

## CERTIFICATE OF ANALYSIS



<b>CLIENT</b>	<b>Alto Utilities Ltd.</b> 10979 Maddock Avenue LAKE COUNTRY BC V4V 2J5	TEL 1-250-864-7426 FAX 1-866-643-7116
<b>ATTENTION</b>	<b>Larry Fallis</b>	
<b>RECEIVED / TEMP REPORTED</b>	Feb-28-11 11:35 / 9.0 °C Mar-07-11	<b>WORK ORDER PROJECT</b> K1B0853 Comprehensive
<b>COC #(s)</b>	35358	

### General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done 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 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.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units:
  - mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
  - mg/L = milligrams per litre, equivalent to parts per million (ppm)
  - ug/L = micrograms per litre, equivalent to parts per billion (ppb)
  - ug/g = micrograms per gram, equivalent to parts per million (ppm)
  - ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed.

### CARO Analytical Services

Final Review Per:

**Sarah Speier, B.Sc. For Jennifer Shanko, ASCT**  
Administration Coordinator

**SAMPLE DATA**



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**PROJECT** Comprehensive

**WORK ORDER #** K1B0853  
**REPORTED** Mar-07-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Analyzed Method (mod. from)	Lab	Notes
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**General Parameters**

**Lodge Road Pumphouse (K1B0853-01) Matrix: Water Sampled: Feb-28-11 11:15**

Alkalinity, Total as CaCO3	<b>314</b>		1.0	mg/L	Mar-01-11 APHA 2320 B	KEL	
Chloride	<b>48.4</b>	AO ≤ 250	0.10	mg/L	Mar-02-11 APHA 4110 B	KEL	
Colour, True	< 5	AO ≤ 15	5	Color Unit	Mar-02-11 APHA 2120 B	KEL	
Conductivity (EC)	<b>829</b>		2	uS/cm	Mar-01-11 APHA 2510 B	KEL	
Cyanide (total)	< 0.01	MAC = 0.2	0.01	mg/L	Mar-01-11 APHA 4500-CN	KEL	
Fluoride	<b>0.28</b>	MAC = 1.5	0.10	mg/L	Mar-02-11 APHA 4110 B	KEL	
Hardness, Total (Total as CaCO3)	<b>333</b>		12.9	mg/L	Mar-02-11 APHA 2340 B	RMD	
Nitrogen, Nitrate as N	<b>1.77</b>	MAC = 10	0.01	mg/L	Mar-02-11 APHA 4110 B	KEL	
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Mar-02-11 APHA 4110 B	KEL	
pH	<b>7.81</b>	AO = 6.5 - 8.5	0.01	pH Units	Mar-01-11 APHA 4500-H+ B	KEL	
Solids, Total Dissolved	<b>462</b>	AO ≤ 500	5	mg/L	Mar-03-11 APHA 2540 C	KEL	
Sulfate	<b>70.4</b>	AO ≤ 500	1.0	mg/L	Mar-02-11 APHA 4110 B	KEL	
Turbidity	<b>0.9</b>	Varies, See Guidelines	0.1	NTU	Mar-02-11 APHA 2130 B	KEL	
UV Transmittance @ 254nm	<b>97.8</b>		0.1	%	Mar-02-11 APHA 5910B	KEL	

**Total Recoverable Metals by ICPMS**

**Lodge Road Pumphouse (K1B0853-01) Matrix: Water Sampled: Feb-28-11 11:15**

Aluminum	< 0.050	AO ≤ 0.1	0.050	mg/L	Mar-02-11 EPA 6020A	RMD	
Antimony	< 0.0010	MAC = 0.006	0.0010	mg/L	Mar-02-11 EPA 6020A	RMD	
Arsenic	< 0.0050	MAC = 0.01	0.0050	mg/L	Mar-02-11 EPA 6020A	RMD	
Barium	<b>0.0663</b>	MAC = 1	0.0500	mg/L	Mar-02-11 EPA 6020A	RMD	
Beryllium	< 0.0010		0.0010	mg/L	Mar-02-11 EPA 6020A	RMD	
Boron	< 0.040	MAC = 5	0.040	mg/L	Mar-02-11 EPA 6020A	RMD	
Cadmium	< 0.00010	MAC = 0.005	0.00010	mg/L	Mar-02-11 EPA 6020A	RMD	
Calcium	<b>79.7</b>		5.0	mg/L	Mar-02-11 EPA 6020A	RMD	
Chromium	< 0.0050	MAC = 0.05	0.0050	mg/L	Mar-02-11 EPA 6020A	RMD	
Cobalt	< 0.00050		0.00050	mg/L	Mar-02-11 EPA 6020A	RMD	
Copper	< 0.0020	AO ≤ 1	0.0020	mg/L	Mar-02-11 EPA 6020A	RMD	
Iron	<b>0.12</b>	AO ≤ 0.3	0.10	mg/L	Mar-02-11 EPA 6020A	RMD	
Lead	< 0.0010	MAC = 0.01	0.0010	mg/L	Mar-02-11 EPA 6020A	RMD	
Magnesium	<b>32.4</b>		0.10	mg/L	Mar-02-11 EPA 6020A	RMD	
Manganese	<b>0.0199</b>	AO ≤ 0.05	0.0020	mg/L	Mar-02-11 EPA 6020A	RMD	
Mercury	< 0.00020	MAC = 0.001	0.00020	mg/L	Mar-02-11 EPA 6020A	RMD	
Molybdenum	<b>0.0042</b>		0.0010	mg/L	Mar-02-11 EPA 6020A	RMD	
Nickel	< 0.0020		0.0020	mg/L	Mar-02-11 EPA 6020A	RMD	
Phosphorus	< 0.20		0.20	mg/L	Mar-02-11 EPA 6020A	RMD	
Potassium	<b>5.87</b>		0.20	mg/L	Mar-02-11 EPA 6020A	RMD	
Selenium	< 0.0050	MAC = 0.01	0.0050	mg/L	Mar-02-11 EPA 6020A	RMD	
Silicon	<b>6.4</b>		5.0	mg/L	Mar-02-11 EPA 6020A	RMD	
Silver	< 0.00050		0.00050	mg/L	Mar-02-11 EPA 6020A	RMD	
Sodium	<b>41.7</b>	AO ≤ 200	0.20	mg/L	Mar-02-11 EPA 6020A	RMD	
Uranium	<b>0.0145</b>	MAC = 0.02	0.00020	mg/L	Mar-02-11 EPA 6020A	RMD	
Vanadium	< 0.010		0.010	mg/L	Mar-02-11 EPA 6020A	RMD	
Zinc	< 0.040	AO ≤ 5	0.040	mg/L	Mar-02-11 EPA 6020A	RMD	

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