

CERTIFICATE OF ANALYSIS

REPORTED TO Keremeos Irrigation District
Box 220
Keremeos, BC V0X 1N0

ATTENTION Jo Cottrill

PO NUMBER

PROJECT General Potability

PROJECT INFO

WORK ORDER 22E4064

RECEIVED / TEMP 2022-05-31 12:15 / 8.5°C

REPORTED 2022-06-07 15:00

COC NUMBER No Number

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

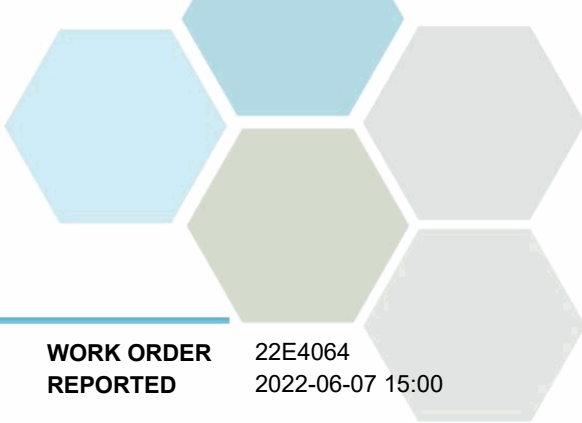
If you have any questions or concerns, please contact me at TeamCaro@caro.ca

Authorized By:

Team CARO
Client Service Representative

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TEST RESULTS

REPORTED TO PROJECT Keremeos Irrigation District
General Potability

WORK ORDER REPORTED 22E4064
2022-06-07 15:00

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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Red Bridge Station 10 HP (22E4064-01) | Matrix: Water | Sampled: 2022-05-30 10:40

Anions

Chloride	3.25	AO ≤ 250	0.10 mg/L	2022-06-01	
Fluoride	< 0.10	MAC = 1.5	0.10 mg/L	2022-06-01	
Nitrate (as N)	0.106	MAC = 10	0.010 mg/L	2022-06-01	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-06-01	
Sulfate	15.0	AO ≤ 500	1.0 mg/L	2022-06-01	

Calculated Parameters

Hardness, Total (as CaCO3)	85.8	None Required	0.500 mg/L	N/A	
Langelier Index	-0.1	N/A	-5.0	2022-06-07	
Solids, Total Dissolved	105	AO ≤ 500	1.00 mg/L	N/A	

General Parameters

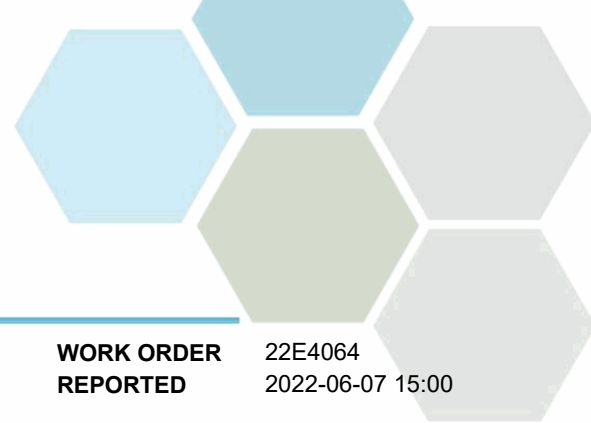
Alkalinity, Total (as CaCO3)	82.1	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Bicarbonate (as CaCO3)	82.1	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Colour, True	5.5	AO ≤ 15	5.0 CU	2022-06-02	
Conductivity (EC)	201	N/A	2.0 µS/cm	2022-06-06	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2022-06-04	
pH	7.94	7.0-10.5	0.10 pH units	2022-06-06	HT2
Temperature, at pH	23.7	N/A	°C	2022-06-06	HT2
Turbidity	0.26	OG < 1	0.10 NTU	2022-05-31	

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2022-05-31	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2022-05-31	

Total Metals

Aluminum, total	< 0.0050	OG < 0.1	0.0050 mg/L	2022-06-03	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2022-06-03	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2022-06-03	
Barium, total	0.0243	MAC = 2	0.0050 mg/L	2022-06-03	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2022-06-03	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2022-06-03	
Calcium, total	27.4	None Required	0.20 mg/L	2022-06-03	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2022-06-03	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2022-06-03	
Copper, total	0.00082	MAC = 2	0.00040 mg/L	2022-06-03	
Iron, total	0.049	AO ≤ 0.3	0.010 mg/L	2022-06-03	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2022-06-03	
Magnesium, total	4.19	None Required	0.010 mg/L	2022-06-03	
Manganese, total	0.00050	MAC = 0.12	0.00020 mg/L	2022-06-03	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2022-06-03	



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2022-06-07 15:00

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Red Bridge Station 10 HP (22E4064-01) Matrix: Water Sampled: 2022-05-30 10:40, Continued					
<i>Total Metals, Continued</i>					
Molybdenum, total	0.00121	N/A	0.00010 mg/L	2022-06-03	
Nickel, total	< 0.00040	N/A	0.00040 mg/L	2022-06-03	
Potassium, total	0.85	N/A	0.10 mg/L	2022-06-03	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2022-06-03	
Sodium, total	3.91	AO ≤ 200	0.10 mg/L	2022-06-03	
Strontium, total	0.134	MAC = 7	0.0010 mg/L	2022-06-03	
Uranium, total	0.000437	MAC = 0.02	0.000020 mg/L	2022-06-03	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2022-06-03	

West Pump Station #4 (22E4064-02) | Matrix: Water | Sampled: 2022-05-30 12:30

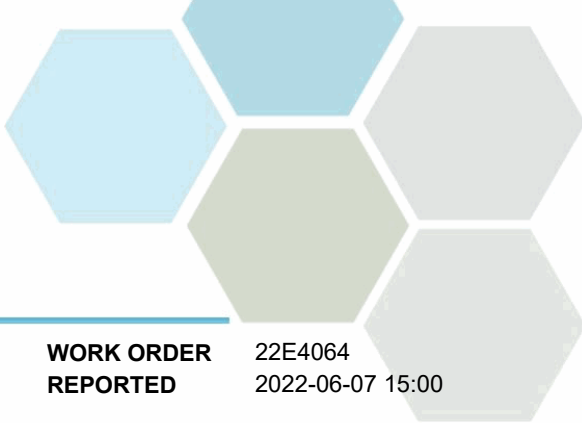
<i>Anions</i>					
Chloride	3.46	AO ≤ 250	0.10 mg/L	2022-06-01	
Fluoride	< 0.10	MAC = 1.5	0.10 mg/L	2022-06-01	
Nitrate (as N)	0.466	MAC = 10	0.010 mg/L	2022-06-01	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-06-01	
Sulfate	20.1	AO ≤ 500	1.0 mg/L	2022-06-01	

<i>Calculated Parameters</i>					
Hardness, Total (as CaCO3)	102	None Required	0.500 mg/L	N/A	
Langelier Index	0.06	N/A	-5.0	2022-06-07	
Solids, Total Dissolved	126	AO ≤ 500	1.00 mg/L	N/A	

<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	93.5	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Bicarbonate (as CaCO3)	93.5	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2022-06-02	
Conductivity (EC)	233	N/A	2.0 µS/cm	2022-06-06	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2022-06-04	
pH	7.99	7.0-10.5	0.10 pH units	2022-06-06	HT2
Temperature, at pH	23.6	N/A	°C	2022-06-06	HT2
Turbidity	0.14	OG < 1	0.10 NTU	2022-05-31	

<i>Microbiological Parameters</i>					
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2022-05-31	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2022-05-31	

<i>Total Metals</i>					
Aluminum, total	< 0.0050	OG < 0.1	0.0050 mg/L	2022-06-03	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2022-06-03	
Arsenic, total	0.00073	MAC = 0.01	0.00050 mg/L	2022-06-03	



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West Pump Station #4 (22E4064-02) | Matrix: Water | Sampled: 2022-05-30 12:30, Continued

Total Metals, Continued

Barium, total	0.0265	MAC = 2	0.0050 mg/L	2022-06-03	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2022-06-03	
Cadmium, total	0.000012	MAC = 0.005	0.000010 mg/L	2022-06-03	
Calcium, total	32.5	None Required	0.20 mg/L	2022-06-03	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2022-06-03	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2022-06-03	
Copper, total	0.00323	MAC = 2	0.00040 mg/L	2022-06-03	
Iron, total	< 0.010	AO ≤ 0.3	0.010 mg/L	2022-06-03	
Lead, total	0.00022	MAC = 0.005	0.00020 mg/L	2022-06-03	
Magnesium, total	5.11	None Required	0.010 mg/L	2022-06-03	
Manganese, total	< 0.00020	MAC = 0.12	0.00020 mg/L	2022-06-03	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2022-06-03	
Molybdenum, total	0.00136	N/A	0.00010 mg/L	2022-06-03	
Nickel, total	< 0.00040	N/A	0.00040 mg/L	2022-06-03	
Potassium, total	1.06	N/A	0.10 mg/L	2022-06-03	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2022-06-03	
Sodium, total	4.34	AO ≤ 200	0.10 mg/L	2022-06-03	
Strontium, total	0.162	MAC = 7	0.0010 mg/L	2022-06-03	
Uranium, total	0.000541	MAC = 0.02	0.000020 mg/L	2022-06-03	
Zinc, total	0.0061	AO ≤ 5	0.0040 mg/L	2022-06-03	

East Pump Station #3 (22E4064-03) | Matrix: Water | Sampled: 2022-05-30 12:00

Anions

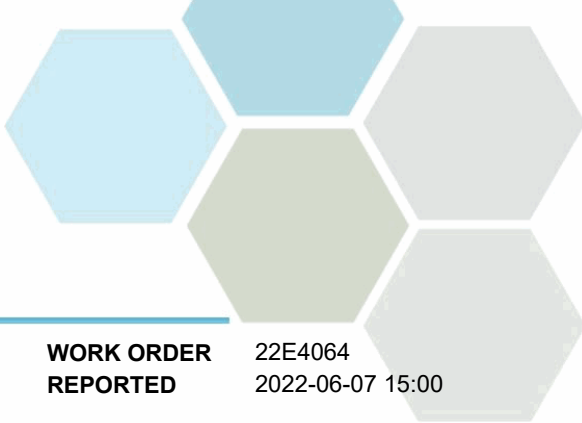
Chloride	14.0	AO ≤ 250	0.10 mg/L	2022-06-01	
Fluoride	< 0.10	MAC = 1.5	0.10 mg/L	2022-06-01	
Nitrate (as N)	1.83	MAC = 10	0.010 mg/L	2022-06-01	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-06-01	
Sulfate	108	AO ≤ 500	1.0 mg/L	2022-06-01	

Calculated Parameters

Hardness, Total (as CaCO3)	267	None Required	0.500 mg/L	N/A	
Langelier Index	1.0	N/A	-5.0	2022-06-07	
Solids, Total Dissolved	364	AO ≤ 500	10.0 mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	198	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Bicarbonate (as CaCO3)	198	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-06-06	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2022-06-02	
Conductivity (EC)	596	N/A	2.0 µS/cm	2022-06-06	



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2022-06-07 15:00

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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East Pump Station #3 (22E4064-03) | Matrix: Water | Sampled: 2022-05-30 12:00, Continued

General Parameters, Continued

Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2022-06-04	
pH	8.23	7.0-10.5	0.10	pH units	2022-06-06	HT2
Temperature, at pH	23.6	N/A		°C	2022-06-06	HT2
Turbidity	0.11	OG < 1	0.10	NTU	2022-05-31	

Microbiological Parameters

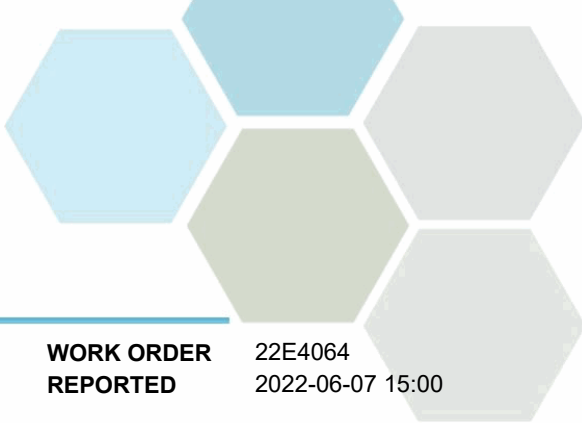
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2022-05-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2022-05-31	

Total Metals

Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2022-06-03	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-06-03	
Arsenic, total	0.00104	MAC = 0.01	0.00050	mg/L	2022-06-03	
Barium, total	0.0359	MAC = 2	0.0050	mg/L	2022-06-03	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-06-03	
Cadmium, total	0.000012	MAC = 0.005	0.000010	mg/L	2022-06-03	
Calcium, total	84.0	None Required	0.20	mg/L	2022-06-03	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-06-03	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-06-03	
Copper, total	0.00083	MAC = 2	0.00040	mg/L	2022-06-03	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-06-03	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-06-03	
Magnesium, total	13.8	None Required	0.010	mg/L	2022-06-03	
Manganese, total	< 0.00020	MAC = 0.12	0.00020	mg/L	2022-06-03	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2022-06-03	
Molybdenum, total	0.00243	N/A	0.00010	mg/L	2022-06-03	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-06-03	
Potassium, total	2.42	N/A	0.10	mg/L	2022-06-03	
Selenium, total	0.00141	MAC = 0.05	0.00050	mg/L	2022-06-03	
Sodium, total	12.6	AO ≤ 200	0.10	mg/L	2022-06-03	
Strontium, total	0.494	MAC = 7	0.0010	mg/L	2022-06-03	
Uranium, total	0.00287	MAC = 0.02	0.000020	mg/L	2022-06-03	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-06-03	

Sample Qualifiers:

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



APPENDIX 1: SUPPORTING INFORMATION

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General Potability

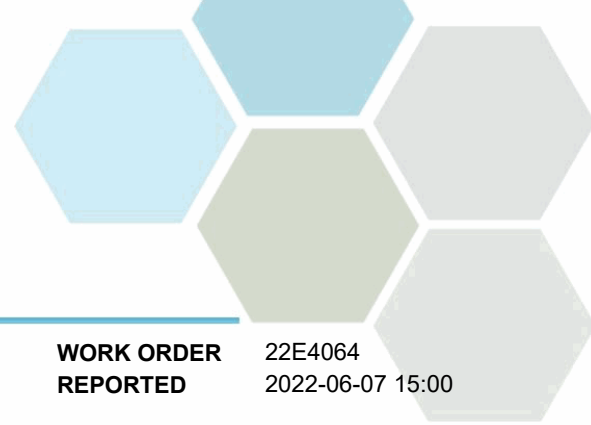
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2017)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Colour, True in Water	SM 2120 C (2017)	Spectrophotometry (456 nm)	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	✓	Kelowna
E. coli in Water	SM 9222* (2017)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Langelier Index in Water	SM 2330 B (2017)	Calculation		N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2017)	SM 1030 E (2011)		N/A
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2017)	Nephelometry	✓	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
°C	Degrees Celcius
AO	Aesthetic Objective
CFU/100 mL	Colony Forming Units per 100 millilitres
CU	Colour Units (referenced against a platinum cobalt standard)
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
OG	Operational Guideline (treated water)
pH units	pH < 7 = acidic, pH > 7 = basic
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association



APPENDIX 1: SUPPORTING INFORMATION

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General Comments:

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Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: TeamCaro@caro.ca

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