



Cartier Regional Water Co-op - Headingley
Regional - PWS
ATTN: DAVID EPLER
CRWC - Headingley Regional - PWS
6000 Portage Avenue
Headingley MB R4H 1E8

Date Received: 10-SEP-20
Report Date: 17-SEP-20 07:15 (MT)
Version: FINAL

Client Phone: 204-832-2555

Certificate of Analysis

Lab Work Order #: L2501441
Project P.O. #: NOT SUBMITTED
Job Reference: HEADINGLEY REGIONAL - PWS 89.40
C of C Numbers:
Legal Site Desc: 57047



Hua Wo
Chemistry Laboratory Manager

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ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
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Physical Tests (WATER)

		ALS ID		L2501441-1	L2501441-2
		Sampled Date		10-SEP-20	10-SEP-20
		Sampled Time		14:45	14:50
		Sample ID		HEADINGLEY REGIONAL 1 - RAW	HEADINGLEY REGIONAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Colour, True	CU	15	-	20.7	<5.0
Conductivity	umhos/cm	-	-	886	221
Hardness (as CaCO ₃)	mg/L	-	-	403 HTC	80.0 HTC
Langelier Index (4 C)	No Unit	-	-	1.3	-0.45
Langelier Index (60 C)	No Unit	-	-	2.0	0.33
pH	pH units	7.00-10.5	-	8.61	7.88
Total Dissolved Solids	mg/L	500	-	592	130
Transmittance, UV (254 nm)	%T/cm	-	-	50.1	97.9
Turbidity	NTU	-	-	10.2	1.02

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Anions and Nutrients (WATER)

		ALS ID		L2501441-1	L2501441-2
		Sampled Date		10-SEP-20	10-SEP-20
		Sampled Time		14:45	14:50
		Sample ID		HEADINGLEY REGIONAL 1 - RAW	HEADINGLEY REGIONAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Alkalinity, Total (as CaCO ₃)	mg/L	-	-	330	63.2
Ammonia, Total (as N)	mg/L	-	-	0.036	<0.010
Bicarbonate (HCO ₃)	mg/L	-	-	366	77.1
Bromide (Br)	mg/L	-	-	0.091	<0.010
Carbonate (CO ₃)	mg/L	-	-	17.9	<0.60
Chloride (Cl)	mg/L	250	-	26.0	3.00
Fluoride (F)	mg/L	-	1.5	0.176	<0.020
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34
Nitrate (as N)	mg/L	-	10	0.063	0.0181
Nitrite (as N)	mg/L	-	1	<0.0020 DLM	<0.0050 DLM
Sulfate (SO ₄)	mg/L	500	-	202	45.3

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Organic / Inorganic Carbon (WATER)

		ALS ID		L2501441-1	L2501441-2
		Sampled Date		10-SEP-20	10-SEP-20
		Sampled Time		14:45	14:50
		Sample ID		HEADINGLEY REGIONAL 1 - RAW	HEADINGLEY REGIONAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Dissolved Organic Carbon	mg/L	-	-	11.0	<0.50
Total Organic Carbon	mg/L	-	-	10.9	<0.50

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

 Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limit listed on this report.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals (WATER)

		ALS ID		L2501441-1	L2501441-2
		Sampled Date		10-SEP-20	10-SEP-20
		Sampled Time		14:45	14:50
		Sample ID		HEADINGLEY	HEADINGLEY
				REGIONAL 1 -	REGIONAL 2 -
Analyte	Unit	Guide Limit #1	Guide Limit #2	RAW	TREATED
Aluminum (Al)-Total	mg/L	0.1	-	0.273	0.0038
Antimony (Sb)-Total	mg/L	-	0.006	0.00048	<0.00010
Arsenic (As)-Total	mg/L	-	0.01	0.00911	<0.00010
Barium (Ba)-Total	mg/L	-	2	0.0682	0.00106
Beryllium (Be)-Total	mg/L	-	-	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	<0.000050	0.000052
Boron (B)-Total	mg/L	-	5	0.134	0.092
Cadmium (Cd)-Total	mg/L	-	0.005	0.0000334	<0.0000050
Calcium (Ca)-Total	mg/L	-	-	79.8	30.6
Cesium (Cs)-Total	mg/L	-	-	0.000045	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	0.00052	<0.00010
Cobalt (Co)-Total	mg/L	-	-	0.00041	<0.00010
Copper (Cu)-Total	mg/L	1	2	0.0950	0.0160
Iron (Fe)-Total	mg/L	0.3	-	0.452	<0.010
Lead (Pb)-Total	mg/L	-	0.005	0.000325	0.00124
Lithium (Li)-Total	mg/L	-	-	0.0719	0.0056
Magnesium (Mg)-Total	mg/L	-	-	49.4	0.850
Manganese (Mn)-Total	mg/L	0.02	0.12	0.0658	0.0123
Molybdenum (Mo)-Total	mg/L	-	-	0.00398	<0.000050
Nickel (Ni)-Total	mg/L	-	-	0.00416	<0.00050
Phosphorus (P)-Total	mg/L	-	-	0.233	<0.030
Potassium (K)-Total	mg/L	-	-	12.4	0.752
Rubidium (Rb)-Total	mg/L	-	-	0.00302	<0.00020
Selenium (Se)-Total	mg/L	-	0.05	0.000638	<0.000050
Silicon (Si)-Total	mg/L	-	-	9.78	0.66
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	200	-	55.9	12.5
Strontium (Sr)-Total	mg/L	-	7	0.333	0.0711
Sulfur (S)-Total	mg/L	-	-	69.6	15.1
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	0.000019	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-	<0.00010	<0.00010

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

 Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limit listed on this report.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals (WATER)

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		Sampled Date		10-SEP-20	10-SEP-20
		Sampled Time		14:45	14:50
		Sample ID		HEADINGLEY REGIONAL 1 - RAW	HEADINGLEY REGIONAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Titanium (Ti)-Total	mg/L	-	-	0.00807	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.00322	0.000013
Vanadium (V)-Total	mg/L	-	-	0.00578	<0.00050
Zinc (Zn)-Total	mg/L	5	-	<0.0030	0.0081
Zirconium (Zr)-Total	mg/L	-	-	0.00045	<0.00020

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

Analytical result for this parameter exceeds Guide Limit listed on this report.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO ₃ 2-/L.			
ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO ₃ -/L.			
ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.			
ALK-TITR-WP	Water	Alkalinity, Total (as CaCO ₃)	APHA 2320B
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO ₃ - and H ₂ CO ₃ endpoints indicated electrometrically.			
BR-L-IC-N-WP	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)-LR
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP
Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO ₂ which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.			
C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP
Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO ₂ which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.			
CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
COLOUR-TRUE-WP	Water	Colour, True	APHA 2120C
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
EC-WP	Water	Conductivity	APHA 2510B
Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.			
ETL-LANGELIER-4-WP	Water	Langelier Index 4C	Calculated
ETL-LANGELIER-60-WP	Water	Langelier Index 60C	Calculated
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
IONBALANCE-CALC-WP	Water	Ion Balance Calculation	APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance (as % difference) cannot be calculated accurately for waters with very low electrical conductivity (EC), and is reported as "Low EC" where EC < 100 uS/cm (umhos/cm). Ion Balance is calculated as:

$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$

MET-T-CCMS-WP Water Total Metals in Water by CRC ICPMS EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2-L-IC-N-WP Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WP Water pH APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

SO4-IC-N-WP Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-WP Water Total Dissolved Solids (TDS) APHA 2540 SOLIDS C,E

A well-mixed sample is filtered through a glass fiber filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2C. The increase in vial weight represents the total dissolved solids.

TURBIDITY-WP Water Turbidity APHA 2130B (modified)

Turbidity in aqueous matrices is determined by the nephelometric method.

UV-%TRANS-WP Water UV Transmittance (Calculated) APHA 5910B

Test method is adapted from APHA Method 5910B. A sample is filtered through a 0.45 um polyethersulfone (PES) filter and its UV Absorbance is measured in a quartz cell at 254 nm. UV Transmittance is calculated from the UV Absorbance result and reported as UV Transmittance per cm. The analysis is carried out without pH adjustment.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2501441

Report Date: 17-SEP-20

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5223694							
WG3402994-4 DUP		WG3402994-3						
Aluminum (Al)-Total		0.0038	<0.0030	RPD-NA	mg/L	N/A	20	14-SEP-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Arsenic (As)-Total		<0.00010	0.00011	RPD-NA	mg/L	N/A	20	14-SEP-20
Barium (Ba)-Total		0.00106	0.00105		mg/L	0.6	20	14-SEP-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Bismuth (Bi)-Total		0.000052	<0.000050	RPD-NA	mg/L	N/A	20	14-SEP-20
Boron (B)-Total		0.092	0.095		mg/L	2.7	20	14-SEP-20
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	14-SEP-20
Calcium (Ca)-Total		30.6	30.6		mg/L	0.2	20	14-SEP-20
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-SEP-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Copper (Cu)-Total		0.0160	0.0162		mg/L	1.2	20	14-SEP-20
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	14-SEP-20
Lead (Pb)-Total		0.00124	0.00123		mg/L	0.9	20	14-SEP-20
Lithium (Li)-Total		0.0056	0.0057		mg/L	0.9	20	14-SEP-20
Magnesium (Mg)-Total		0.850	0.851		mg/L	0.1	20	14-SEP-20
Manganese (Mn)-Total		0.0123	0.0125		mg/L	1.8	20	14-SEP-20
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	14-SEP-20
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	14-SEP-20
Potassium (K)-Total		0.752	0.752		mg/L	0.1	20	14-SEP-20
Phosphorus (P)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	14-SEP-20
Rubidium (Rb)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-SEP-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	14-SEP-20
Silicon (Si)-Total		0.66	0.68		mg/L	2.4	20	14-SEP-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-SEP-20
Sodium (Na)-Total		12.5	12.6		mg/L	0.9	20	14-SEP-20
Strontium (Sr)-Total		0.0711	0.0666		mg/L	6.6	20	14-SEP-20
Sulfur (S)-Total		15.1	15.1		mg/L	0.2	20	14-SEP-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-SEP-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-SEP-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Tin (Sn)-Total		<0.00010	<0.00010		mg/L			14-SEP-20

Quality Control Report

Workorder: L2501441

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5223694							
WG3402994-4	DUP	WG3402994-3						
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	14-SEP-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-SEP-20
Uranium (U)-Total		0.000013	0.000015		mg/L	11	20	14-SEP-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	14-SEP-20
Zinc (Zn)-Total		0.0081	0.0040	J	mg/L	0.0040	0.006	14-SEP-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-SEP-20
WG3402994-2	LCS							
Aluminum (Al)-Total			99.8		%		80-120	14-SEP-20
Antimony (Sb)-Total			101.4		%		80-120	14-SEP-20
Arsenic (As)-Total			99.4		%		80-120	14-SEP-20
Barium (Ba)-Total			99.0		%		80-120	14-SEP-20
Beryllium (Be)-Total			105.3		%		80-120	14-SEP-20
Bismuth (Bi)-Total			99.8		%		80-120	14-SEP-20
Boron (B)-Total			105.9		%		80-120	14-SEP-20
Cadmium (Cd)-Total			99.6		%		80-120	14-SEP-20
Calcium (Ca)-Total			101.4		%		80-120	14-SEP-20
Cesium (Cs)-Total			98.7		%		80-120	14-SEP-20
Chromium (Cr)-Total			99.6		%		80-120	14-SEP-20
Cobalt (Co)-Total			98.7		%		80-120	14-SEP-20
Copper (Cu)-Total			100.1		%		80-120	14-SEP-20
Iron (Fe)-Total			98.4		%		80-120	14-SEP-20
Lead (Pb)-Total			98.4		%		80-120	14-SEP-20
Lithium (Li)-Total			103.2		%		80-120	14-SEP-20
Magnesium (Mg)-Total			104.5		%		80-120	14-SEP-20
Manganese (Mn)-Total			99.7		%		80-120	14-SEP-20
Molybdenum (Mo)-Total			99.5		%		80-120	14-SEP-20
Nickel (Ni)-Total			98.6		%		80-120	14-SEP-20
Potassium (K)-Total			100.6		%		80-120	14-SEP-20
Phosphorus (P)-Total			100.7		%		80-120	14-SEP-20
Rubidium (Rb)-Total			96.0		%		80-120	14-SEP-20
Selenium (Se)-Total			101.6		%		80-120	14-SEP-20
Silicon (Si)-Total			101.5		%		80-120	14-SEP-20



Quality Control Report

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5223694							
WG3402994-2		LCS						
Silver (Ag)-Total			97.7		%		80-120	14-SEP-20
Sodium (Na)-Total			101.9		%		80-120	14-SEP-20
Strontium (Sr)-Total			100.5		%		80-120	14-SEP-20
Sulfur (S)-Total			97.3		%		80-120	14-SEP-20
Tellurium (Te)-Total			97.7		%		80-120	14-SEP-20
Thallium (Tl)-Total			99.5		%		80-120	14-SEP-20
Thorium (Th)-Total			92.4		%		80-120	14-SEP-20
Tin (Sn)-Total			97.4		%		80-120	14-SEP-20
Titanium (Ti)-Total			96.8		%		80-120	14-SEP-20
Tungsten (W)-Total			98.6		%		80-120	14-SEP-20
Uranium (U)-Total			96.9		%		80-120	14-SEP-20
Vanadium (V)-Total			99.0		%		80-120	14-SEP-20
Zinc (Zn)-Total			100.1		%		80-120	14-SEP-20
Zirconium (Zr)-Total			92.2		%		80-120	14-SEP-20
WG3402994-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	14-SEP-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-SEP-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Chromium (Cr)-Total			0.00021	B	mg/L		0.0001	14-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-SEP-20

Quality Control Report

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5223694							
WG3402994-1 MB								
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-SEP-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	14-SEP-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Sulfur (S)-Total			<0.50		mg/L		0.5	14-SEP-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-SEP-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-SEP-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	14-SEP-20
WG3402994-5 MS		WG3402994-3						
Aluminum (Al)-Total			97.8		%		70-130	14-SEP-20
Antimony (Sb)-Total			101.1		%		70-130	14-SEP-20
Arsenic (As)-Total			100.3		%		70-130	14-SEP-20
Barium (Ba)-Total			99.2		%		70-130	14-SEP-20
Beryllium (Be)-Total			108.9		%		70-130	14-SEP-20
Bismuth (Bi)-Total			99.9		%		70-130	14-SEP-20
Boron (B)-Total			117.7		%		70-130	14-SEP-20
Cadmium (Cd)-Total			100.9		%		70-130	14-SEP-20
Calcium (Ca)-Total			N/A	MS-B	%		-	14-SEP-20
Cesium (Cs)-Total			100.6		%		70-130	14-SEP-20
Chromium (Cr)-Total			99.1		%		70-130	14-SEP-20
Cobalt (Co)-Total			98.9		%		70-130	14-SEP-20
Copper (Cu)-Total			95.5		%		70-130	14-SEP-20

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5223694							
WG3402994-5 MS		WG3402994-3						
Iron (Fe)-Total			98.3		%		70-130	14-SEP-20
Lead (Pb)-Total			98.8		%		70-130	14-SEP-20
Lithium (Li)-Total			106.5		%		70-130	14-SEP-20
Magnesium (Mg)-Total			113.6		%		70-130	14-SEP-20
Manganese (Mn)-Total			95.4		%		70-130	14-SEP-20
Molybdenum (Mo)-Total			100.9		%		70-130	14-SEP-20
Nickel (Ni)-Total			98.5		%		70-130	14-SEP-20
Potassium (K)-Total			98.0		%		70-130	14-SEP-20
Phosphorus (P)-Total			102.3		%		70-130	14-SEP-20
Rubidium (Rb)-Total			96.8		%		70-130	14-SEP-20
Selenium (Se)-Total			104.9		%		70-130	14-SEP-20
Silicon (Si)-Total			102.3		%		70-130	14-SEP-20
Silver (Ag)-Total			99.6		%		70-130	14-SEP-20
Sodium (Na)-Total			N/A	MS-B	%		-	14-SEP-20
Strontium (Sr)-Total			N/A	MS-B	%		-	14-SEP-20
Sulfur (S)-Total			97.3		%		70-130	14-SEP-20
Tellurium (Te)-Total			100.1		%		70-130	14-SEP-20
Thallium (Tl)-Total			97.0		%		70-130	14-SEP-20
Thorium (Th)-Total			101.2		%		70-130	14-SEP-20
Tin (Sn)-Total			99.4		%		70-130	14-SEP-20
Titanium (Ti)-Total			98.5		%		70-130	14-SEP-20
Tungsten (W)-Total			99.8		%		70-130	14-SEP-20
Uranium (U)-Total			100.7		%		70-130	14-SEP-20
Vanadium (V)-Total			100.3		%		70-130	14-SEP-20
Zinc (Zn)-Total			96.9		%		70-130	14-SEP-20
Zirconium (Zr)-Total			98.8		%		70-130	14-SEP-20
NH3-COL-WP		Water						
Batch	R5223781							
WG3402970-15 DUP		L2500999-1						
Ammonia, Total (as N)		0.011	0.012		mg/L	4.3	20	11-SEP-20
WG3402970-14 LCS								
Ammonia, Total (as N)			99.8		%		85-115	11-SEP-20
WG3402970-13 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	11-SEP-20



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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP		Water						
Batch	R5224066							
WG3402149-3	DUP	L2501441-2						
Sulfate (SO4)		45.3	45.3		mg/L	0.2	20	10-SEP-20
WG3402149-2	LCS							
Sulfate (SO4)			100.6		%		90-110	10-SEP-20
WG3402149-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-SEP-20
WG3402149-4	MS	L2501441-2						
Sulfate (SO4)			105.4		%		75-125	10-SEP-20
TDS-WP		Water						
Batch	R5223239							
WG3402480-6	DUP	L2500711-9						
Total Dissolved Solids		249	256		mg/L	3.0	20	11-SEP-20
WG3402480-5	LCS							
Total Dissolved Solids			94.4		%		85-115	11-SEP-20
WG3402480-4	MB							
Total Dissolved Solids			<4.0		mg/L		4	11-SEP-20
TURBIDITY-WP		Water						
Batch	R5223607							
WG3403770-3	DUP	L2501419-1						
Turbidity		49.4	49.1		NTU	0.6	15	11-SEP-20
WG3403770-2	LCS							
Turbidity			102.0		%		85-115	11-SEP-20
WG3403770-1	MB							
Turbidity			<0.10		NTU		0.1	11-SEP-20
UV-%TRANS-WP		Water						
Batch	R5222988							
WG3402576-3	DUP	L2501195-2						
Transmittance, UV (254 nm)		88.1	88.3		%T/cm	0.2	20	11-SEP-20
WG3402576-1	IRM	BLANK						
Transmittance, UV (254 nm)			100.0		%		99.5-100.5	11-SEP-20
WG3402576-2	LCS							
Transmittance, UV (254 nm)			99.3		%		85-115	11-SEP-20

Quality Control Report

Workorder: L2501441

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
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Contact: DAVID EPLER

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2501441

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Headingley MB R4H 1E8
Contact: DAVID EPLER

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH	1	10-SEP-20 14:45	11-SEP-20 12:00	0.25	21	hours	EHTR-FM
	2	10-SEP-20 14:50	11-SEP-20 12:00	0.25	21	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2501441 were received on 10-SEP-20 15:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Conservation and Climate
Office of Drinking Water
1007 Century Street, Winnipeg, Manitoba,
Canada R3H 0W4



L2501441-COFC

Terms

Regular Service (default):

☒ Regular Service
(is 5-7 Days):

Unless otherwise requested

☒ 1 Day, rush / priority
☒ 2 Day, rush / priority
☒ 3 Day, rush / priority

Report to Operator (email PDF):

Contact: David Epler
Address: 6000 Portage Ave, Headingley, MB R4H 1E8
Phone: (204) 832-2555
Email: headingleywtp@crwc.ca

Report to Owner (email PDF):

Contact: Robert Poirier
Address: 6000 Portage Avenue, Headingley, MB R4H 1E8
Phone: 204-960-3569
Email: robertpoirier@icloud.com;
headingleywtp@crwc.ca;

Email PDF copy to:

DWO: Amanda Crawley
DWO Address: 1007 Century St., Winnipeg, MB R3H0W4
DWO Phone: (204) 795-9614
DWO Email: amanda.crawley@gov.mb.ca
Additional Email: Joern.Muenster@gov.mb.ca;
Nancy.Eidse@gov.mb.ca

If an update in Owner or Operator contact information is required, please contact your Drinking Water Officer

Client / Project Information: Lab: Account: Agency Code: 382 Report Type: EMS (Lab-MWS) Project: DWQ-C

Operation Name:	HEADINGLEY REGIONAL - PWS	Expected Sample Time:	September-2020
Operation Code:	89-40		
Operation ID:	57047		
Sampled by:	<i>David Epler</i>		

Please record Free & Total Chlorine residuals for Distribution By-product Sampling

**DO NOT COPY or RE-USE this form. Sample Number are unique to the Office of Drinking Water
and provided by Drinking Water Officer.**

Sample Number	Station Number	Sample Identification	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Sample Date dd-mmm-yyyy	Sample Time hh:mm	Sample Matrix	Sample Type	MB-CH-PWS-V2013	# of Containers
2009AC5001	MB05MJD481	Headingley Regional 1 - Raw	—	—	10-08-2020	2:45pm	6	1	X	5
2009AC5002	MB05MJD482	Headingley Regional 2 - Treated	1.45	1.50	10-08-2020	2:50pm	10	1	X	5

Failure to complete all portions of this form may delay analysis.

Sample Matrix: 6-Raw Water, 9-Distributed Water, 10-Treated Water

Please fill in this form LEGIBLY.

Sample Type: 1-Grab Sample

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified by the Laboratory.

For ALL other testing, please use Laboratory specific forms.

Relinquished By: <i>David Epler</i>	Date & Time: 2:55pm	Validated By (lab use only):	Date & Time:
Received By: <i>GE</i>	Date & Time: Sept 10 / 2020	Sample Condition (lab use only):	
(lab use only)	(lab use only)	Temperature: 19.3°C	Samples Received in Good Condition? Y / N