

REPORTED TO Black Mountain Irrigation District
285 Gray Avenue
KELOWNA, BC V1X 1W8

TEL (250) 765-5169
FAX (250) 765-0277

ATTENTION BMID Reports

WORK ORDER 6060535

PO NUMBER

RECEIVED / TEMP 2016-06-07 11:15 / 13°C

PROJECT Comprehensive

REPORTED 2016-06-14

PROJECT INFO

COC NUMBER No Number

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

REPORTED TO PROJECT Black Mountain Irrigation District
Comprehensive

WORK ORDER REPORTED 6060535
2016-06-14

Analysis Description	Method Reference	Technique	Location
Alkalinity in Water	APHA 2320 B*	Titration with H2SO4	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Coliforms, Total (MF-CCA) in Water	APHA 9222*	Membrane Filtration / Incubation on Chromocult Agar	Kelowna
Colour, True in Water	APHA 2120 C	Spectrophotometry (456 nm)	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
Cyanide, SAD in Water	APHA 4500-CN- C / APHA 4500-CN- E	Distillation / Colorimetry	Kelowna
E. coli (MF-CCA) in Water	APHA 9222*	Membrane Filtration / Incubation on Chromocult Agar	Kelowna
Hardness (as CaCO3) in Water	APHA 2340 B*	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Estimated)	N/A
Mercury, total by CVAFS in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Solids, Total Dissolved in Water	APHA 1030 E	Calculation: 100 x (([Cations]-[Anions])/([Cations]+[Anions]))	N/A
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
Turbidity in Water	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
% T Percent Transmittance
CFU/100 mL 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

REPORTED TO PROJECT Black Mountain Irrigation District
Comprehensive

WORK ORDER REPORTED 6060535
2016-06-14

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

Sample ID: Booster #1 (6060535-01) [Water] Sampled: 2016-06-07 10:30

Anions

Chloride	9.37	0.10	mg/L	N/A	2016-06-09	
Fluoride	< 0.10	0.10	mg/L	N/A	2016-06-09	
Nitrate (as N)	< 0.010	0.010	mg/L	N/A	2016-06-09	
Nitrite (as N)	< 0.010	0.010	mg/L	N/A	2016-06-09	
Sulfate	1.6	1.0	mg/L	N/A	2016-06-09	

General Parameters

Alkalinity, Total (as CaCO3)	10	1	mg/L	N/A	2016-06-13	
Colour, True	< 5	5	CU	N/A	2016-06-09	
Conductivity (EC)	59	2	µS/cm	N/A	2016-06-09	
Cyanide, Total	< 0.010	0.010	mg/L	2016-06-14	2016-06-14	
pH	6.75	0.01	pH units	N/A	2016-06-13	HT2
Turbidity	0.48	0.10	NTU	N/A	2016-06-07	
UV Transmittance @ 254nm	94.0	0.1	% T	N/A	2016-06-09	

Calculated Parameters

Hardness, Total (as CaCO3)	18.0	5.0	mg/L	N/A	N/A	
Solids, Total Dissolved	27.2	2.0	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	0.20	0.05	mg/L	2016-06-10	2016-06-10	
Antimony, total	< 0.001	0.001	mg/L	2016-06-10	2016-06-10	
Arsenic, total	< 0.005	0.005	mg/L	2016-06-10	2016-06-10	
Barium, total	< 0.05	0.05	mg/L	2016-06-10	2016-06-10	
Beryllium, total	< 0.001	0.001	mg/L	2016-06-10	2016-06-10	
Boron, total	< 0.04	0.04	mg/L	2016-06-10	2016-06-10	
Cadmium, total	< 0.0001	0.0001	mg/L	2016-06-10	2016-06-10	
Calcium, total	5.2	2.0	mg/L	2016-06-10	2016-06-10	
Chromium, total	< 0.005	0.005	mg/L	2016-06-10	2016-06-10	
Cobalt, total	< 0.0005	0.0005	mg/L	2016-06-10	2016-06-10	
Copper, total	< 0.002	0.002	mg/L	2016-06-10	2016-06-10	
Iron, total	< 0.10	0.10	mg/L	2016-06-10	2016-06-10	
Lead, total	< 0.001	0.001	mg/L	2016-06-10	2016-06-10	
Magnesium, total	1.2	0.1	mg/L	2016-06-10	2016-06-10	
Manganese, total	0.004	0.002	mg/L	2016-06-10	2016-06-10	
Mercury, total	< 0.00002	0.00002	mg/L	2016-06-12	2016-06-13	
Molybdenum, total	< 0.001	0.001	mg/L	2016-06-10	2016-06-10	
Nickel, total	< 0.002	0.002	mg/L	2016-06-10	2016-06-10	
Phosphorus, total	< 0.2	0.2	mg/L	2016-06-10	2016-06-10	
Potassium, total	0.3	0.2	mg/L	2016-06-10	2016-06-10	
Selenium, total	< 0.005	0.005	mg/L	2016-06-10	2016-06-10	
Silicon, total	< 5	5	mg/L	2016-06-10	2016-06-10	
Silver, total	< 0.0005	0.0005	mg/L	2016-06-10	2016-06-10	
Sodium, total	3.7	0.2	mg/L	2016-06-10	2016-06-10	
Uranium, total	< 0.0002	0.0002	mg/L	2016-06-10	2016-06-10	
Vanadium, total	< 0.01	0.01	mg/L	2016-06-10	2016-06-10	
Zinc, total	< 0.04	0.04	mg/L	2016-06-10	2016-06-10	

REPORTED TO PROJECT Black Mountain Irrigation District
Comprehensive

WORK ORDER REPORTED 6060535
2016-06-14

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

Sample ID: Booster #1 (6060535-01) [Water] Sampled: 2016-06-07 10:30, Continued

Microbiological Parameters

Coliforms, Total	< 1	1 CFU/100 mL	N/A	2016-06-07	
E. coli	< 1	1 CFU/100 mL	N/A	2016-06-07	

Sample ID: Well #4 (6060535-02) [Water] Sampled: 2016-06-07 11:08

Anions

Chloride	12.6	0.10 mg/L	N/A	2016-06-09	
Fluoride	0.12	0.10 mg/L	N/A	2016-06-09	
Nitrate (as N)	3.58	0.010 mg/L	N/A	2016-06-09	
Nitrite (as N)	< 0.010	0.010 mg/L	N/A	2016-06-09	
Sulfate	24.8	1.0 mg/L	N/A	2016-06-09	

General Parameters

Alkalinity, Total (as CaCO3)	226	1 mg/L	N/A	2016-06-13	
Colour, True	< 5	5 CU	N/A	2016-06-09	
Conductivity (EC)	512	2 µS/cm	N/A	2016-06-09	
Cyanide, Total	< 0.010	0.010 mg/L	2016-06-14	2016-06-14	
pH	7.73	0.01 pH units	N/A	2016-06-13	HT2
Turbidity	< 0.10	0.10 NTU	N/A	2016-06-07	
UV Transmittance @ 254nm	96.7	0.1 % T	N/A	2016-06-09	

Calculated Parameters

Hardness, Total (as CaCO3)	267	5.0 mg/L	N/A	N/A	
Solids, Total Dissolved	301	2.0 mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	< 0.05	0.05 mg/L	2016-06-10	2016-06-10	
Antimony, total	< 0.001	0.001 mg/L	2016-06-10	2016-06-10	
Arsenic, total	< 0.005	0.005 mg/L	2016-06-10	2016-06-10	
Barium, total	< 0.05	0.05 mg/L	2016-06-10	2016-06-10	
Beryllium, total	< 0.001	0.001 mg/L	2016-06-10	2016-06-10	
Boron, total	< 0.04	0.04 mg/L	2016-06-10	2016-06-10	
Cadmium, total	< 0.0001	0.0001 mg/L	2016-06-10	2016-06-10	
Calcium, total	79.7	2.0 mg/L	2016-06-10	2016-06-10	
Chromium, total	< 0.005	0.005 mg/L	2016-06-10	2016-06-10	
Cobalt, total	< 0.0005	0.0005 mg/L	2016-06-10	2016-06-10	
Copper, total	< 0.002	0.002 mg/L	2016-06-10	2016-06-10	
Iron, total	< 0.10	0.10 mg/L	2016-06-10	2016-06-10	
Lead, total	< 0.001	0.001 mg/L	2016-06-10	2016-06-10	
Magnesium, total	16.4	0.1 mg/L	2016-06-10	2016-06-10	
Manganese, total	< 0.002	0.002 mg/L	2016-06-10	2016-06-10	
Mercury, total	< 0.00002	0.00002 mg/L	2016-06-12	2016-06-13	
Molybdenum, total	< 0.001	0.001 mg/L	2016-06-10	2016-06-10	
Nickel, total	< 0.002	0.002 mg/L	2016-06-10	2016-06-10	
Phosphorus, total	< 0.2	0.2 mg/L	2016-06-10	2016-06-10	
Potassium, total	2.0	0.2 mg/L	2016-06-10	2016-06-10	
Selenium, total	< 0.005	0.005 mg/L	2016-06-10	2016-06-10	

REPORTED TO PROJECT Black Mountain Irrigation District
Comprehensive

WORK ORDER REPORTED 6060535
2016-06-14

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

Sample ID: Well #4 (6060535-02) [Water] Sampled: 2016-06-07 11:08, Continued

Total Recoverable Metals, Continued

Silicon, total	12	5 mg/L	2016-06-10	2016-06-10	
Silver, total	< 0.0005	0.0005 mg/L	2016-06-10	2016-06-10	
Sodium, total	11.4	0.2 mg/L	2016-06-10	2016-06-10	
Uranium, total	0.0011	0.0002 mg/L	2016-06-10	2016-06-10	
Vanadium, total	< 0.01	0.01 mg/L	2016-06-10	2016-06-10	
Zinc, total	< 0.04	0.04 mg/L	2016-06-10	2016-06-10	

Microbiological Parameters

Coliforms, Total	< 1	1 CFU/100 mL	N/A	2016-06-07	
E. coli	< 1	1 CFU/100 mL	N/A	2016-06-07	

Sample / Analysis Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.