

CERTIFICATE OF ANALYSIS

REPORTED TO	Alto Utilities Ltd. 10397 Lodge Rd LAKE COUNTRY, BC V4V 1V6	WORK ORDER	2312770
ATTENTION	Keith Hanson	RECEIVED / TEMP REPORTED	2023-09-22 11:23 / 13.9°C 2023-10-02 12:23
PO NUMBER		COC NUMBER	B134451
PROJECT	Water Bacteriology		
PROJECT INFO	No Project		

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.

In this Draft Report, please see the Analyses In Progress section after the appendices.

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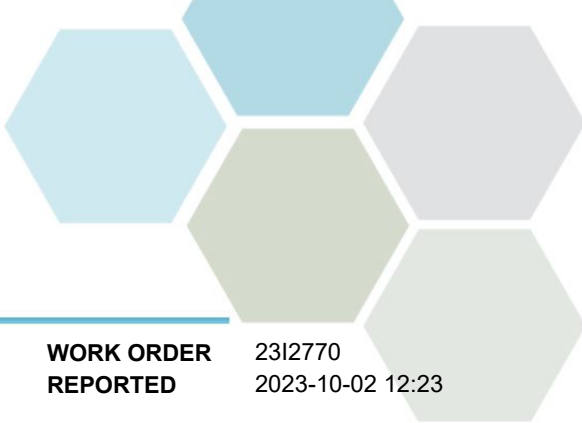
If you have any questions or concerns, please contact me at TeamCaro@caro.ca

Authorized By:

DRAFT REPORT
DATA SUBJECT TO CHANGE

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TEST RESULTS

REPORTED TO PROJECT Alto Utilities Ltd.
Water Bacteriology

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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Lodge Test Station North Well (2312770-01) Matrix: Water Sampled: 2023-09-22 10:40					
Anions					
Chloride	46.7	AO ≤ 250	0.10 mg/L	2023-09-23	
Fluoride	0.25	MAC = 1.5	0.10 mg/L	2023-09-23	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2023-09-23	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2023-09-23	
Sulfate	50.6	AO ≤ 500	1.0 mg/L	2023-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	315	None Required	0.500 mg/L	N/A	
Langelier Index	0.8	N/A	-5.0	2023-09-28	CT6
Solids, Total Dissolved	409	AO ≤ 500	1.00 mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	269	N/A	1.0 mg/L	2023-09-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2023-09-24	
Alkalinity, Bicarbonate (as CaCO3)	269	N/A	1.0 mg/L	2023-09-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2023-09-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2023-09-24	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2023-09-23	
Conductivity (EC)	683	N/A	2.0 µS/cm	2023-09-24	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2023-09-25	
pH	8.06	7.0-10.5	0.10 pH units	2023-09-24	HT2
Temperature, at pH	23.0	N/A	°C	2023-09-24	HT2
Turbidity	0.64	OG < 1	0.10 NTU	2023-09-24	
Microbiological Parameters					
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2023-09-22	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2023-09-22	
Total Metals					
Aluminum, total	< 0.0050	OG < 0.1	0.0050 mg/L	2023-09-26	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2023-09-26	
Arsenic, total	0.00099	MAC = 0.01	0.00050 mg/L	2023-09-26	
Barium, total	0.0510	MAC = 2	0.0050 mg/L	2023-09-26	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2023-09-26	
Cadmium, total	0.000055	MAC = 0.007	0.000010 mg/L	2023-09-26	
Calcium, total	83.4	None Required	0.20 mg/L	2023-09-26	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2023-09-26	
Cobalt, total	0.00024	N/A	0.00010 mg/L	2023-09-26	
Copper, total	0.00074	MAC = 2	0.00040 mg/L	2023-09-26	
Iron, total	0.146	AO ≤ 0.3	0.010 mg/L	2023-09-26	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2023-09-26	
Magnesium, total	25.8	None Required	0.010 mg/L	2023-09-26	
Manganese, total	0.140	MAC = 0.12	0.00020 mg/L	2023-09-26	
Mercury, total	< 0.000040	MAC = 0.001	0.000040 mg/L	2023-09-26	HG1

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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Lodge Test Station North Well (2312770-01) Matrix: Water Sampled: 2023-09-22 10:40, Continued					
<i>Total Metals, Continued</i>					
Molybdenum, total	0.00502	N/A	0.00010 mg/L	2023-09-26	
Nickel, total	0.00340	N/A	0.00040 mg/L	2023-09-26	
Potassium, total	4.84	N/A	0.10 mg/L	2023-09-26	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2023-10-01	
Sodium, total	33.8	AO ≤ 200	0.10 mg/L	2023-09-26	
Strontium, total	0.582	MAC = 7	0.0010 mg/L	2023-09-26	
Uranium, total	0.00467	MAC = 0.02	0.000020 mg/L	2023-09-26	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2023-09-26	

Sample Qualifiers:

- CT6 Results were based on lab temperature & lab pH.
- HG1 Sample bottle and preservation submitted is not suitable for Mercury analysis and analyte stability may be affected.
- 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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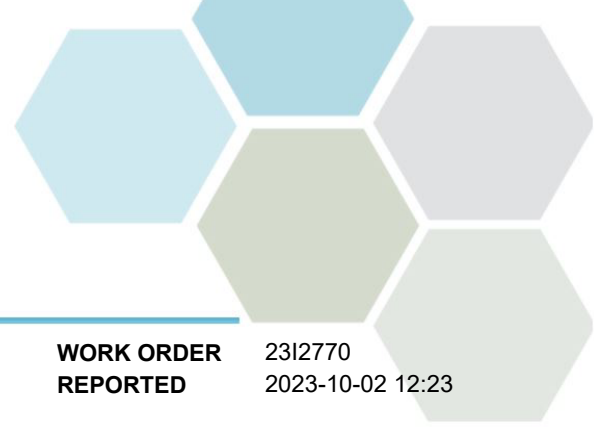
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2021)	Titration with H ₂ SO ₄	✓	Kelowna
Anions in Water	SM 4110 B (2020)	Ion Chromatography	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Colour, True in Water	SM 2120 C (2021)	Spectrophotometry (456 nm)	✓	Kelowna
Conductivity in Water	SM 2510 B (2021)	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* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Hardness in Water	SM 2340 B* (2021)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Langelier Index in Water	SM 2330 B (2021)	Calculation		N/A
pH in Water	SM 4500-H+ B (2021)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2021)	SM 1030 E		N/A
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	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



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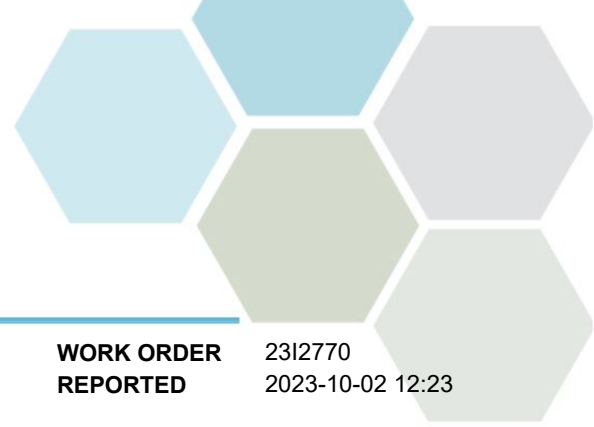
General Comments:

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APPENDIX 3: REVISION HISTORY

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ANALYSES IN PROGRESS

Sample Number	Sample Name	Pending Analyses
2312770-01	Lodge Test Station North Well	BART

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