/A	Jun-03-13	
Zinc, dissolved	< 0.04		0.04	mg/L	N/A	Jun-03-13	
Zirconium, dissolved	< 0.001		0.001	mg/L	N/A	Jun-03-13	

Total Recoverable Metals

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48

F1

Aluminum, total	0.08	AO ≤ 0.1	0.05	mg/L	May-31-13	Jun-03-13	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	May-31-13	Jun-03-13	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	May-31-13	Jun-03-13	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	May-31-13	Jun-03-13	
Beryllium, total	< 0.001		0.001	mg/L	May-31-13	Jun-03-13	
Bismuth, total	< 0.001		0.001	mg/L	May-31-13	Jun-03-13	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	May-31-13	Jun-03-13	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	May-31-13	Jun-03-13	
Calcium, total	12		2	mg/L	May-31-13	Jun-03-13	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	May-31-13	Jun-03-13	
Cobalt, total	< 0.0005		0.0005	mg/L	May-31-13	Jun-03-13	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	May-31-13	Jun-03-13	
Iron, total	0.2	AO ≤ 0.3	0.1	mg/L	May-31-13	Jun-03-13	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	May-31-13	Jun-03-13	
Lithium, total	< 0.001		0.001	mg/L	May-31-13	Jun-03-13	
Magnesium, total	2.1		0.1	mg/L	May-31-13	Jun-03-13	
Manganese, total	0.003	AO ≤ 0.05	0.002	mg/L	May-31-13	Jun-03-13	

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Total Recoverable Metals, Continued

Sample ID: Del Oro CWS (3051709-01) [Water] Sampled: May-29-13 13:48, Continued

F1

Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	May-31-13	Jun-03-13	
Molybdenum, total	< 0.001		0.001	mg/L	May-31-13	Jun-03-13	
Nickel, total	< 0.002		0.002	mg/L	May-31-13	Jun-03-13	
Phosphorus, total	< 0.2		0.2	mg/L	May-31-13	Jun-03-13	
Potassium, total	0.8		0.2	mg/L	May-31-13	Jun-03-13	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	May-31-13	Jun-03-13	
Silicon, total	< 5		5	mg/L	May-31-13	Jun-03-13	
Silver, total	< 0.0005		0.0005	mg/L	May-31-13	Jun-03-13	
Sodium, total	10.1	AO ≤ 200	0.2	mg/L	May-31-13	Jun-03-13	
Strontium, total	0.07		0.01	mg/L	May-31-13	Jun-03-13	
Sulfur, total	< 10		10	mg/L	May-31-13	Jun-03-13	
Tellurium, total	< 0.002		0.002	mg/L	May-31-13	Jun-03-13	
Thallium, total	< 0.0002		0.0002	mg/L	May-31-13	Jun-03-13	
Thorium, total	< 0.001		0.001	mg/L	May-31-13	Jun-03-13	
Tin, total	< 0.002		0.002	mg/L	May-31-13	Jun-03-13	
Titanium, total	< 0.05		0.05	mg/L	May-31-13	Jun-03-13	
Uranium, total	0.0003	MAC = 0.02	0.0002	mg/L	May-31-13	Jun-03-13	
Vanadium, total	< 0.01		0.01	mg/L	May-31-13	Jun-03-13	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	May-31-13	Jun-03-13	
Zirconium, total	< 0.001		0.001	mg/L	May-31-13	Jun-03-13	

Volatile Organic Compounds (VOC)

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F1

Bromodichloromethane	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Bromoform	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Chloroform	0.034		0.001	mg/L	N/A	Jun-03-13	
Dibromochloromethane	< 0.001		0.001	mg/L	N/A	Jun-03-13	
Surrogate: Toluene-d8	91 %		80-120		N/A	Jun-03-13	
Surrogate: 4-Bromofluorobenzene	91 %		80-120		N/A	Jun-03-13	

Sample / Analysis Qualifiers:

F1 The sample was not field-filtered and was therefore filtered through a 0.45 um membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.