

Report Transmission Cover Page

Lot ID: **879651**
Control Number: A193464
Date Received: Jul 4, 2012
Date Reported: Jul 10, 2012
Report Number: 1748888

Contact & Affiliation	Address	Delivery Commitments
		On [Lot Verification] send (COA) by Email - Multiple Reports
		On [Report Approval] send (COC, Test Report) by Email - Multiple Reports
		On [Report Approval] send (Test Report) by Email - Multiple Reports
		On [Report Approval] send (Test Report) by Email - Single Report
		On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
		On [Lot Creation] send (COR) by Email - Multiple Reports
		On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report

Notes To Clients:

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Sample Custody

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Sample Disposal Date: August 09, 2012

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the top of this page.

☐ Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for an additional 30 days	\$ 2.50 per sample
Storage for an additional 60 days	\$ 5.00 per sample
Storage for an additional 90 days	\$ 7.50 per sample

☐ Return Sample, collect, to the address below via:

☐ Greyhound

☐ DHL

☐ Purolator

☐ Other (specify) _____

Name	_____
Company	_____
Address	_____
Phone	_____
Fax	_____
Signature	_____

Analytical Report

Lot ID: **879651**
Control Number: A193464
Date Received: Jul 4, 2012
Date Reported: Jul 10, 2012
Report Number: 1748888

Reference Number 879651-1
Sample Date July 03, 2012
Sample Time 16:15
Sample Location
Sample Description 12-20-059-19 W5M / WTH 2-12 M41087.565836` / 6.1°C
Sample Matrix Water

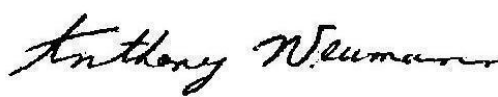
Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Mercury	Extractable	mg/L	<0.0001	0.0001	0.001	Below MAC
Aluminum	Extractable	mg/L	0.096	0.002	0.1	Below OG
Antimony	Extractable	mg/L	<0.0002	0.0002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0002	0.0002	0.01	Below MAC
Barium	Extractable	mg/L	0.151	0.001	1	Below MAC
Boron	Extractable	mg/L	0.023	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00003	0.00001	0.005	Below MAC
Chromium	Extractable	mg/L	0.0007	0.0005	0.05	Below MAC
Copper	Extractable	mg/L	<0.001	0.001	1	Below AO
Lead	Extractable	mg/L	0.0002	0.0001	0.01	Below MAC
Selenium	Extractable	mg/L	0.0003	0.0002	0.01	Below MAC
Silver	Extractable	mg/L	<0.00001	0.00001		
Uranium	Extractable	mg/L	0.0017	0.0005	0.02	Below MAC
Zinc	Extractable	mg/L	0.037	0.001	5	Below AO
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	<1	1	0	Below MAC
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	1		
Escherichia coli	Membrane Filtration	CFU/100 mL	<1	1	0	Below MAC
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	<5	5	15	Below AO
Turbidity		NTU	2.6	0.1	0.1	Above OG
Routine Water						
pH			7.98		6.5 - 8.5	Within AO
Temperature of observed		°C	21.7			
pH						
Electrical Conductivity		µS/cm at 25 C	555	1		
Calcium	Extractable	mg/L	88.2	0.2		
Magnesium	Extractable	mg/L	20.0	0.2		
Sodium	Extractable	mg/L	12.2	0.4	200	Below AO
Potassium	Extractable	mg/L	1	0.4		
Iron	Extractable	mg/L	0.18	0.01	0.3	Below AO
Manganese	Extractable	mg/L	0.030	0.005	0.05	Below AO
Chloride	Dissolved	mg/L	0.6	0.4	250	Below AO
Fluoride		mg/L	0.08	0.05	1.5	Below MAC
Nitrate - N		mg/L	0.27	0.01	10	Below MAC
Nitrite - N		mg/L	<0.005	0.005	1	Below MAC

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Sample Time 16:15
Sample Location
Sample Description 12-20-059-19 W5M / WTH 2-12 M41087.565836` / 6.1°C
Sample Matrix Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate and Nitrite - N		mg/L	0.27	0.01	10	Below MAC
Sulfate (SO ₄)		mg/L	11	0.9	500	Below AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	399	5		
P-Alkalinity	as CaCO ₃	mg/L	<5	5		
T-Alkalinity	as CaCO ₃	mg/L	327	5		
Total Dissolved Solids		mg/L	329	1	500	Below AO
Hardness	as CaCO ₃	mg/L	303			
Ionic Balance		%	97			


Approved by:
Anthony Neumann, MSc
Laboratory Operations Manager

Methodology and Notes

Lot ID: **879651**
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Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	* Alkalinity - Titration Method, 2320 B	05-Jul-12	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	* Conductivity, 2510 B	05-Jul-12	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	* pH - Electrometric Method, 4500-H+ B	05-Jul-12	Exova Edmonton
Anions (Routine) by Ion Chromatography	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	05-Jul-12	Exova Edmonton
Approval-Edmonton	APHA	Checking Correctness of Analyses, 1030 E	05-Jul-12	Exova Edmonton
Chloride in Water	APHA	* Automated Ferricyanide Method, 4500-Cl- E	05-Jul-12	Exova Edmonton
Coliforms - Membrane Filtration	APHA	E. Coli - MF Partition Procedures, 9222 G	05-Jul-12	Exova Calgary
Coliforms - Membrane Filtration	APHA	Fecal Coliform Membrane Filter Procedure, 9222 D	05-Jul-12	Exova Calgary
Coliforms - Membrane Filtration	APHA	Standard Total Coliform Membrane Filter Procedure, 9222 B	05-Jul-12	Exova Calgary
Colour (Apparent) in water	APHA	* Visual Comparison Method, 2120 B	09-Jul-12	Exova Edmonton
Mercury (Extractable) in water	APHA	* Cold Vapour Atomic Absorption Spectrometric Method, 3112 B	05-Jul-12	Exova Edmonton
Metals ICP-MS (Extractable) in water	APHA/USEPA	* Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.8	09-Jul-12	Exova Edmonton
Metals Trace (Extractable) in water	APHA	Hardness by Calculation, 2340 B	05-Jul-12	Exova Edmonton
Metals Trace (Extractable) in water	APHA	* Inductively Coupled Plasma (ICP) Method, 3120 B	05-Jul-12	Exova Edmonton
Turbidity in Water	APHA	* Turbidity - Nephelometric Method, 2130 B	06-Jul-12	Exova Edmonton

* Reference Method Modified

References

APHA Standard Methods for the Examination of Water and Wastewater
US EPA US Environmental Protection Agency Test Methods

Guidelines

Guideline Description Health Canada GCDWQ
Guideline Source Guidelines for Canadian Drinking Water Quality, Health Canada, May 2008
Guideline Comments MAC = Maximum Acceptable Concentration
AO = Aesthetic Objective
OG = Operational Guideline for Water Treatment Plants
Refer to Health Canada GCDWQ for complete guidelines and additional drinking water information at www.hc-sc.gc.ca

Methodology and Notes

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Comments:

The comparison of test results to guideline limits is provided for information purposes only. This is not to be taken as a statement of conformance / nonconformance to any guideline, regulation or limit. The data user is responsible for all conclusions drawn with respect to the data and is advised to consult official regulatory references when evaluating compliance.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Quality Control

Lot ID: **879651**
Control Number: A193464
Date Received: Jul 4, 2012
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Metals Extractable

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Sulfur	mg/L	-0.0139492	-0.3	0.3	yes
Mercury	ug/L	0	-0.0340	0.0620	yes
Aluminum	ug/L	1.849	-2	2	yes
Antimony	ug/L	-0.051	-0.2	0.2	yes
Arsenic	ug/L	0.052	-0.2	0.2	yes
Barium	ug/L	0.423	-1	1	yes
Boron	ug/L	0.842	-2	2	yes
Cadmium	ug/L	0.004	-0.01	0.01	yes
Chromium	ug/L	-0.114	-0.5	0.5	yes
Copper	ug/L	0.039	-1	1	yes
Lead	ug/L	0.068	-0.1	0.1	yes
Selenium	ug/L	0.099	-0.2	0.2	yes
Silver	ug/L	0	-0.09	0.09	yes
Uranium	ug/L	0.244	-0.5	0.5	yes
Zinc	ug/L	0.589	-1	1	yes

Date Acquired: July 09, 2012

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Sulfur	mg/L	19.0	18.8	10	0.1	yes
Mercury	mg/L	<0.0001	<0.0001	10	0.0003	yes

Date Acquired: July 05, 2012

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	mg/L	0.0009	0.0007	0.0010	yes
Mercury	mg/L	0.0029	0.0026	0.0032	yes
Aluminum	ug/L	1020	887	1063	yes
Antimony	ug/L	41.4	37.7	43.7	yes
Arsenic	ug/L	40.3	37.0	43.6	yes
Barium	ug/L	201	182	212	yes
Boron	ug/L	411	344	434	yes
Cadmium	ug/L	2.05	1.86	2.26	yes
Chromium	ug/L	101	89.7	107.7	yes
Copper	ug/L	198	180	220	yes
Lead	ug/L	20.7	18.4	22.0	yes
Selenium	ug/L	39.1	35.8	43.0	yes
Silver	ug/L	20.7	18.62	22.58	yes
Uranium	ug/L	106	86.8	106.6	yes
Zinc	ug/L	211	183	219	yes

Date Acquired: July 09, 2012

Mercury	mg/L	0.0008	0.0007	0.0009	yes
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Date Acquired: July 05, 2012

Quality Control

Lot ID: **879651**
Control Number: A193464
Date Received: Jul 4, 2012
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Report Number: 1748888

Metals Extractable - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	50	45	55	yes
Antimony	ug/L	2.2	1.8	2.2	yes
Arsenic	ug/L	2.0	1.8	2.2	yes
Barium	ug/L	10	9	11	yes
Boron	ug/L	21	18	22	yes
Cadmium	ug/L	0.09	0.09	0.11	yes
Chromium	ug/L	5.0	4.5	5.5	yes
Copper	ug/L	10	9	11	yes
Lead	ug/L	1.0	0.9	1.1	yes
Selenium	ug/L	1.8	1.8	2.2	yes
Silver	ug/L	1.02	0.90	1.10	yes
Uranium	ug/L	5.2	4.5	5.5	yes
Zinc	ug/L	10	9	11	yes
Date Acquired: July 09, 2012					
Sulfur	mg/L	141	140.5	158.5	yes
Date Acquired: July 09, 2012					
Sulfur	mg/L	3.1	2.8	3.3	yes
Date Acquired: July 09, 2012					

Physical and Aggregate Properties

Blanks		Units	Measured	Lower Limit	Upper Limit	Passed QC	
Turbidity		NTU	0.089	0.0	0.1	yes	
Date Acquired:		July 06, 2012					
Turbidity		NTU	0.085	0.1	0.1	yes	
Date Acquired:		July 06, 2012					
Replicates		Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Turbidity		NTU	0.6	0.6	10	0.2	yes
Date Acquired:		July 06, 2012					
Control Sample		Units	Measured	Lower Limit	Upper Limit	Passed QC	
Turbidity		NTU	2120	2088.2	2191.8	yes	
Date Acquired:		July 06, 2012					
Turbidity		NTU	5310	5076.9	5563.1	yes	
Date Acquired:		July 06, 2012					
Colour		Colour units	10	10	10	yes	
Turbidity		NTU	161	161.0	173.0	yes	
Date Acquired:		July 06, 2012					
Turbidity		NTU	14.0	13.8	14.6	yes	
Date Acquired:		July 06, 2012					

Quality Control

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Physical and Aggregate Properties -

Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Turbidity	NTU	1.4	1.4	1.5	yes
Date Acquired: July 06, 2012					

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.0446775	-0.1	0.1	yes
Magnesium	mg/L	-0.00853535	-0.1	0.1	yes
Sodium	mg/L	-0.0839897	-0.4	0.3	yes
Potassium	mg/L	-0.0549488	-0.4	0.4	yes
Iron	mg/L	0.00477368	-0.02	0.02	yes
Manganese	mg/L	-0.000649783	-0.003	0.003	yes
Chloride	mg/L	0.36	-0.4	0.4	yes
Fluoride	mg/L	0	-0.05	0.05	yes
Nitrate - N	mg/L	0.0016282	-0.01	0.01	yes
Nitrite - N	mg/L	0.00389596	-0.005	0.005	yes
Date Acquired: July 05, 2012					

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.30	8.30	0		yes
Electrical Conductivity	dS/m at 25 C	0.330	0.332	10	0.002	yes
Calcium	mg/L	5.6	5.6	10	0.6	yes
Magnesium	mg/L	0.7	0.7	10	0.4	yes
Sodium	mg/L	304	300	10	1.2	yes
Potassium	mg/L	1.1	1.1	10	1.2	yes
Iron	mg/L	0.02	0.04	10	0.05	yes
Manganese	mg/L	<0.005	<0.005	10	0.010	yes
Chloride	mg/L	5.2	4.8	10	0.5	yes
Nitrate - N	mg/L	0.03	0.03	10	0.01	yes
Nitrite - N	mg/L	<0.005	<0.005	10	0.010	yes
Hydroxide	mg/L	<5	<5	10		yes
Carbonate	mg/L	<6	<6	10	6	yes
Bicarbonate	mg/L	176	170	10	6	yes
P-Alkalinity	mg/L	<5	<5	10	5	yes
T-Alkalinity	mg/L	144	140	10	5	yes
Date Acquired: July 05, 2012						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Chloride	mg/L	2010	1913.9	2188.1	yes
Date Acquired: July 05, 2012					
pH		9.18	9.05	9.25	yes
Electrical Conductivity	dS/m at 25 C	2.63	2.616	2.904	yes

Quality Control

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Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	244	225.1	274.9	yes
Magnesium	mg/L	98.1	92.7	101.1	yes
Sodium	mg/L	251	233.8	263.8	yes
Potassium	mg/L	256	235.2	259.2	yes
Iron	mg/L	9.49	9.01	10.99	yes
Manganese	mg/L	2.35	2.240	2.540	yes
Fluoride	mg/L	9.85	9.41	10.43	yes
Nitrate - N	mg/L	9.72	9.62	10.52	yes
Nitrite - N	mg/L	9.88	9.590	10.550	yes
Nitrate and Nitrite - N	mg/L	19.6	19.23	21.03	yes
P-Alkalinity	mg/L	451	402	552	yes
T-Alkalinity	mg/L	997	956	1056	yes
Date Acquired: July 05, 2012					
pH		6.89	6.78	6.96	yes
Electrical Conductivity	dS/m at 25 C	0.079	0.070	0.083	yes
Chloride	mg/L	81.4	74.9	86.9	yes
Fluoride	mg/L	4.83	4.61	5.27	yes
Nitrate - N	mg/L	4.74	4.41	5.13	yes
Nitrite - N	mg/L	4.88	4.530	5.250	yes
Nitrate and Nitrite - N	mg/L	9.62	9.01	10.33	yes
P-Alkalinity	mg/L	36	22	67	yes
T-Alkalinity	mg/L	133	113	137	yes
Date Acquired: July 05, 2012					
Calcium	mg/L	5.3	4.6	5.7	yes
Magnesium	mg/L	2.0	1.8	2.2	yes
Sodium	mg/L	5.0	4.7	5.7	yes
Potassium	mg/L	4.9	4.5	5.5	yes
Iron	mg/L	0.21	0.18	0.22	yes
Manganese	mg/L	0.047	0.045	0.055	yes
Chloride	mg/L	15.6	13.3	16.5	yes
Fluoride	mg/L	0.51	0.45	0.55	yes
Nitrate - N	mg/L	0.48	0.46	0.56	yes
Nitrite - N	mg/L	0.520	0.433	0.547	yes
Nitrate and Nitrite - N	mg/L	1.00	0.93	1.07	yes
Date Acquired: July 05, 2012					