



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

Date Received: 08-MAR-22
Report Date: 14-MAR-22 15:01 (MT)
Version: FINAL

Client Phone: 204-832-2555

Certificate of Analysis

Lab Work Order #: L2690835
Project P.O. #: NOT SUBMITTED
Job Reference: HEADINGLEY REGIONAL - PWS 89.40
C of C Numbers:
Legal Site Desc: 57047

Kianna Brown
Account Manager

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Physical Tests (WATER)

		ALS ID		L2690835-1	L2690835-2
		Sampled Date		08-MAR-22	08-MAR-22
		Sampled Time		08:00	07:30
		Sample ID		HEADINGLEY REGIONAL 1 - RAW/RIPH	HEADINGLEY REGIONAL 2 - TREATED/ LAB TAP
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Colour, True	CU	15	-	11.4	<5.0
Conductivity	umhos/cm	-	-	977	175
Hardness (as CaCO ₃)	mg/L	-	-	464 ^{HTC}	68.8 ^{HTC}
Langelier Index (4 C)	No Unit	-	-	0.65	-1.3
Langelier Index (60 C)	No Unit	-	-	1.4	-0.53
pH	pH units	7.00-10.5	-	7.95	7.24
Total Dissolved Solids	mg/L	500	-	653	109
Transmittance, UV (254 nm)	%T/cm	-	-	67.0	101
Turbidity	NTU	-	-	57.9	<0.10

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)

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

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

Anions and Nutrients (WATER)

		ALS ID		L2690835-1	L2690835-2
		Sampled Date		08-MAR-22	08-MAR-22
		Sampled Time		08:00	07:30
		Sample ID		HEADINGLEY REGIONAL 1 - RAW/RIPH	HEADINGLEY REGIONAL 2 - TREATED/ LAB TAP
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Alkalinity, Total (as CaCO ₃)	mg/L	-	-	292	42.4
Ammonia, Total (as N)	mg/L	-	-	0.082	0.026
Bicarbonate (HCO ₃)	mg/L	-	-	356	51.7
Bromide (Br)	mg/L	-	-	0.043	<0.010
Carbonate (CO ₃)	mg/L	-	-	<0.60	<0.60
Chloride (Cl)	mg/L	250	-	22.1	2.25
Fluoride (F)	mg/L	-	1.5	0.171	<0.020
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34
Nitrate (as N)	mg/L	-	10	0.783	0.223
Nitrite (as N)	mg/L	-	1	0.0035	<0.0010
Sulfate (SO ₄)	mg/L	500	-	226	38.1

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)

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

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Organic / Inorganic Carbon (WATER)

		ALS ID		L2690835-1	L2690835-2
		Sampled Date		08-MAR-22	08-MAR-22
		Sampled Time		08:00	07:30
		Sample ID		HEADINGLEY REGIONAL 1 - RAW/RIPH	HEADINGLEY REGIONAL 2 - TREATED/ LAB TAP
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Dissolved Organic Carbon	mg/L	-	-	9.74	<0.50
Total Organic Carbon	mg/L	-	-	9.97	<0.50

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)

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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.

ANALYTICAL REPORT

Total Metals (WATER)

		ALS ID		L2690835-1	L2690835-2	L2690835-3
		Sampled Date		08-MAR-22	08-MAR-22	07-MAR-22
		Sampled Time		08:00	07:30	14:20
		Sample ID		HEADINGLEY	HEADINGLEY	HEADINGLEY
				REGIONAL 1 -	REGIONAL 2 -	REGIONAL 3 -
Analyte	Unit	Guide Limit #1	Guide Limit #2	RAW/RIPH	TREATED/ LAB TAP	DISTRIBUTION @ SFX RES
Aluminum (Al)-Total	mg/L	0.1	2.9	0.415	<0.0030	<0.0030
Antimony (Sb)-Total	mg/L	-	0.006	0.00018	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	-	0.01	0.00336	<0.00010	<0.00010
Barium (Ba)-Total	mg/L	-	2	0.105	0.00109	0.00104
Beryllium (Be)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	<0.000050	<0.000050	<0.000050
Boron (B)-Total	mg/L	-	5	0.119	0.094	0.102
Cadmium (Cd)-Total	mg/L	-	0.005	0.0000283	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	-	-	99.4	26.8	26.8
Cesium (Cs)-Total	mg/L	-	-	0.000072	<0.000010	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	0.00081	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	-	-	0.00062	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	1	2	0.0980	0.0132	0.00264
Iron (Fe)-Total	mg/L	0.3	-	0.783	<0.010	<0.010
Lead (Pb)-Total	mg/L	-	0.005	0.000874	<0.000050	0.000073
Lithium (Li)-Total	mg/L	-	-	0.0562	0.0035	0.0037
Magnesium (Mg)-Total	mg/L	-	-	52.4	0.483	0.465
Manganese (Mn)-Total	mg/L	0.02	0.12	0.106	0.00475	0.00102
Molybdenum (Mo)-Total	mg/L	-	-	0.00338	<0.000050	<0.000050
Nickel (Ni)-Total	mg/L	-	-	0.00416	<0.00050	<0.00050
Phosphorus (P)-Total	mg/L	-	-	0.168	<0.030	<0.030
Potassium (K)-Total	mg/L	-	-	14.4	0.627	0.638
Rubidium (Rb)-Total	mg/L	-	-	0.00334	<0.00020	<0.00020
Selenium (Se)-Total	mg/L	-	0.05	0.000362	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	-	9.81	0.37	0.39
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	200	-	47.8	7.38	8.12
Strontium (Sr)-Total	mg/L	-	7	0.368	0.0279	0.0281
Sulfur (S)-Total	mg/L	-	-	86.1	13.3	13.4
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	0.000015	<0.000010	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-	0.00010	<0.00010	0.00033

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)

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 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		L2690835-1	L2690835-2	L2690835-3
		Sampled Date		08-MAR-22	08-MAR-22	07-MAR-22
		Sampled Time		08:00	07:30	14:20
		Sample ID		HEADINGLEY REGIONAL 1 - RAW/RIPH	HEADINGLEY REGIONAL 2 - TREATED/ LAB TAP	HEADINGLEY REGIONAL 3 - DISTRIBUTION @ SFX RES
Analyte	Unit	Guide Limit #1	Guide Limit #2			
Titanium (Ti)-Total	mg/L	-	-	0.0109	<0.00030	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.00389	0.000020	0.000020
Vanadium (V)-Total	mg/L	-	-	0.00240	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	5	-	0.0543	0.0031	<0.0030
Zirconium (Zr)-Total	mg/L	-	-	0.00055	<0.00020	<0.00020

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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).

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-OH-OH-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 Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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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: L2690835

Report Date: 14-MAR-22

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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
CL-L-IC-N-WP		Water						
Batch	R5738789							
WG3703633-9	MB		<0.10		mg/L		0.1	09-MAR-22
Chloride (Cl)								
COLOUR-TRUE-WP		Water						
Batch	R5736698							
WG3703792-3	DUP	L2690431-1						
Colour, True		12.4	10.7		CU	15	20	08-MAR-22
WG3703792-2	LCS							
Colour, True			100.2		%		85-115	08-MAR-22
WG3703792-1	MB							
Colour, True			<5.0		CU		5	08-MAR-22
EC-WP		Water						
Batch	R5738520							
WG3704409-10	DUP	L2690835-2						
Conductivity		175	174		umhos/cm	0.2	10	09-MAR-22
WG3704409-8	LCS							
Conductivity			98.6		%		90-110	09-MAR-22
WG3704409-6	MB							
Conductivity			<1.0		umhos/cm		1	09-MAR-22
F-IC-N-WP		Water						
Batch	R5738789							
WG3703633-10	LCS							
Fluoride (F)			101.3		%		90-110	09-MAR-22
WG3703633-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-MAR-22
MET-T-CCMS-WP		Water						
Batch	R5742127							
WG3703574-4	DUP	WG3703574-3						
Aluminum (Al)-Total		0.0224	0.0231		mg/L	3.1	20	11-MAR-22
Antimony (Sb)-Total		0.00042	0.00040		mg/L	6.3	20	11-MAR-22
Arsenic (As)-Total		0.00050	0.00051		mg/L	1.8	20	11-MAR-22
Barium (Ba)-Total		0.00778	0.00780		mg/L	0.3	20	11-MAR-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAR-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAR-22
Boron (B)-Total		0.223	0.216		mg/L	3.1	20	11-MAR-22
Cadmium (Cd)-Total		0.0000383	0.0000343		mg/L	11	20	11-MAR-22

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Client: Cartier Regional Water Co-op - Headingley Regional - PWS
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Headingley MB R4H 1E8

Contact: DAVID EPLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5742127							
WG3703574-4 DUP		WG3703574-3						
Calcium (Ca)-Total		68.9	67.9		mg/L	1.4	20	11-MAR-22
Cesium (Cs)-Total		0.000089	0.000088		mg/L	1.1	20	11-MAR-22
Chromium (Cr)-Total		0.00036	0.00033		mg/L	6.9	20	11-MAR-22
Cobalt (Co)-Total		0.00059	0.00061		mg/L	2.7	20	11-MAR-22
Copper (Cu)-Total		0.00078	0.00078		mg/L	0.1	20	11-MAR-22
Iron (Fe)-Total		0.040	0.040		mg/L	1.2	20	11-MAR-22
Lead (Pb)-Total		0.000378	0.000373		mg/L	1.3	20	11-MAR-22
Lithium (Li)-Total		0.0650	0.0604		mg/L	7.2	20	11-MAR-22
Magnesium (Mg)-Total		29.2	29.3		mg/L	0.2	20	11-MAR-22
Manganese (Mn)-Total		0.137	0.137		mg/L	0.4	20	11-MAR-22
Molybdenum (Mo)-Total		0.00374	0.00373		mg/L	0.2	20	11-MAR-22
Nickel (Ni)-Total		0.00415	0.00419		mg/L	0.9	20	11-MAR-22
Potassium (K)-Total		35.1	35.3		mg/L	0.6	20	11-MAR-22
Phosphorus (P)-Total		0.203	0.231		mg/L	13	20	11-MAR-22
Rubidium (Rb)-Total		0.0314	0.0311		mg/L	0.7	20	11-MAR-22
Selenium (Se)-Total		0.000346	0.000346		mg/L	0.0	20	11-MAR-22
Silicon (Si)-Total		6.64	6.59		mg/L	0.7	20	11-MAR-22
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-MAR-22
Sodium (Na)-Total		192	188		mg/L	2.3	20	11-MAR-22
Strontium (Sr)-Total		0.187	0.186		mg/L	0.6	20	11-MAR-22
Sulfur (S)-Total		120	121		mg/L	0.4	20	11-MAR-22
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-MAR-22
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-MAR-22
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAR-22
Tin (Sn)-Total		<0.00010	0.00011	RPD-NA	mg/L	N/A	20	11-MAR-22
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-MAR-22
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAR-22
Uranium (U)-Total		0.000316	0.000306		mg/L	3.0	20	11-MAR-22
Vanadium (V)-Total		0.00233	0.00229		mg/L	1.9	20	11-MAR-22
Zinc (Zn)-Total		0.0456	0.0456		mg/L	0.0	20	11-MAR-22
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-MAR-22
WG3703574-2 LCS								
Aluminum (Al)-Total			98.8		%		80-120	11-MAR-22



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 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	R5742127							
WG3703574-2	LCS							
Antimony (Sb)-Total			103.2		%		80-120	11-MAR-22
Arsenic (As)-Total			98.4		%		80-120	11-MAR-22
Barium (Ba)-Total			100.3		%		80-120	11-MAR-22
Beryllium (Be)-Total			100.0		%		80-120	11-MAR-22
Bismuth (Bi)-Total			98.3		%		80-120	11-MAR-22
Boron (B)-Total			95.8		%		80-120	11-MAR-22
Cadmium (Cd)-Total			102.3		%		80-120	11-MAR-22
Calcium (Ca)-Total			104.5		%		80-120	11-MAR-22
Cesium (Cs)-Total			98.8		%		80-120	11-MAR-22
Chromium (Cr)-Total			101.0		%		80-120	11-MAR-22
Cobalt (Co)-Total			101.6		%		80-120	11-MAR-22
Copper (Cu)-Total			99.2		%		80-120	11-MAR-22
Iron (Fe)-Total			98.3		%		80-120	11-MAR-22
Lead (Pb)-Total			96.5		%		80-120	11-MAR-22
Lithium (Li)-Total			100.7		%		80-120	11-MAR-22
Magnesium (Mg)-Total			100.3		%		80-120	11-MAR-22
Manganese (Mn)-Total			98.0		%		80-120	11-MAR-22
Molybdenum (Mo)-Total			99.1		%		80-120	11-MAR-22
Nickel (Ni)-Total			100.4		%		80-120	11-MAR-22
Potassium (K)-Total			100.4		%		80-120	11-MAR-22
Phosphorus (P)-Total			101.4		%		80-120	11-MAR-22
Rubidium (Rb)-Total			99.4		%		80-120	11-MAR-22
Selenium (Se)-Total			104.3		%		80-120	11-MAR-22
Silicon (Si)-Total			104.6		%		80-120	11-MAR-22
Silver (Ag)-Total			94.3		%		80-120	11-MAR-22
Sodium (Na)-Total			99.98		%		80-120	11-MAR-22
Strontium (Sr)-Total			98.4		%		80-120	11-MAR-22
Sulfur (S)-Total			104.6		%		80-120	11-MAR-22
Tellurium (Te)-Total			96.2		%		80-120	11-MAR-22
Thallium (Tl)-Total			95.6		%		80-120	11-MAR-22
Thorium (Th)-Total			90.8		%		80-120	11-MAR-22
Tin (Sn)-Total			99.97		%		80-120	11-MAR-22
Titanium (Ti)-Total			96.1		%		80-120	11-MAR-22



Quality Control Report

Workorder: L2690835

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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	R5742127							
WG3703574-2	LCS							
Tungsten (W)-Total			98.5		%		80-120	11-MAR-22
Uranium (U)-Total			94.5		%		80-120	11-MAR-22
Vanadium (V)-Total			101.9		%		80-120	11-MAR-22
Zinc (Zn)-Total			99.3		%		80-120	11-MAR-22
Zirconium (Zr)-Total			89.1		%		80-120	11-MAR-22
WG3703574-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	11-MAR-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	11-MAR-22
Boron (B)-Total			<0.010		mg/L		0.01	11-MAR-22
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	11-MAR-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	11-MAR-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	11-MAR-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	11-MAR-22
Iron (Fe)-Total			<0.010		mg/L		0.01	11-MAR-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	11-MAR-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	11-MAR-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	11-MAR-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	11-MAR-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	11-MAR-22
Potassium (K)-Total			<0.050		mg/L		0.05	11-MAR-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	11-MAR-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	11-MAR-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	11-MAR-22
Silicon (Si)-Total			<0.10		mg/L		0.1	11-MAR-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	11-MAR-22
Sodium (Na)-Total			<0.050		mg/L		0.05	11-MAR-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	11-MAR-22

Quality Control Report

Workorder: L2690835

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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	R5742127							
WG3703574-1	MB							
Sulfur (S)-Total			<0.50		mg/L		0.5	11-MAR-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	11-MAR-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	11-MAR-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	11-MAR-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	11-MAR-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	11-MAR-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	11-MAR-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	11-MAR-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	11-MAR-22
WG3703574-5	MS	WG3703574-3						
Aluminum (Al)-Total			88.5		%		70-130	11-MAR-22
Antimony (Sb)-Total			93.6		%		70-130	11-MAR-22
Arsenic (As)-Total			91.0		%		70-130	11-MAR-22
Barium (Ba)-Total			90.3		%		70-130	11-MAR-22
Beryllium (Be)-Total			89.6		%		70-130	11-MAR-22
Bismuth (Bi)-Total			89.2		%		70-130	11-MAR-22
Boron (B)-Total			N/A	MS-B	%		-	11-MAR-22
Cadmium (Cd)-Total			88.1		%		70-130	11-MAR-22
Calcium (Ca)-Total			N/A	MS-B	%		-	11-MAR-22
Cesium (Cs)-Total			90.2		%		70-130	11-MAR-22
Chromium (Cr)-Total			90.2		%		70-130	11-MAR-22
Cobalt (Co)-Total			87.6		%		70-130	11-MAR-22
Copper (Cu)-Total			83.9		%		70-130	11-MAR-22
Iron (Fe)-Total			88.3		%		70-130	11-MAR-22
Lead (Pb)-Total			83.0		%		70-130	11-MAR-22
Lithium (Li)-Total			80.8		%		70-130	11-MAR-22
Magnesium (Mg)-Total			N/A	MS-B	%		-	11-MAR-22
Manganese (Mn)-Total			N/A	MS-B	%		-	11-MAR-22
Molybdenum (Mo)-Total			95.9		%		70-130	11-MAR-22
Nickel (Ni)-Total			85.3		%		70-130	11-MAR-22
Potassium (K)-Total			N/A	MS-B	%		-	11-MAR-22
Phosphorus (P)-Total			95.0		%		70-130	11-MAR-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5742127							
WG3703574-5	MS	WG3703574-3						
Rubidium (Rb)-Total			N/A	MS-B	%		-	11-MAR-22
Selenium (Se)-Total			94.9		%		70-130	11-MAR-22
Silicon (Si)-Total			91.4		%		70-130	11-MAR-22
Silver (Ag)-Total			83.7		%		70-130	11-MAR-22
Sodium (Na)-Total			N/A	MS-B	%		-	11-MAR-22
Strontium (Sr)-Total			N/A	MS-B	%		-	11-MAR-22
Sulfur (S)-Total			N/A	MS-B	%		-	11-MAR-22
Tellurium (Te)-Total			89.7		%		70-130	11-MAR-22
Thallium (Tl)-Total			81.1		%		70-130	11-MAR-22
Thorium (Th)-Total			86.0		%		70-130	11-MAR-22
Tin (Sn)-Total			92.0		%		70-130	11-MAR-22
Titanium (Ti)-Total			89.6		%		70-130	11-MAR-22
Tungsten (W)-Total			92.1		%		70-130	11-MAR-22
Uranium (U)-Total			83.0		%		70-130	11-MAR-22
Vanadium (V)-Total			93.5		%		70-130	11-MAR-22
Zinc (Zn)-Total			85.1		%		70-130	11-MAR-22
Zirconium (Zr)-Total			93.9		%		70-130	11-MAR-22
NH3-COL-WP		Water						
Batch	R5741818							
WG3705573-11	DUP	L2690678-3						
Ammonia, Total (as N)		0.036	0.042		mg/L	17	20	11-MAR-22
WG3705573-10	LCS							
Ammonia, Total (as N)			100.2		%		85-115	11-MAR-22
WG3705573-9	MB							
Ammonia, Total (as N)			<0.010		mg/L		0.01	11-MAR-22
WG3705573-12	MS	L2690678-3						
Ammonia, Total (as N)			88.6		%		75-125	11-MAR-22
NO2-L-IC-N-WP		Water						
Batch	R5738789							
WG3703633-10	LCS							
Nitrite (as N)			98.6		%		90-110	09-MAR-22
WG3703633-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-MAR-22
NO3-L-IC-N-WP		Water						



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
NO3-L-IC-N-WP	Water							
Batch R5738789								
WG3703633-10 LCS								
Nitrate (as N)			98.7		%		90-110	09-MAR-22
WG3703633-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	09-MAR-22
PH-WP	Water							
Batch R5738520								
WG3704409-10 DUP		L2690835-2						
pH		7.24	7.25	J	pH units	0.01	0.2	09-MAR-22
WG3704409-7 LCS								
pH			6.94		pH units		6.9-7.1	09-MAR-22
SO4-IC-N-WP	Water							
Batch R5738789								
WG3703633-10 LCS								
Sulfate (SO4)			99.8		%		90-110	09-MAR-22
WG3703633-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-MAR-22
TDS-WP	Water							
Batch R5739697								
WG3704010-3 DUP		L2690907-1						
Total Dissolved Solids		923	928		mg/L	0.5	20	09-MAR-22
WG3704010-2 LCS								
Total Dissolved Solids			94.3		%		85-115	09-MAR-22
WG3704010-1 MB								
Total Dissolved Solids			<4.0		mg/L		4	09-MAR-22
TURBIDITY-WP	Water							
Batch R5740016								
WG3704970-3 DUP		L2690835-1						
Turbidity		57.9	60.5		NTU	4.4	15	10-MAR-22
WG3704970-2 LCS								
Turbidity			98.0		%		85-115	10-MAR-22
WG3704970-1 MB								
Turbidity			<0.10		NTU		0.1	10-MAR-22
UV-%TRANS-WP	Water							
Batch R5737918								
WG3704220-3 DUP		L2690835-1						
Transmittance, UV (254 nm)		67.0	68.7		%T/cm	2.5	20	09-MAR-22
WG3704220-1 IRM		BLANK						



Quality Control Report

Workorder: L2690835

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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
UV-%TRANS-WP	Water							
Batch	R5737918							
WG3704220-1	IRM	BLANK						
Transmittance, UV (254 nm)			100.0		%		99.5-100.5	09-MAR-22
WG3704220-2	LCS							
Transmittance, UV (254 nm)			104.5		%		85-115	09-MAR-22

Quality Control Report

Workorder: L2690835

Report Date: 14-MAR-22

Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
Headingley MB R4H 1E8
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
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: L2690835

Report Date: 14-MAR-22

Client: Cartier Regional Water Co-op - Headingley Regional - PWS
CRWC - Headingley Regional - PWS 6000 Portage Avenue
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	08-MAR-22 08:00	09-MAR-22 12:00	0.25	28	hours	EHTR-FM
	2	08-MAR-22 07:30	09-MAR-22 12:00	0.25	29	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 L2690835 were received on 08-MAR-22 12:54.

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.

Manitoba

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



L2690835-COFC

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;
Tyler.Foxton2@gov.mb.ca

Report to Owner (email PDF):

Contact: Robert Poirier
Address: 6000 Portage Avenue, Headingley, MB R4H 1E8
Phone: (204) 832-2555
Email: robert.poirier@icloud.com;
headingleywtp@crwc.ca;
angela.meier@gov.mb.ca; dvaillant@crwc.ca

Email PDF copy to:

DWO: Marc Balcaen
DWO Address: 1007 Century St., Winnipeg, MB R3H0W4
DWO Phone: (204) 794-3904
DWO Email: Marc.Balcaen@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

Operation Code: 89.40

Operation ID: 57047

Sampled by: *Nathan B Harris*

Expected Sample Time:

March-2022

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	MB-MET-T-CCMS	# of Containers
2203MB5001	MB05MJD481	Headingley Regional 1 - Raw / <i>KIPH</i>	—	—	<i>08-MAR-2022</i>	<i>8:00</i>	6	1	X		4
2203MB5002	MB05MJD482	Headingley Regional 2 - Treated / <i>LAB TAP</i>	<i>1.26</i>	<i>1.33</i>	<i>08-MAR-2022</i>	<i>7:30</i>	10	1	X		4
2203MB5003	MB05MJD483	Headingley Regional 3 - Distribution @ <i>SFX RES. INCOMING</i>	<i>1.43</i>	<i>1.52</i>	<i>07-MAR-2022</i>	<i>2:20pm</i>	9	1		X	1

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

Please fill in this form LEGIBLY.

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

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>Nathan B Harris</i>	Date & Time: <i>12:50pm MAR 8/22</i>	Validated By (lab use only):	Date & Time:
Received By: (lab use only) <i>O.A.</i>	Date & Time: (lab use only) <i>MAR 08/2022 12:54pm</i>	Temperature: <i>10.6</i>	Samples Received in Good Condition? Y / N