

WATER SUPPLY

The Town of The Pas draws its raw water from the Saskatchewan River that is gravity fed to a well. The water is pumped from the well into the water treatment plant.

TREATMENT PROCESS

At the well potassium permanganate is introduced to the raw water for taste and odor control.

When the water enters the plant aluminum sulphate and a coagulant are added. The water is then sent to two mixing chambers. In the mixing chambers another coagulant aid is introduced. The raw water and additives are then mixed and suspended solids precipitate from the water. After this point, the water passes through four (4) dual media filters before the finished water is sent into clear wells for storage. Chlorine is added as a residual disinfectant, the water is sterilized by ultra violet reactors. Fluoride is no longer added for dental health as of May 20th 2015.

WATER DISTRIBUTION SYSTEM

The treated water is pumped from the water treatment plant to the consumers via a system of underground pipes. The water is metered for consumption and is billed accordingly.

WATER TESTING

- Raw water is tested daily for turbidity & temperature.
- Treated or finished water is tested daily for turbidity, chlorine residual, and temperature.
- Water is tested 4 times per year for THM's and HAA's.
- Raw and Treated Water is tested yearly for total water chemistries.

BACTERIOLOGICAL TESTING

Samples of raw water, treated water and points in the distribution system are tested bi-weekly for coliforms and E.Coli. The results of these tests are shown in the table below:

BACETERIOLOGICAL MONITORING AND REPORTING	Regulatory Requirement	PWS Performance
Number of raw/incoming water samples	26	27
Number of treated water samples	26	27
Number of distribution water samples (2 sampling locations)	52	54
Frequency of testing	Bi-weekly	85%
Total coli form present in water samples	0 TC per 100 mL	98.1%
E.coli present in water samples	0 EC per 100 mL	100%

COMMENTS:

A resample on one of the samples was required. The public water system has met the bacteriological sampling requirements for 2020.

TURBIDITY TESTING

Turbidity is a measurement of water clarity. This test is used as a benchmark on how the treatment process is working. Facilities are obligated to meet regulatory requirements on the filtering process and the treated water that is sent to consumers. The results of these tests are shown in the table below:

Turbidity Standards	Regulatory Requirement	PWS Performance
Chemically assisted, rapid gravity filtration process	≤ 0.3 NTU in at least 95% of the samples taken per month	100%
	Not to exceed 0.3 NTU for more than 12 continuous hours	100%
	Not to exceed 1.0 NTU at anytime	100%
Frequency of testing	Daily	100%

DISINFECTION TESTING & MONITORING

This testing is done to ensure that the water is safe for the consumer and to meet the regulatory requirements. The results of these tests are shown in the table illustrated below:

Chlorine Requirements	Regulatory Requirement	PWS Performance
(A) Free chlorine residual entering the distribution system	≥ 0.5 mg/L	100%
(B) Free chlorine residual in the distribution system	≥ 0.1 mg/L	90.4%
(C) Frequency of testing	Daily for A	100%
	Bi Weekly for B	100%
(D) Report submissions	Monthly	100%

FLUORIDE

The Town of The Pas no longer fluoridates the as of May 20th 2015.

DISINFECTION BY-PRODUCTS MONITORING & REPORTING

These tests are done to meet Regulatory requirements. The results of these tests are shown on the following table:

DISINFECTION BY –PRODUCTS MONITORING AND REPORTING	Regulatory Requirement	PWS Performance
A) Total Trihalomethane sampling requirements	4 times per year	100%
B) Total Trihalomethane Standard*	0.1 mg/L	0.157 mg/L
C) Total Haloacetic Acids sampling requirements	4 times per year	100%
D) Total Haloacetic Acids Standard**	0.08 mg/L	0.0858 mg/L

*THM results were lower than the previous year. Last year's result was 0.107 mg/L mg/L.

** HAA results were lower than previous year. Last year's result was 0.0796 mg/L.

WATER CHEMISTRY ANALYSIS

Chemical analysis tests were done on the raw and treated water on January 2020. The treated water met all the G.C.D WQ maximum-acceptable concentrations for health-based parameters.

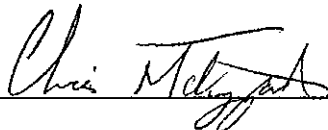
EMERGENCY-COMPLIANCE ISSUES-2020

- Town of The Pas Water and Sewer Crews fixed 8 water main breaks recorded in 2020.
- Issues with getting a CL^2 residual at the extents; this was solved by flushing the hydrant at the extents.

FUTURE INITIATIVES FOR IMPROVEMENT

The Town will carry out an aggressive flushing/valve program as per the unidirectional flushing plan to clear the water mains to help keep up our residuals. The Town is working on a water main renewal program to replace the aging water main infrastructure and continue to provide its citizens with safe drinking water.

For general questions during regular business hours call the Engineering Dept. at 1-204-627-1125. For emergency calls please phone 1-204-623-2330



Chris McTaggart, C.E.T.
Assistant Municipal Superintendent
Town of The Pas



Town of The Pas - Water Plant
ATTN: RYAN LAGACE
Town of The Pas
Box 870
The Pas MB R9A 1K8

Date Received: 07-JAN-20
Report Date: 14-JAN-20 13:04 (MT)
Version: FINAL

Client Phone: 204-620-0426

Certificate of Analysis

Lab Work Order #: L2402808
Project P.O. #: NOT SUBMITTED
Job Reference: THE PAS - PWS 226.00
C of C Numbers:
Legal Site Desc: 11490

Comments: NOTE: For frac -2 The Pas - Distribution - Did not receive a 60 ml Metals bottle (HNO3 preserved) for MET-T-L-MS-WP

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		L2402808-1	L2402808-3
		Sampled Date		06-JAN-20	06-JAN-20
		Sampled Time		16:00	16:00
		Sample ID		THE PAS 1 - RAW	THE PAS 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Colour, True	CU	15	-	7.8	<5.0
Conductivity	umhos/cm	-	-	466	472
Hardness (as CaCO3)	mg/L	-	-	226 ^{HTC}	215 ^{HTC}
Langelier Index (4 C)	No Unit	-	-	0.35	-0.21
Langelier Index (60 C)	No Unit	-	-	1.1	0.56
pH	pH units	7.00-10.5	-	8.07	7.58
Total Dissolved Solids	mg/L	500	-	283	286
Transmittance, UV (254 nm)	%T/cm	-	-	71.3	88.3
Turbidity	NTU	-	-	7.15	<0.10

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2019)

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

Physical Tests (MISC.)

		ALS ID		L2402808-2
		Sampled Date		06-JAN-20
		Sampled Time		16:00
		Sample ID		THE PAS 3 - DISTRIBUTION
Analyte	Unit	Guide Limit #1	Guide Limit #2	
Sample Comment	No Unit	-	-	Sample Not

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2019)

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

Anions and Nutrients (WATER)

		ALS ID		L2402808-1	L2402808-3
		Sampled Date		06-JAN-20	06-JAN-20
		Sampled Time		16:00	16:00
		Sample ID		THE PAS 1 - RAW	THE PAS 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Alkalinity, Total (as CaCO3)	mg/L	-	-	172	153
Ammonia, Total (as N)	mg/L	-	-	0.032	<0.010
Bicarbonate (HCO3)	mg/L	-	-	210	186
Bromide (Br)	mg/L	-	-	0.015	<0.010
Carbonate (CO3)	mg/L	-	-	<0.60	<0.60
Chloride (Cl)	mg/L	250	-	11.0	14.3
Fluoride (F)	mg/L	-	1.5	0.149	0.119
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34
Nitrate (as N)	mg/L	-	10	0.133	0.135
Nitrite (as N)	mg/L	-	1	0.0011	<0.0010
Sulfate (SO4)	mg/L	500	-	65.4	79.6

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2019)

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

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.

Total Metals (WATER)

Analyte	Unit	ALS ID		L2402808-1	L2402808-3
		Guide Limit #1	Guide Limit #2	06-JAN-20 16:00 THE PAS 1 - RAW	06-JAN-20 16:00 THE PAS 2 - TREATED
Aluminum (Al)-Total	mg/L	0.1	-	0.171	0.0334
Antimony (Sb)-Total	mg/L	-	0.006	0.00014	0.00012
Arsenic (As)-Total	mg/L	-	0.01	0.00083	0.00029
Barium (Ba)-Total	mg/L	-	1	0.0831	0.0635
Beryllium (Be)-Total	mg/L	-	-	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	<0.000050	<0.000050
Boron (B)-Total	mg/L	-	5	0.021	0.020
Cadmium (Cd)-Total	mg/L	-	0.005	0.0000163	0.0000066
Calcium (Ca)-Total	mg/L	-	-	53.5	50.6
Cesium (Cs)-Total	mg/L	-	-	0.000026	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	0.00032	<0.00010
Cobalt (Co)-Total	mg/L	-	-	0.00021	<0.00010
Copper (Cu)-Total	mg/L	1	2	0.00167	0.00149
Iron (Fe)-Total	mg/L	0.3	-	0.282	<0.010
Lead (Pb)-Total	mg/L	-	0.005	0.000195	<0.000050
Lithium (Li)-Total	mg/L	-	-	0.0120	0.0117
Magnesium (Mg)-Total	mg/L	-	-	22.4	21.5
Manganese (Mn)-Total	mg/L	0.02	0.12	0.0239	0.00614
Molybdenum (Mo)-Total	mg/L	-	-	0.00123	0.00117
Nickel (Ni)-Total	mg/L	-	-	0.00171	0.00134
Phosphorus (P)-Total	mg/L	-	-	<0.030	<0.050
Potassium (K)-Total	mg/L	-	-	3.02	2.99
Rubidium (Rb)-Total	mg/L	-	-	0.00121	0.00097
Selenium (Se)-Total	mg/L	-	0.05	0.000235	0.000234
Silicon (Si)-Total	mg/L	-	-	1.29	0.91
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	200	-	20.1	19.9
Strontium (Sr)-Total	mg/L	-	7	0.373	0.345
Sulfur (S)-Total	mg/L	-	-	22.7	
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-	<0.00010	0.00013

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2019)

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

■ 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.

Total Metals (WATER)

Analyte	Unit	ALS ID		L2402808-1	L2402808-3
		Guide Limit #1	Guide Limit #2	06-JAN-20 16:00 THE PAS 1 - RAW	06-JAN-20 16:00 THE PAS 2 - TREATED
Titanium (Ti)-Total	mg/L	-	-	0.00507	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.000999	0.000336
Vanadium (V)-Total	mg/L	-	-	0.00081	<0.00050
Zinc (Zn)-Total	mg/L	5	-	<0.0030	<0.0030
Zirconium (Zr)-Total	mg/L	-	-	0.00029	<0.00020

Federal Guidelines for Canadian Drinking Water Quality (MAR, 2019)
#1: GCDWQ - Aesthetic Objective/Other Value
#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

■ 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).

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-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc			
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

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<p>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.</p> <p>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:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F
<p>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.</p>			
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
PH-WP	Water	pH	APHA 4500H
<p>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.</p>			
SAMPNOTRECD-ONREP-WP	Misc.	Sample not received	SAMPLE NOT RECEIVED
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
TDS-WP	Water	Total Dissolved Solids (TDS)	APHA 2540 SOLIDS C,E
<p>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.</p>			
TURBIDITY-WP	Water	Turbidity	APHA 2130B (modified)
<p>Turbidity in aqueous matrices is determined by the nephelometric method.</p>			
UV-%TRANS-WP	Water	UV Transmittance (Calculated)	APHA 5910B
<p>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.</p>			

**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 wwt - 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: L2402808

Report Date: 14-JAN-20

Page 1 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP Water								
Batch R4965553								
WG3254996-15	DUP	L2402808-1						
Alkalinity, Total (as CaCO3)		172	172		mg/L	0.2	20	08-JAN-20
WG3254996-14	LCS							
Alkalinity, Total (as CaCO3)			105.6		%		85-115	08-JAN-20
WG3254996-11	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-JAN-20
BR-L-IC-N-WP Water								
Batch R4965763								
WG3254447-7	DUP	L2402808-1						
Bromide (Br)		0.015	0.011	J	mg/L	0.004	0.02	08-JAN-20
WG3254447-6	LCS							
Bromide (Br)			104.5		%		85-115	08-JAN-20
WG3254447-5	MB							
Bromide (Br)			<0.010		mg/L		0.01	08-JAN-20
WG3254447-8	MS	L2402808-1						
Bromide (Br)			108.6		%		75-125	08-JAN-20
C-DOC-HTC-WP Water								
Batch R4965527								
WG3254972-3	DUP	L2401995-1						
Dissolved Organic Carbon		9.63	9.45		mg/L	1.9	20	08-JAN-20
WG3254972-2	LCS							
Dissolved Organic Carbon			97.8		%		80-120	08-JAN-20
WG3254972-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JAN-20
WG3254972-4	MS	L2402632-1						
Dissolved Organic Carbon			99.9		%		70-130	08-JAN-20
C-TOC-HTC-WP Water								
Batch R4965548								
WG3254984-3	DUP	L2401995-1						
Total Organic Carbon		9.25	10.7		mg/L	15	20	08-JAN-20
WG3254984-7	DUP	L2403220-1						
Total Organic Carbon		8.93	8.65		mg/L	3.2	20	08-JAN-20
WG3254984-2	LCS							
Total Organic Carbon			98.7		%		80-120	08-JAN-20
WG3254984-6	LCS							
Total Organic Carbon			104.7		%		80-120	08-JAN-20
WG3254984-1	MB							



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 2 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP Water								
Batch R4965548								
WG3254984-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	08-JAN-20
WG3254984-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	08-JAN-20
WG3254984-4	MS	L2402220-2						
Total Organic Carbon			103.1		%		70-130	08-JAN-20
CL-L-IC-N-WP Water								
Batch R4965763								
WG3254447-7	DUP	L2402808-1						
Chloride (Cl)		11.0	11.0		mg/L	0.2	20	08-JAN-20
WG3254447-6	LCS							
Chloride (Cl)			102.7		%		90-110	08-JAN-20
WG3254447-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	08-JAN-20
WG3254447-8	MS	L2402808-1						
Chloride (Cl)			106.0		%		75-125	08-JAN-20
COLOUR-TRUE-WP Water								
Batch R4966287								
WG3255786-3	DUP	L2402808-3						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	08-JAN-20
WG3255786-2	LCS							
Colour, True			96.4		%		85-115	08-JAN-20
WG3255786-1	MB							
Colour, True			<5.0		CU		5	08-JAN-20
EC-WP Water								
Batch R4965553								
WG3254996-15	DUP	L2402808-1						
Conductivity		466	470		umhos/cm	0.9	10	08-JAN-20
WG3254996-13	LCS							
Conductivity			99.7		%		90-110	08-JAN-20
WG3254996-11	MB							
Conductivity			<1.0		umhos/cm		1	08-JAN-20
F-IC-N-WP Water								
Batch R4965763								
WG3254447-7	DUP	L2402808-1						
Fluoride (F)		0.149	0.149		mg/L	0.1	20	08-JAN-20
WG3254447-6	LCS							



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 3 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP		Water						
Batch	R4965763							
WG3254447-6	LCS							
Fluoride (F)			105.7		%		90-110	08-JAN-20
WG3254447-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-JAN-20
WG3254447-8	MS	L2402808-1						
Fluoride (F)			108.6		%		75-125	08-JAN-20
MET-T-CCMS-WP		Water						
Batch	R4966978							
WG3255624-4	DUP	WG3255624-3						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	10-JAN-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Arsenic (As)-Total		0.00018	0.00017		mg/L	7.0	20	10-JAN-20
Barium (Ba)-Total		0.00456	0.00447		mg/L	1.9	20	10-JAN-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JAN-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JAN-20
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-JAN-20
Calcium (Ca)-Total		7.46	7.56		mg/L	1.4	20	10-JAN-20
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JAN-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JAN-20
Iron (Fe)-Total		0.049	0.051		mg/L	3.5	20	10-JAN-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JAN-20
Lithium (Li)-Total		0.0028	0.0030		mg/L	5.5	20	10-JAN-20
Magnesium (Mg)-Total		4.99	4.93		mg/L	1.2	20	10-JAN-20
Manganese (Mn)-Total		0.00198	0.00201		mg/L	1.8	20	10-JAN-20
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JAN-20
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JAN-20
Potassium (K)-Total		0.457	0.452		mg/L	1.0	20	10-JAN-20
Phosphorus (P)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	10-JAN-20
Rubidium (Rb)-Total		0.00021	<0.00020	RPD-NA	mg/L	N/A	20	10-JAN-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JAN-20
Silicon (Si)-Total		0.62	0.69		mg/L	9.9	20	10-JAN-20



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 4 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8
 Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4966978							
WG3255624-4 DUP		WG3255624-3						
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JAN-20
Sodium (Na)-Total		1.04	1.01		mg/L	3.5	20	10-JAN-20
Strontium (Sr)-Total		0.0345	0.0348		mg/L	0.9	20	10-JAN-20
Sulfur (S)-Total		1.05	1.07		mg/L	2.2	20	10-JAN-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JAN-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JAN-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	10-JAN-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JAN-20
Uranium (U)-Total		0.000018	0.000018		mg/L	3.4	20	10-JAN-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JAN-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	10-JAN-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JAN-20
WG3255624-2 LCS								
Aluminum (Al)-Total			104.0		%		80-120	10-JAN-20
Antimony (Sb)-Total			104.2		%		80-120	10-JAN-20
Arsenic (As)-Total			98.2		%		80-120	10-JAN-20
Barium (Ba)-Total			99.8		%		80-120	10-JAN-20
Beryllium (Be)-Total			103.6		%		80-120	10-JAN-20
Bismuth (Bi)-Total			104.6		%		80-120	10-JAN-20
Boron (B)-Total			99.2		%		80-120	10-JAN-20
Cadmium (Cd)-Total			100.2		%		80-120	10-JAN-20
Calcium (Ca)-Total			101.5		%		80-120	10-JAN-20
Cesium (Cs)-Total			103.9		%		80-120	10-JAN-20
Chromium (Cr)-Total			102.3		%		80-120	10-JAN-20
Cobalt (Co)-Total			99.2		%		80-120	10-JAN-20
Copper (Cu)-Total			101.0		%		80-120	10-JAN-20
Iron (Fe)-Total			90.8		%		80-120	10-JAN-20
Lead (Pb)-Total			104.4		%		80-120	10-JAN-20
Lithium (Li)-Total			106.2		%		80-120	10-JAN-20
Magnesium (Mg)-Total			104.6		%		80-120	10-JAN-20
Manganese (Mn)-Total			100.1		%		80-120	10-JAN-20



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 5 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4966978							
WG3255624-2 LCS								
Molybdenum (Mo)-Total			107.0		%		80-120	10-JAN-20
Nickel (Ni)-Total			97.5		%		80-120	10-JAN-20
Potassium (K)-Total			97.1		%		80-120	10-JAN-20
Phosphorus (P)-Total			104.4		%		80-120	10-JAN-20
Rubidium (Rb)-Total			98.0		%		80-120	10-JAN-20
Selenium (Se)-Total			100.1		%		80-120	10-JAN-20
Silicon (Si)-Total			107.2		%		80-120	10-JAN-20
Silver (Ag)-Total			104.1		%		80-120	10-JAN-20
Sodium (Na)-Total			97.7		%		80-120	10-JAN-20
Strontium (Sr)-Total			105.4		%		80-120	10-JAN-20
Sulfur (S)-Total			114.4		%		80-120	10-JAN-20
Tellurium (Te)-Total			101.5		%		80-120	10-JAN-20
Thallium (Tl)-Total			103.1		%		80-120	10-JAN-20
Thorium (Th)-Total			101.4		%		80-120	10-JAN-20
Tin (Sn)-Total			100.3		%		80-120	10-JAN-20
Titanium (Ti)-Total			98.2		%		80-120	10-JAN-20
Tungsten (W)-Total			103.2		%		80-120	10-JAN-20
Uranium (U)-Total			103.4		%		80-120	10-JAN-20
Vanadium (V)-Total			100.3		%		80-120	10-JAN-20
Zinc (Zn)-Total			101.3		%		80-120	10-JAN-20
Zirconium (Zr)-Total			100.6		%		80-120	10-JAN-20
WG3255624-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JAN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JAN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JAN-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JAN-20



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 6 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4966978							
WG3255624-1 MB								
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JAN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JAN-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	10-JAN-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	10-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JAN-20
Sulfur (S)-Total			<0.50		mg/L		0.5	10-JAN-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	10-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JAN-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JAN-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	10-JAN-20
WG3255624-5 MS		WG3255624-3						
Aluminum (Al)-Total			102.5		%		70-130	10-JAN-20
Antimony (Sb)-Total			108.3		%		70-130	10-JAN-20
Arsenic (As)-Total			99.4		%		70-130	10-JAN-20
Barium (Ba)-Total			99.0		%		70-130	10-JAN-20
Beryllium (Be)-Total			102.9		%		70-130	10-JAN-20
Bismuth (Bi)-Total			104.5		%		70-130	10-JAN-20



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 7 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8
 Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4966978							
WG3255624-5 MS		WG3255624-3						
Boron (B)-Total			106.0		%		70-130	10-JAN-20
Cadmium (Cd)-Total			98.9		%		70-130	10-JAN-20
Calcium (Ca)-Total			N/A	MS-B	%		-	10-JAN-20
Cesium (Cs)-Total			106.6		%		70-130	10-JAN-20
Chromium (Cr)-Total			99.6		%		70-130	10-JAN-20
Cobalt (Co)-Total			98.9		%		70-130	10-JAN-20
Copper (Cu)-Total			97.0		%		70-130	10-JAN-20
Iron (Fe)-Total			99.5		%		70-130	10-JAN-20
Lead (Pb)-Total			105.8		%		70-130	10-JAN-20
Lithium (Li)-Total			104.8		%		70-130	10-JAN-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	10-JAN-20
Manganese (Mn)-Total			99.2		%		70-130	10-JAN-20
Molybdenum (Mo)-Total			111.0		%		70-130	10-JAN-20
Nickel (Ni)-Total			98.6		%		70-130	10-JAN-20
Potassium (K)-Total			96.8		%		70-130	10-JAN-20
Phosphorus (P)-Total			96.9		%		70-130	10-JAN-20
Rubidium (Rb)-Total			98.5		%		70-130	10-JAN-20
Selenium (Se)-Total			97.3		%		70-130	10-JAN-20
Silicon (Si)-Total			96.7		%		70-130	10-JAN-20
Silver (Ag)-Total			106.4		%		70-130	10-JAN-20
Sodium (Na)-Total			98.5		%		70-130	10-JAN-20
Strontium (Sr)-Total			N/A	MS-B	%		-	10-JAN-20
Sulfur (S)-Total			99.8		%		70-130	10-JAN-20
Tellurium (Te)-Total			105.9		%		70-130	10-JAN-20
Thallium (Tl)-Total			105.3		%		70-130	10-JAN-20
Thorium (Th)-Total			105.6		%		70-130	10-JAN-20
Tin (Sn)-Total			98.5		%		70-130	10-JAN-20
Titanium (Ti)-Total			98.5		%		70-130	10-JAN-20
Tungsten (W)-Total			105.3		%		70-130	10-JAN-20
Uranium (U)-Total			106.2		%		70-130	10-JAN-20
Vanadium (V)-Total			97.8		%		70-130	10-JAN-20
Zinc (Zn)-Total			101.7		%		70-130	10-JAN-20
Zirconium (Zr)-Total			106.5		%		70-130	10-JAN-20



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 8 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8
 Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-COL-WP	Water							
Batch	R4965993							
WG3254923-27	DUP	L2402634-1						
Ammonia, Total (as N)		0.300	0.310		mg/L	3.3	20	08-JAN-20
WG3254923-26	LCS							
Ammonia, Total (as N)			91.3		%		85-115	08-JAN-20
WG3254923-25	MB							
Ammonia, Total (as N)			<0.010		mg/L		0.01	08-JAN-20
WG3254923-28	MS	L2402634-2						
Ammonia, Total (as N)			91.6		%		75-125	08-JAN-20
NO2-L-IC-N-WP	Water							
Batch	R4965763							
WG3254447-7	DUP	L2402808-1						
Nitrite (as N)		0.0011	<0.0010	RPD-NA	mg/L	N/A	20	08-JAN-20
WG3254447-6	LCS							
Nitrite (as N)			103.1		%		90-110	08-JAN-20
WG3254447-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-JAN-20
WG3254447-8	MS	L2402808-1						
Nitrite (as N)			104.2		%		75-125	08-JAN-20
NO3-L-IC-N-WP	Water							
Batch	R4965763							
WG3254447-7	DUP	L2402808-1						
Nitrate (as N)		0.133	0.133		mg/L	0.4	20	08-JAN-20
WG3254447-6	LCS							
Nitrate (as N)			102.6		%		90-110	08-JAN-20
WG3254447-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-JAN-20
WG3254447-8	MS	L2402808-1						
Nitrate (as N)			106.2		%		75-125	08-JAN-20
PH-WP	Water							
Batch	R4965553							
WG3254996-15	DUP	L2402808-1						
pH		8.07	8.10	J	pH units	0.03	0.2	08-JAN-20
WG3254996-12	LCS							
pH			7.36		pH units		7.3-7.5	08-JAN-20
SO4-IC-N-WP	Water							



Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Page 9 of 11

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP		Water						
Batch	R4965763							
WG3254447-7	DUP	L2402808-1						
Sulfate (SO4)		65.4	65.6		mg/L	0.3	20	08-JAN-20
WG3254447-6	LCS							
Sulfate (SO4)			103.4		%		90-110	08-JAN-20
WG3254447-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-JAN-20
WG3254447-8	MS	L2402808-1						
Sulfate (SO4)			104.2		%		75-125	08-JAN-20
TDS-WP		Water						
Batch	R4967379							
WG3254301-3	DUP	L2402181-3						
Total Dissolved Solids		1040	1030		mg/L	0.6	20	08-JAN-20
WG3254301-2	LCS							
Total Dissolved Solids			101.8		%		85-115	08-JAN-20
WG3254301-1	MB							
Total Dissolved Solids			<4.0		mg/L		4	08-JAN-20
TURBIDITY-WP		Water						
Batch	R4965547							
WG3254960-3	DUP	L2402447-1						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	08-JAN-20
WG3254960-2	LCS							
Turbidity			104.0		%		85-115	08-JAN-20
WG3254960-1	MB							
Turbidity			<0.10		NTU		0.1	08-JAN-20
UV-%TRANS-WP		Water						
Batch	R4967014							
WG3255872-3	DUP	L2403220-2						
Transmittance, UV (254 nm)		85.5	86.1		%T/cm	0.7	20	08-JAN-20
WG3255872-1	IRM	BLANK						
Transmittance, UV (254 nm)			100.0		%		99.5-100.5	08-JAN-20
WG3255872-2	LCS							
Transmittance, UV (254 nm)			95.9		%		85-115	08-JAN-20

Quality Control Report

Workorder: L2402808

Report Date: 14-JAN-20

Client: Town of The Pas - Water Plant
Town of The Pas Box 870
The Pas MB R9A 1K8
Contact: RYAN LAGACE

Page 10 of 11

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: L2402808

Report Date: 14-JAN-20

Client: Town of The Pas - Water Plant
Town of The Pas Box 870
The Pas MB R9A 1K8
Contact: RYAN LAGACE

Page 11 of 11

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	06-JAN-20 16:00	08-JAN-20 12:00	0.25	44	hours	EHTR-FM
	3	06-JAN-20 16:00	08-JAN-20 12:00	0.25	44	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).

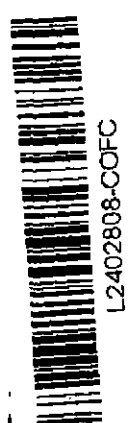
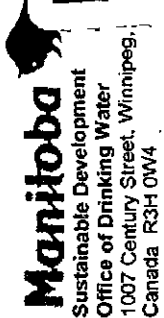
Notes*:

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 L2402808 were received on 07-JAN-20 11:50.

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.



in of Custody (COC)
itoba Drinking Water Systems

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 Owner (email PDF):
 Contact: Sam Mirza
 Address: Box 870, The Pas, MB R9A1K8
 Phone: (204) 627-1124
 Email: sam@townofthepas.ca

Report to Operator (email PDF):
 Contact: Ryan Lagace
 Address: Box 870, The Pas, MB R9A1K8
 Phone: (204) 627-1142
 Email: wrp@townofthepas.ca

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

Client / Project Information: Lab: _____ Agency Code: 382 Report Type: EMS (Lab-MWS) Project: DWQ-C
 Operation Name: THE PAS - PWS
 Operation Code: 226.00
 Operation ID: 11490
 Sampled by: *Allen L...*

December-2019

Expected Sample Time:

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-mm-yyy	Sample Time hh:mm	Sample Matrix	Sample Type	# of Containers
1912BL0008	MB05KLD071	The Pas 1 - Raw	3.60	3.80	06/20/2020	4:00	6	1	4
1912BL0010	MB05KLD073	The Pas 3 - Distribution			06/20/2020	09:00	9	1	1
1912BL0014	MB05KLD072	The Pas 2 - Treated			06/20/2020	10:00	10	1	4

Failure to complete all portions of this form may delay analysis.
 Please fill in this form LEGIBLY.
 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: *Allen L...* Date & Time: Jan 6 2020 4:30 PM
 Sample Matrix: 6-Raw Water, 9-Distributed Water, 10-Treated Water
 Sample Type: 1-Grab Sample
 Validated By (lab use only):
 Sample Condition (lab use only):
 Temperature: 10.6
 Samples Received in Good Condition? Y/N



Town of The Pas - Water Plant
ATTN: RYAN LAGACE
Town of The Pas
Box 870
The Pas MB R9A 1K8

Date Received: 21-JAN-20
Report Date: 03-FEB-20 09:20 (MT)
Version: FINAL

Client Phone: 204-627-1142

Certificate of Analysis

Lab Work Order #: L2407688
Project P.O. #: CONTRACT 5700-2018/19
Job Reference: WP226.00
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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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Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407688-3 THE PAS 3 - DISTRIBUTION @ REF L2402808-2							
Sampled By: CLIENT on 20-JAN-20 @ 15:30							
Matrix: DRINKING WATER - DISTRIBUTION							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0250		0.0030	mg/L	28-JAN-20	31-JAN-20	R4986578
Antimony (Sb)-Total	0.00012		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Arsenic (As)-Total	0.00031		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Barium (Ba)-Total	0.0708		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	28-JAN-20	31-JAN-20	R4986578
Boron (B)-Total	0.025		0.010	mg/L	28-JAN-20	31-JAN-20	R4986578
Cadmium (Cd)-Total	0.0000077		0.0000050	mg/L	28-JAN-20	31-JAN-20	R4986578
Calcium (Ca)-Total	53.0		0.050	mg/L	28-JAN-20	31-JAN-20	R4986578
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	28-JAN-20	31-JAN-20	R4986578
Chromium (Cr)-Total	<0.00010		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Copper (Cu)-Total	0.00907		0.00050	mg/L	28-JAN-20	31-JAN-20	R4986578
Iron (Fe)-Total	0.272		0.010	mg/L	28-JAN-20	31-JAN-20	R4986578
Lead (Pb)-Total	0.000211		0.000050	mg/L	28-JAN-20	31-JAN-20	R4986578
Lithium (Li)-Total	0.0137		0.0010	mg/L	28-JAN-20	31-JAN-20	R4986578
Magnesium (Mg)-Total	21.9		0.0050	mg/L	28-JAN-20	31-JAN-20	R4986578
Manganese (Mn)-Total	0.0112		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Molybdenum (Mo)-Total	0.00114		0.000050	mg/L	28-JAN-20	31-JAN-20	R4986578
Nickel (Ni)-Total	0.00137		0.00050	mg/L	28-JAN-20	31-JAN-20	R4986578
Potassium (K)-Total	3.46		0.050	mg/L	28-JAN-20	31-JAN-20	R4986578
Phosphorus (P)-Total	<0.030		0.030	mg/L	28-JAN-20	31-JAN-20	R4986578
Rubidium (Rb)-Total	0.00109		0.00020	mg/L	28-JAN-20	31-JAN-20	R4986578
Selenium (Se)-Total	0.000243		0.000050	mg/L	28-JAN-20	31-JAN-20	R4986578
Silicon (Si)-Total	1.14		0.10	mg/L	28-JAN-20	31-JAN-20	R4986578
Silver (Ag)-Total	<0.000010		0.000010	mg/L	28-JAN-20	31-JAN-20	R4986578
Sodium (Na)-Total	24.2		0.050	mg/L	28-JAN-20	31-JAN-20	R4986578
Strontium (Sr)-Total	0.351		0.00020	mg/L	28-JAN-20	31-JAN-20	R4986578
Sulfur (S)-Total	28.3		0.50	mg/L	28-JAN-20	31-JAN-20	R4986578
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	28-JAN-20	31-JAN-20	R4986578
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	28-JAN-20	31-JAN-20	R4986578
Thorium (Th)-Total	<0.00010		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Tin (Sn)-Total	<0.00010		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Titanium (Ti)-Total	<0.00030		0.00030	mg/L	28-JAN-20	31-JAN-20	R4986578
Tungsten (W)-Total	<0.00010		0.00010	mg/L	28-JAN-20	31-JAN-20	R4986578
Uranium (U)-Total	0.000435		0.000010	mg/L	28-JAN-20	31-JAN-20	R4986578
Vanadium (V)-Total	<0.00050		0.00050	mg/L	28-JAN-20	31-JAN-20	R4986578
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	28-JAN-20	31-JAN-20	R4986578
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	28-JAN-20	31-JAN-20	R4986578

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)
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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.

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

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

Chain of Custody Numbers:

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.



Quality Control Report

Workorder: L2407688

Report Date: 03-FEB-20

Page 1 of 4

Client: Town of The Pas - Water Plant
 Town of The Pas Box 870
 The Pas MB R9A 1K8

Contact: RYAN LAGACE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4986578							
WG3264471-2	LCS							
Aluminum (Al)-Total			106.8		%		80-120	31-JAN-20
Antimony (Sb)-Total			107.2		%		80-120	31-JAN-20
Arsenic (As)-Total			104.6		%		80-120	31-JAN-20
Barium (Ba)-Total			104.9		%		80-120	31-JAN-20
Beryllium (Be)-Total			106.1		%		80-120	31-JAN-20
Bismuth (Bi)-Total			105.8		%		80-120	31-JAN-20
Boron (B)-Total			103.4		%		80-120	31-JAN-20
Cadmium (Cd)-Total			104.2		%		80-120	31-JAN-20
Calcium (Ca)-Total			106.4		%		80-120	31-JAN-20
Cesium (Cs)-Total			111.1		%		80-120	31-JAN-20
Chromium (Cr)-Total			105.6		%		80-120	31-JAN-20
Cobalt (Co)-Total			105.5		%		80-120	31-JAN-20
Copper (Cu)-Total			107.4		%		80-120	31-JAN-20
Iron (Fe)-Total			97.8		%		80-120	31-JAN-20
Lead (Pb)-Total			109.5		%		80-120	31-JAN-20
Lithium (Li)-Total			100.7		%		80-120	31-JAN-20
Magnesium (Mg)-Total			114.4		%		80-120	31-JAN-20
Manganese (Mn)-Total			106.4		%		80-120	31-JAN-20
Molybdenum (Mo)-Total			104.9		%		80-120	31-JAN-20
Nickel (Ni)-Total			103.5		%		80-120	31-JAN-20
Potassium (K)-Total			109.1		%		80-120	31-JAN-20
Phosphorus (P)-Total			109.6		%		80-120	31-JAN-20
Rubidium (Rb)-Total			106.7		%		80-120	31-JAN-20
Selenium (Se)-Total			102.0		%		80-120	31-JAN-20
Silicon (Si)-Total			103.1		%		80-120	31-JAN-20
Silver (Ag)-Total			111.9		%		80-120	31-JAN-20
Sodium (Na)-Total			107.9		%		80-120	31-JAN-20
Strontium (Sr)-Total			112.3		%		80-120	31-JAN-20
Sulfur (S)-Total			97.7		%		80-120	31-JAN-20
Tellurium (Te)-Total			108.4		%		80-120	31-JAN-20
Thallium (Tl)-Total			108.8		%		80-120	31-JAN-20
Thorium (Th)-Total			103.4		%		80-120	31-JAN-20
Tin (Sn)-Total			102.3		%		80-120	31-JAN-20
Titanium (Ti)-Total			100.6		%		80-120	31-JAN-20



Quality Control Report

Workorder: L2407688

Report Date: 03-FEB-20

Page 2 of 4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4986578							
WG3264471-2 LCS								
Tungsten (W)-Total			108.7		%		80-120	31-JAN-20
Uranium (U)-Total			118.8		%		80-120	31-JAN-20
Vanadium (V)-Total			105.2		%		80-120	31-JAN-20
Zinc (Zn)-Total			104.1		%		80-120	31-JAN-20
Zirconium (Zr)-Total			105.2		%		80-120	31-JAN-20
WG3264471-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	31-JAN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-JAN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-JAN-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	31-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	31-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-JAN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	31-JAN-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	31-JAN-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	31-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	31-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	31-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-JAN-20



Quality Control Report

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Page 3 of 4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch	R4986578							
WG3264471-1 MB								
Sulfur (S)-Total			<0.50		mg/L		0.5	31-JAN-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	31-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-JAN-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-JAN-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	31-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-JAN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-JAN-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	31-JAN-20

Quality Control Report

Workorder: L2407688

Report Date: 03-FEB-20

Page 4 of 4

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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.

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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



L2407688-COFC

1329 Niakwa Road East, Unit 12
Reg. MB R2J 3T4 (204) 255-9720

BACTERIA SAMPLING ONLY

For Laboratory use only

Condition of samples upon receipt

Acceptable []

Not acceptable []

Login Number

Date Received

Jan 21

Comments

Time Received

1105

Average temperature

10.0

Deg C

Received By

CRD

To be completed by client. The Province of Manitoba reserves the right to refuse credits if this form is incompletely filled.

ODW Code: WP226.00	Water System Name: TOWN OF THE PAS	Regional Drinking Water Officer: BRIAN LUNDMARK
Date sampled: <u>Jan 20/2020</u>	Contact Name: RYAN LAGACE	MB Approval ID: 11490
Analysis: TC,EC,QT51	Phone: 204-627-1142	Phone: 204-679-5984
Is the system under a boil water advisory? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Email addresses: brian.lundmark@gov.mb.ca, wtp@townofthepas.ca, chrism@townofthepas.ca	
Emergency contact name phone number 1. RYAN LAGACE 204-620-0426	Street Address: Town of The Pas Box 870	Additional notes (e.g. any information incorrect on form).
Emergency contact name phone number 2. CHRIS MCTAGGART 204-620-8654	City/Town: The Pas	
Sampler's signature <u>Allen Hill</u>	Postal Code: R9A 1K8	
Is this a Re-Sample? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	FAX: 204-623-3951	
	Customer Number: W7307	

Client Supplied

Sample	Sample Identification	Time Sampled	Free Chlorine	Total Chlorine	Mono Chloramine	Chlorine Dioxide	Other Disinfectant	Turbidity
1	THE PAS 1 - RAW	3:30pm	/	/				7.03
2	THE PAS 2 - TREATED	11	2.50	2.80				0.11
3	THE PAS 3 - DISTRIBUTION @ <u>North Plains</u>	11	0.70	1.06				0.38
4	THE PAS 3 - DISTRIBUTION @ <u>Garage</u>	11	0.49	0.63				1.23
S	reference wO# L2402808-2 Metals	11	0.44	0.67				1.20