

REPORTED TO South East Kelowna Irrigation District
PO Box 28064, RPO East Kelowna
KELOWNA, BC V1W 4A6

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ATTENTION Dave Metcalfe

WORK ORDER 4090146

PO NUMBER

RECEIVED / TEMP Sep-03-14 09:22 / 12°C

PROJECT Drinking Water

REPORTED Sep-10-14

PROJECT INFO

COC NUMBER B 19676

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:

Kelsey Aalten, BASc For Jennifer Shanko, ASCT
Administration Coordinator

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

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Analysis Description	Method Reference	Technique	Location
Alkalinity, total	APHA 2320 B	Titration with H2SO4 to pH 4.5	Kelowna
Anions in Water by IC	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Colour, True	APHA 2120 C *	Spectrophotometry (410 nm)	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
Cyanide, Total in Liquids	APHA 4500-CN- C / APHA 4500-CN- E	Distillation / Colorimetry	Kelowna
E. coli (CCA)	APHA 9222 *	Membrane Filtration	Kelowna
E. coli (Partition)	APHA 9222 G	Membrane Filtration	Kelowna
Hardness (as CaCO3)	APHA 2340 B	Calculation	N/A
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Solids, Total Dissolved	APHA 1030 E	Calculation	N/A
Total Coliforms (by Endo)	APHA 9222 B	Membrane Filtration	Kelowna
Total Coliforms (CCA)	APHA 9222 *	Membrane Filtration	Kelowna
Total Recoverable Metals	APHA 3030E * / APHA 3125 B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Transmissivity at 254 nm	APHA 5910 B	Ultraviolet Absorption	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
AO	Aesthetic objective
MAC	Maximum acceptable concentration (health based)
OG	Operational guideline (treated water)
% T	Percent Transmittance
CFU/100mL	Colony Forming Units per 100 millilitres
CU	Colour Units (referenced against a platinum cobalt standard)
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 (2012)

Website: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2012-sum_guide-res_recom/index-eng.php

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

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Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Intake (4090146-01) [Water] Sampled: Sep-03-14 08:30 **Hydraulic Creek Water**

Anions

Alkalinity, Total as CaCO ₃	22	N/A	1	mg/L	N/A	Sep-03-14	
Chloride	0.36	AO ≤ 250	0.10	mg/L	N/A	Sep-04-14	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	N/A	Sep-04-14	
Nitrogen, Nitrate as N	0.032	MAC = 10	0.010	mg/L	N/A	Sep-04-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Sep-04-14	
Sulfate	1.5	AO ≤ 500	1.0	mg/L	N/A	Sep-04-14	

General Parameters

Colour, True	54	AO ≤ 15	5	CU	N/A	Sep-05-14	
Conductivity (EC)	49	N/A	2	µS/cm	N/A	Sep-03-14	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Sep-08-14	Sep-08-14	
pH	7.32	6.5-8.5	0.01	pH units	N/A	Sep-03-14	
Turbidity	3.1	OG < 0.1	0.1	NTU	N/A	Sep-04-14	
UV Transmittance @ 254nm	45.7	N/A	0.1	% T	N/A	Sep-04-14	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	19.2	N/A	5.0	mg/L	N/A	N/A	
Solids, Total Dissolved	24.6	AO ≤ 500	2.0	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	0.16	OG < 0.1	0.05	mg/L	Sep-04-14	Sep-04-14	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Sep-04-14	Sep-04-14	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Sep-04-14	Sep-04-14	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Sep-04-14	Sep-04-14	
Beryllium, total	< 0.001	N/A	0.001	mg/L	Sep-04-14	Sep-04-14	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Sep-04-14	Sep-04-14	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	Sep-04-14	Sep-04-14	
Calcium, total	5.0	N/A	2.0	mg/L	Sep-04-14	Sep-04-14	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Sep-04-14	Sep-04-14	
Cobalt, total	< 0.0005	N/A	0.0005	mg/L	Sep-04-14	Sep-04-14	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	Sep-04-14	Sep-04-14	
Iron, total	0.57	AO ≤ 0.3	0.10	mg/L	Sep-04-14	Sep-04-14	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Sep-04-14	Sep-04-14	
Magnesium, total	1.6	N/A	0.1	mg/L	Sep-04-14	Sep-04-14	
Manganese, total	0.063	AO ≤ 0.05	0.002	mg/L	Sep-04-14	Sep-04-14	
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Sep-04-14	Sep-04-14	
Molybdenum, total	< 0.001	N/A	0.001	mg/L	Sep-04-14	Sep-04-14	
Nickel, total	< 0.002	N/A	0.002	mg/L	Sep-04-14	Sep-04-14	
Phosphorus, total	< 0.2	N/A	0.2	mg/L	Sep-04-14	Sep-04-14	
Potassium, total	0.4	N/A	0.2	mg/L	Sep-04-14	Sep-04-14	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Sep-04-14	Sep-04-14	
Silicon, total	< 5	N/A	5	mg/L	Sep-04-14	Sep-04-14	
Silver, total	< 0.0005	N/A	0.0005	mg/L	Sep-04-14	Sep-04-14	
Sodium, total	2.1	AO ≤ 200	0.2	mg/L	Sep-04-14	Sep-04-14	
Uranium, total	0.0005	MAC = 0.02	0.0002	mg/L	Sep-04-14	Sep-04-14	
Vanadium, total	< 0.01	N/A	0.01	mg/L	Sep-04-14	Sep-04-14	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Sep-04-14	Sep-04-14	

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Sample ID: Intake (4090146-01) [Water] Sampled: Sep-03-14 08:30, Continued

Microbiological Parameters

Coliforms, Total	1400	MAC = None Detected		1 CFU/100mL	Sep-03-14	Sep-04-14	
E. coli	60	MAC = None Detected		1 CFU/100mL	Sep-03-14	Sep-04-14	

Sample ID: Johnson Road (4090146-02) [Water] Sampled: Sep-02-14 09:00

Well Water - Hall Road

Anions

Alkalinity, Total as CaCO ₃	173	N/A		1 mg/L	N/A	Sep-03-14	
Chloride	6.22	AO ≤ 250		0.10 mg/L	N/A	Sep-04-14	
Fluoride	0.11	MAC = 1.5		0.10 mg/L	N/A	Sep-04-14	
Nitrogen, Nitrate as N	4.17	MAC = 10		0.010 mg/L	N/A	Sep-04-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1		0.010 mg/L	N/A	Sep-04-14	
Sulfate	32.2	AO ≤ 500		1.0 mg/L	N/A	Sep-04-14	

General Parameters

Colour, True	< 5	AO ≤ 15		5 CU	N/A	Sep-05-14	
Conductivity (EC)	446	N/A		2 µS/cm	N/A	Sep-03-14	
Cyanide, total	< 0.010	MAC = 0.2		0.010 mg/L	Sep-08-14	Sep-08-14	
pH	7.81	6.5-8.5		0.01 pH units	N/A	Sep-03-14	
Turbidity	0.1	OG < 0.1		0.1 NTU	N/A	Sep-04-14	
UV Transmittance @ 254nm	98.5	N/A		0.1 % T	N/A	Sep-04-14	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	202	N/A		5.0 mg/L	N/A	N/A	
Solids, Total Dissolved	248	AO ≤ 500		2.0 mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	< 0.05	OG < 0.1		0.05 mg/L	Sep-04-14	Sep-04-14	
Antimony, total	< 0.001	MAC = 0.006		0.001 mg/L	Sep-04-14	Sep-04-14	
Arsenic, total	< 0.005	MAC = 0.01		0.005 mg/L	Sep-04-14	Sep-04-14	
Barium, total	< 0.05	MAC = 1		0.05 mg/L	Sep-04-14	Sep-04-14	
Beryllium, total	< 0.001	N/A		0.001 mg/L	Sep-04-14	Sep-04-14	
Boron, total	0.04	MAC = 5		0.04 mg/L	Sep-04-14	Sep-04-14	
Cadmium, total	< 0.0001	MAC = 0.005		0.0001 mg/L	Sep-04-14	Sep-04-14	
Calcium, total	55.3	N/A		2.0 mg/L	Sep-04-14	Sep-04-14	
Chromium, total	< 0.005	MAC = 0.05		0.005 mg/L	Sep-04-14	Sep-04-14	
Cobalt, total	< 0.0005	N/A		0.0005 mg/L	Sep-04-14	Sep-04-14	
Copper, total	< 0.002	AO ≤ 1		0.002 mg/L	Sep-04-14	Sep-04-14	
Iron, total	< 0.10	AO ≤ 0.3		0.10 mg/L	Sep-04-14	Sep-04-14	
Lead, total	< 0.001	MAC = 0.01		0.001 mg/L	Sep-04-14	Sep-04-14	
Magnesium, total	15.6	N/A		0.1 mg/L	Sep-04-14	Sep-04-14	
Manganese, total	< 0.002	AO ≤ 0.05		0.002 mg/L	Sep-04-14	Sep-04-14	
Mercury, total	< 0.0002	MAC = 0.001		0.0002 mg/L	Sep-04-14	Sep-04-14	
Molybdenum, total	0.004	N/A		0.001 mg/L	Sep-04-14	Sep-04-14	
Nickel, total	< 0.002	N/A		0.002 mg/L	Sep-04-14	Sep-04-14	
Phosphorus, total	< 0.2	N/A		0.2 mg/L	Sep-04-14	Sep-04-14	

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Sample ID: Johnson Road (4090146-02) [Water] Sampled: Sep-02-14 09:00, Continued

Total Recoverable Metals, Continued

Potassium, total	2.4	N/A	0.2 mg/L	Sep-04-14	Sep-04-14	
Selenium, total	< 0.005	MAC = 0.01	0.005 mg/L	Sep-04-14	Sep-04-14	
Silicon, total	9	N/A	5 mg/L	Sep-04-14	Sep-04-14	
Silver, total	< 0.0005	N/A	0.0005 mg/L	Sep-04-14	Sep-04-14	
Sodium, total	12.1	AO ≤ 200	0.2 mg/L	Sep-04-14	Sep-04-14	
Uranium, total	0.0041	MAC = 0.02	0.0002 mg/L	Sep-04-14	Sep-04-14	
Vanadium, total	< 0.01	N/A	0.01 mg/L	Sep-04-14	Sep-04-14	
Zinc, total	< 0.04	AO ≤ 5	0.04 mg/L	Sep-04-14	Sep-04-14	

Microbiological Parameters

Coliforms, Total	< 1	MAC = None Detected	1 CFU/100mL	Sep-03-14	Sep-04-14	
E. coli	< 1	MAC = None Detected	1 CFU/100mL	Sep-03-14	Sep-04-14	