



LGD of Pinawa - PWS
ATTN: BRENT HENSCHALL
Pinawa - PWS
Box 100
Pinawa MB R0E 1L0

Date Received: 07-OCT-21
Report Date: 14-OCT-21 13:47 (MT)
Version: FINAL

Client Phone: 204-753-2542

Certificate of Analysis

Lab Work Order #: L2648758
Project P.O. #: NOT SUBMITTED
Job Reference: PINAWA - PWS 166.00
C of C Numbers:
Legal Site Desc: 7037



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
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Physical Tests (WATER)

		ALS ID		L2648758-1	L2648758-2
		Sampled Date		06-OCT-21	06-OCT-21
		Sampled Time		11:00	11:15
		Sample ID		PINAWA 1 - RAW	PINAWA 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Colour, True	CU	15	-	17.3	<5.0
Conductivity	umhos/cm	-	-	106	168
Hardness (as CaCO ₃)	mg/L	-	-	48.3 HTC	47.3 HTC
Langelier Index (4 C)	No Unit	-	-	-1.2	-1.2
Langelier Index (60 C)	No Unit	-	-	-0.44	-0.44
pH	pH units	7.00-10.5	-	7.59	7.65
Total Dissolved Solids	mg/L	500	-	70	87
Transmittance, UV (254 nm)	%T/cm	-	-	57.1	87.9
Turbidity	NTU	-	-	5.11	<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		L2648758-1	L2648758-2
		Sampled Date		06-OCT-21	06-OCT-21
		Sampled Time		11:00	11:15
		Sample ID		PINAWA 1 - RAW	PINAWA 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Alkalinity, Total (as CaCO ₃)	mg/L	-	-	46.9	43.3
Ammonia, Total (as N)	mg/L	-	-	<0.010	0.036
Bicarbonate (HCO ₃)	mg/L	-	-	57.2	52.8
Bromide (Br)	mg/L	-	-	<0.010	<0.010
Carbonate (CO ₃)	mg/L	-	-	<0.60	<0.60
Chloride (Cl)	mg/L	250	-	1.94	4.55
Fluoride (F)	mg/L	-	1.5	0.046	0.020
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34
Nitrate (as N)	mg/L	-	10	0.0099	0.0251
Nitrite (as N)	mg/L	-	1	<0.0010	<0.0010
Sulfate (SO ₄)	mg/L	500	-	3.86	29.0

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)

Organic / Inorganic Carbon (WATER)

		ALS ID		L2648758-1	L2648758-2
		Sampled Date		06-OCT-21	06-OCT-21
		Sampled Time		11:00	11:15
		Sample ID		PINAWA 1 - RAW	PINAWA 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Dissolved Organic Carbon	mg/L	-	-	9.85	4.92
Total Organic Carbon	mg/L	-	-	9.56	4.91

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)

 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		L2648758-1	L2648758-2	L2648758-3
		Sampled Date		06-OCT-21	06-OCT-21	06-OCT-21
		Sampled Time		11:00	11:15	11:30
		Sample ID		PINAWA 1 - RAW	PINAWA 2 - TREATED	PINAWA 3 - DISTRIBUTION @ LEWIS CENTRE
Analyte	Unit	Guide Limit #1	Guide Limit #2			
Aluminum (Al)-Total	mg/L	0.1	2.9	0.211	0.0140	0.0237
Antimony (Sb)-Total	mg/L	-	0.006	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	-	0.01	0.00091	0.00037	0.00040
Barium (Ba)-Total	mg/L	-	2	0.0112	0.00884	0.00837
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	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	mg/L	-	0.005	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	-	-	12.4	12.2	13.1
Cesium (Cs)-Total	mg/L	-	-	0.000030	<0.000010	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	0.00040	<0.00010	0.00017
Cobalt (Co)-Total	mg/L	-	-	0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	1	2	0.00185	<0.00050	0.0376
Iron (Fe)-Total	mg/L	0.3	-	0.209	<0.010	0.038
Lead (Pb)-Total	mg/L	-	0.005	0.000141	<0.000050	0.000353
Lithium (Li)-Total	mg/L	-	-	0.0014	0.0012	0.0011
Magnesium (Mg)-Total	mg/L	-	-	4.23	4.08	3.80
Manganese (Mn)-Total	mg/L	0.02	0.12	0.0103	0.00066	0.00162
Molybdenum (Mo)-Total	mg/L	-	-	0.000146	0.000159	0.000184
Nickel (Ni)-Total	mg/L	-	-	0.00086	0.00087	0.00082
Phosphorus (P)-Total	mg/L	-	-	<0.050	0.511	0.425
Potassium (K)-Total	mg/L	-	-	0.863	0.845	0.862
Rubidium (Rb)-Total	mg/L	-	-	0.00170	0.00137	0.00145
Selenium (Se)-Total	mg/L	-	0.05	0.000125	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	-	0.91	0.50	0.53
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	200	-	2.60	14.4	14.1
Strontium (Sr)-Total	mg/L	-	7	0.0233	0.0236	0.0264
Sulfur (S)-Total	mg/L	-	-			10.3
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010

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)

 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		L2648758-1	L2648758-2	L2648758-3
		Sampled Date		06-OCT-21	06-OCT-21	06-OCT-21
		Sampled Time		11:00	11:15	11:30
		Sample ID		PINAWA 1 - RAW	PINAWA 2 - TREATED	PINAWA 3 - DISTRIBUTION @ LEWIS CENTRE
Analyte	Unit	Guide Limit #1	Guide Limit #2			
Titanium (Ti)-Total	mg/L	-	-	0.00591	<0.00030	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.000085	0.000022	0.000016
Vanadium (V)-Total	mg/L	-	-	0.00090	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	5	-	<0.0030	0.0030	<0.0030
Zirconium (Zr)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020

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)

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**
---------------	--------	------------------	--------------------

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.

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: L2648758

Report Date: 14-OCT-21

Page 1 of 11

Client:

LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0

Contact:

BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP Water								
Batch	R5615550							
WG3635489-10	DUP	L2648817-10						
Alkalinity, Total (as CaCO3)		63.2	61.6		mg/L	2.6	20	08-OCT-21
WG3635489-15	DUP	L2648751-2						
Alkalinity, Total (as CaCO3)		165	162		mg/L	1.3	20	08-OCT-21
WG3635489-14	LCS							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	08-OCT-21
WG3635489-9	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	08-OCT-21
WG3635489-11	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-OCT-21
WG3635489-6	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-OCT-21
BR-L-IC-N-WP Water								
Batch	R5614333							
WG3633445-10	LCS							
Bromide (Br)			97.1		%		85-115	07-OCT-21
WG3633445-9	MB							
Bromide (Br)			<0.010		mg/L		0.01	07-OCT-21
C-DOC-HTC-WP Water								
Batch	R5616326							
WG3636463-3	DUP	L2648758-1						
Dissolved Organic Carbon		9.85	9.88		mg/L	0.2	20	13-OCT-21
WG3636463-2	LCS							
Dissolved Organic Carbon			102.0		%		80-120	13-OCT-21
WG3636463-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-OCT-21
WG3636463-4	MS	L2648758-2						
Dissolved Organic Carbon			102.0		%		70-130	13-OCT-21
C-TOC-HTC-WP Water								
Batch	R5616327							
WG3636479-3	DUP	L2648758-1						
Total Organic Carbon		9.56	9.79		mg/L	2.4	20	13-OCT-21
WG3636479-2	LCS							
Total Organic Carbon			102.7		%		80-120	13-OCT-21
WG3636479-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	13-OCT-21
WG3636479-4	MS	L2648758-2						

Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 2 of 11

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0

Contact: BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R5616327								
WG3636479-4 MS		L2648758-2						
Total Organic Carbon			102.6		%		70-130	13-OCT-21
CL-L-IC-N-WP	Water							
Batch R5614333								
WG3633445-10 LCS								
Chloride (Cl)			99.0		%		90-110	07-OCT-21
WG3633445-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	07-OCT-21
COLOUR-TRUE-WP	Water							
Batch R5615681								
WG3634549-3 DUP		L2648512-1						
Colour, True		7.7	8.1		CU	4.6	20	08-OCT-21
WG3634549-2 LCS								
Colour, True			103.6		%		85-115	08-OCT-21
WG3634549-1 MB								
Colour, True			<5.0		CU		5	08-OCT-21
EC-WP	Water							
Batch R5615550								
WG3635489-10 DUP		L2648817-10						
Conductivity		1510	1510		umhos/cm	0.0	10	08-OCT-21
WG3635489-15 DUP		L2648751-2						
Conductivity		327	329		umhos/cm	0.6	10	08-OCT-21
WG3635489-13 LCS								
Conductivity			101.1		%		90-110	08-OCT-21
WG3635489-8 LCS								
Conductivity			100.6		%		90-110	08-OCT-21
WG3635489-11 MB								
Conductivity			<1.0		umhos/cm		1	08-OCT-21
WG3635489-6 MB								
Conductivity			<1.0		umhos/cm		1	08-OCT-21
F-IC-N-WP	Water							
Batch R5614333								
WG3633445-11 DUP		L2648478-1						
Fluoride (F)		0.079	0.079		mg/L	0.7	20	07-OCT-21
WG3633445-10 LCS								
Fluoride (F)			103.1		%		90-110	07-OCT-21



Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 3 of 11

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0
Contact: BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	Water							
Batch R5614333								
WG3633445-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	07-OCT-21
WG3633445-12 MS		L2648478-1						
Fluoride (F)			102.0		%		75-125	07-OCT-21
MET-T-CCMS-WP	Water							
Batch R5615826								
WG3633666-4 DUP		WG3633666-3						
Aluminum (Al)-Total		0.145	0.143		mg/L	1.5	20	08-OCT-21
Antimony (Sb)-Total		0.00041	0.00038		mg/L	7.0	20	08-OCT-21
Arsenic (As)-Total		0.00350	0.00338		mg/L	3.4	20	08-OCT-21
Barium (Ba)-Total		0.0683	0.0680		mg/L	0.4	20	08-OCT-21
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Boron (B)-Total		0.109	0.107		mg/L	1.3	20	08-OCT-21
Cadmium (Cd)-Total		0.0000393	0.0000360		mg/L	8.9	20	08-OCT-21
Calcium (Ca)-Total		75.3	74.1		mg/L	1.5	20	08-OCT-21
Cesium (Cs)-Total		0.000037	0.000035		mg/L	7.6	20	08-OCT-21
Chromium (Cr)-Total		0.00031	0.00031		mg/L	2.1	20	08-OCT-21
Cobalt (Co)-Total		0.00066	0.00065		mg/L	1.4	20	08-OCT-21
Copper (Cu)-Total		0.00215	0.00211		mg/L	1.6	20	08-OCT-21
Iron (Fe)-Total		0.317	0.316		mg/L	0.3	20	08-OCT-21
Lead (Pb)-Total		0.000213	0.000208		mg/L	2.5	20	08-OCT-21
Lithium (Li)-Total		0.0407	0.0404		mg/L	0.8	20	08-OCT-21
Magnesium (Mg)-Total		30.5	29.9		mg/L	2.2	20	08-OCT-21
Manganese (Mn)-Total		0.318	0.312		mg/L	1.7	20	08-OCT-21
Molybdenum (Mo)-Total		0.0145	0.0141		mg/L	2.8	20	08-OCT-21
Nickel (Ni)-Total		0.00944	0.00917		mg/L	2.9	20	08-OCT-21
Potassium (K)-Total		6.44	6.29		mg/L	2.3	20	08-OCT-21
Phosphorus (P)-Total		0.079	0.069		mg/L	14	20	08-OCT-21
Rubidium (Rb)-Total		0.00398	0.00390		mg/L	2.0	20	08-OCT-21
Selenium (Se)-Total		0.000745	0.000704		mg/L	5.6	20	08-OCT-21
Silicon (Si)-Total		8.49	8.26		mg/L	2.7	20	08-OCT-21
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-OCT-21
Sodium (Na)-Total		34.9	34.0		mg/L	2.8	20	08-OCT-21



Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 4 of 11

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0

Contact: BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5615826							
WG3633666-4 DUP		WG3633666-3						
Strontium (Sr)-Total		0.309	0.297		mg/L	3.7	20	08-OCT-21
Sulfur (S)-Total		48.2	47.7		mg/L	1.0	20	08-OCT-21
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	08-OCT-21
Thallium (Tl)-Total		0.000050	0.000046		mg/L	9.2	20	08-OCT-21
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Titanium (Ti)-Total		0.00443	0.00426		mg/L	3.9	20	08-OCT-21
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Uranium (U)-Total		0.00473	0.00463		mg/L	2.2	20	08-OCT-21
Vanadium (V)-Total		0.00214	0.00212		mg/L	0.8	20	08-OCT-21
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	08-OCT-21
Zirconium (Zr)-Total		0.00030	0.00030		mg/L	0.9	20	08-OCT-21
WG3633666-2 LCS								
Aluminum (Al)-Total			100.4		%		80-120	08-OCT-21
Antimony (Sb)-Total			98.7		%		80-120	08-OCT-21
Arsenic (As)-Total			104.1		%		80-120	08-OCT-21
Barium (Ba)-Total			105.6		%		80-120	08-OCT-21
Beryllium (Be)-Total			89.2		%		80-120	08-OCT-21
Bismuth (Bi)-Total			90.4		%		80-120	08-OCT-21
Boron (B)-Total			83.9		%		80-120	08-OCT-21
Cadmium (Cd)-Total			99.4		%		80-120	08-OCT-21
Calcium (Ca)-Total			95.0		%		80-120	08-OCT-21
Cesium (Cs)-Total			99.8		%		80-120	08-OCT-21
Chromium (Cr)-Total			99.4		%		80-120	08-OCT-21
Cobalt (Co)-Total			101.0		%		80-120	08-OCT-21
Copper (Cu)-Total			99.5		%		80-120	08-OCT-21
Iron (Fe)-Total			98.9		%		80-120	08-OCT-21
Lead (Pb)-Total			93.7		%		80-120	08-OCT-21
Lithium (Li)-Total			87.7		%		80-120	08-OCT-21
Magnesium (Mg)-Total			106.7		%		80-120	08-OCT-21
Manganese (Mn)-Total			99.1		%		80-120	08-OCT-21
Molybdenum (Mo)-Total			93.1		%		80-120	08-OCT-21
Nickel (Ni)-Total			99.4		%		80-120	08-OCT-21



Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 5 of 11

Client:

LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0
Contact: BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5615826							
WG3633666-2 LCS								
Potassium (K)-Total			97.6		%		80-120	08-OCT-21
Phosphorus (P)-Total			105.4		%		80-120	08-OCT-21
Rubidium (Rb)-Total			102.4		%		80-120	08-OCT-21
Selenium (Se)-Total			97.6		%		80-120	08-OCT-21
Silicon (Si)-Total			104.6		%		80-120	08-OCT-21
Silver (Ag)-Total			93.9		%		80-120	08-OCT-21
Sodium (Na)-Total			103.0		%		80-120	08-OCT-21
Strontium (Sr)-Total			92.7		%		80-120	08-OCT-21
Sulfur (S)-Total			106.3		%		80-120	08-OCT-21
Tellurium (Te)-Total			93.6		%		80-120	08-OCT-21
Thallium (Tl)-Total			91.7		%		80-120	08-OCT-21
Thorium (Th)-Total			88.2		%		80-120	08-OCT-21
Tin (Sn)-Total			96.4		%		80-120	08-OCT-21
Titanium (Ti)-Total			94.5		%		80-120	08-OCT-21
Tungsten (W)-Total			95.3		%		80-120	08-OCT-21
Uranium (U)-Total			94.0		%		80-120	08-OCT-21
Vanadium (V)-Total			100.7		%		80-120	08-OCT-21
Zinc (Zn)-Total			97.3		%		80-120	08-OCT-21
Zirconium (Zr)-Total			87.3		%		80-120	08-OCT-21
WG3633666-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-OCT-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-OCT-21
Boron (B)-Total			<0.010		mg/L		0.01	08-OCT-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	08-OCT-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-OCT-21
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	08-OCT-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-OCT-21
Iron (Fe)-Total			<0.010		mg/L		0.01	08-OCT-21



Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 6 of 11

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0
Contact: BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5615826							
WG3633666-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-OCT-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-OCT-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-OCT-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-OCT-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-OCT-21
Potassium (K)-Total			<0.050		mg/L		0.05	08-OCT-21
Phosphorus (P)-Total			<0.030		mg/L		0.03	08-OCT-21
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	08-OCT-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-OCT-21
Silicon (Si)-Total			<0.10		mg/L		0.1	08-OCT-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-OCT-21
Sodium (Na)-Total			<0.050		mg/L		0.05	08-OCT-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-OCT-21
Sulfur (S)-Total			<0.50		mg/L		0.5	08-OCT-21
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	08-OCT-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-OCT-21
Thorium (Th)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-OCT-21
Tungsten (W)-Total			<0.00010		mg/L		0.0001	08-OCT-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-OCT-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-OCT-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-OCT-21
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	08-OCT-21
WG3633666-5 MS		WG3633666-3						
Aluminum (Al)-Total			112.3		%		70-130	08-OCT-21
Antimony (Sb)-Total			88.6		%		70-130	08-OCT-21
Arsenic (As)-Total			96.4		%		70-130	08-OCT-21
Barium (Ba)-Total			N/A	MS-B	%		-	08-OCT-21
Beryllium (Be)-Total			83.3		%		70-130	08-OCT-21
Bismuth (Bi)-Total			82.5		%		70-130	08-OCT-21
Boron (B)-Total			N/A	MS-B	%		-	08-OCT-21
Cadmium (Cd)-Total			86.9		%		70-130	08-OCT-21



Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 7 of 11

Client:

LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0
Contact: BRENT HENSCHHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R5615826							
WG3633666-5	MS	WG3633666-3						
Calcium (Ca)-Total			N/A	MS-B	%	-	08-OCT-21	
Cesium (Cs)-Total			90.8		%	70-130	08-OCT-21	
Chromium (Cr)-Total			93.5		%	70-130	08-OCT-21	
Cobalt (Co)-Total			91.4		%	70-130	08-OCT-21	
Copper (Cu)-Total			87.1		%	70-130	08-OCT-21	
Iron (Fe)-Total			94.0		%	70-130	08-OCT-21	
Lead (Pb)-Total			83.5		%	70-130	08-OCT-21	
Lithium (Li)-Total			82.8		%	70-130	08-OCT-21	
Magnesium (Mg)-Total			N/A	MS-B	%	-	08-OCT-21	
Manganese (Mn)-Total			N/A	MS-B	%	-	08-OCT-21	
Molybdenum (Mo)-Total			81.9		%	70-130	08-OCT-21	
Nickel (Ni)-Total			88.3		%	70-130	08-OCT-21	
Potassium (K)-Total			N/A	MS-B	%	-	08-OCT-21	
Phosphorus (P)-Total			97.9		%	70-130	08-OCT-21	
Rubidium (Rb)-Total			93.8		%	70-130	08-OCT-21	
Selenium (Se)-Total			96.0		%	70-130	08-OCT-21	
Silicon (Si)-Total			105.0		%	70-130	08-OCT-21	
Silver (Ag)-Total			85.2		%	70-130	08-OCT-21	
Sodium (Na)-Total			N/A	MS-B	%	-	08-OCT-21	
Strontium (Sr)-Total			N/A	MS-B	%	-	08-OCT-21	
Sulfur (S)-Total			N/A	MS-B	%	-	08-OCT-21	
Tellurium (Te)-Total			83.7		%	70-130	08-OCT-21	
Thallium (Tl)-Total			82.3		%	70-130	08-OCT-21	
Thorium (Th)-Total			85.2		%	70-130	08-OCT-21	
Tin (Sn)-Total			89.1		%	70-130	08-OCT-21	
Titanium (Ti)-Total			95.1		%	70-130	08-OCT-21	
Tungsten (W)-Total			88.6		%	70-130	08-OCT-21	
Uranium (U)-Total			N/A	MS-B	%	-	08-OCT-21	
Vanadium (V)-Total			95.6		%	70-130	08-OCT-21	
Zinc (Zn)-Total			85.8		%	70-130	08-OCT-21	
Zirconium (Zr)-Total			85.0		%	70-130	08-OCT-21	

NH3-COL-WP

Water



Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Page 9 of 11

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0

Contact: BRENT HENSCHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	Water							
Batch R5614333								
WG3633445-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	07-OCT-21
WG3633445-12 MS Sulfate (SO4)		L2648478-1	N/A	MS-B	%		-	07-OCT-21
TDS-WP	Water							
Batch R5616662								
WG3633306-6 DUP Total Dissolved Solids		L2648817-5 1040	1060		mg/L	1.5	20	08-OCT-21
WG3633306-8 DUP Total Dissolved Solids		L2648817-10 1070	1070		mg/L	0.2	20	08-OCT-21
WG3633306-5 LCS Total Dissolved Solids			92.4		%		85-115	08-OCT-21
WG3633306-4 MB Total Dissolved Solids			<4.0		mg/L		4	08-OCT-21
TURBIDITY-WP	Water							
Batch R5614339								
WG3634085-9 DUP Turbidity		L2648751-6 101	102		NTU	1.0	15	07-OCT-21
WG3634085-8 LCS Turbidity			100.5		%		85-115	07-OCT-21
WG3634085-7 MB Turbidity			<0.10		NTU		0.1	07-OCT-21
UV-%TRANS-WP	Water							
Batch R5614797								
WG3634682-3 DUP Transmittance, UV (254 nm)		L2648758-1 57.1	57.0		%T/cm	0.2	20	08-OCT-21
WG3634682-1 IRM Transmittance, UV (254 nm)		BLANK	100.2		%		99.5-100.5	08-OCT-21
WG3634682-2 LCS Transmittance, UV (254 nm)			97.7		%		85-115	08-OCT-21

Quality Control Report

Workorder: L2648758

Report Date: 14-OCT-21

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0
Contact: BRENT HENSHELL

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: L2648758

Report Date: 14-OCT-21

Client: LGD of Pinawa - PWS
Pinawa - PWS Box 100
Pinawa MB R0E 1L0
Contact: BRENT HENSCHHELL

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-OCT-21 11:00	08-OCT-21 12:00	0.25	49	hours	EHTR-FM
	2	06-OCT-21 11:15	08-OCT-21 12:00	0.25	49	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 L2648758 were received on 07-OCT-21 09:00.

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

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



L2648758-COFC

Study (COC)
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 Operator (email PDF):

Contact: Brent Henschell
Address: Box 100, Pinawa, MB R0E 1L0
Phone: (204) 753-2542
Email: wtp@pinawa.com (General email address for plant);

Report to Owner (email PDF):

Contact: Gisèle Smith
Address: Box 100, Pinawa, MB R0E 1L0
Phone: (204) 753-5105
Email: smithg@pinawa.com; townoffice@pinawa.com

Email PDF copy to:

DWO: Shannon Ganter
DWO Address: Unit B-284 Reimer Ave., Steinbach, MB R5G
DWO Phone: (204) 371-3885
DWO Email: Shannon.Ganter@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: PINAWA - PWS

Operation Code: 166.00

Operation ID: 7037

Sampled by: Lacey Smith

Expected Sample Time:

October-2021

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
2110SG5001	MB05PFD241	Pinawa 1 - Raw	✓	✓	06-oct-2021	11am	6	1	X		4
2110SG5002	MB05PFD242	Pinawa 2 - Treated	1.30	1.53	06-oct-2021	11:15am	10	1	X		4
2110SG5003	MB05PFD243	Pinawa 3 - Distribution <i>Lewis Centre</i>	2.8	1.50	06-oct-2021	11:30	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>Lacey Smith</i>	Date & Time: <i>Oct. 6/21</i>	Validated By (lab use only):	Date & Time:
Received By: <i>AMH</i>	Date & Time: <i>7/10/21 9:00</i>	Sample Condition (lab use only):	
(lab use only)		Temperature: <i>17.8</i>	Samples Received in Good Condition? Y / N