

Rm of Whitemouth



Public Water System

Annual Report

2021

Name of the Public Water System: **Whitemouth Rural Pipeline**

Name of the Legal Owner: **RM of Whitemouth**

Contact Person: **Colleen Johnson (CAO)**

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Name of Operators: **Glen Campbell, Sr. Utility Operator – Water Treatment 2**

Water Distribution 1

Waste Water Small System

Sean Fawley, Operator

- Water Treatment 2

Water Distribution 1

Waste Water Small System

Matthew Pommer, Operator in

- Water Treatment OIT

Training

Water Distribution OIT

Bradly Schultz, Operator in Training - Water Treatment OIT

Water Distribution OIT

Phone during business hours: **(204) 348-2574 or (204) 348-2221**

Date prepared: March 25, 2022

Prepared By: Glen Campbell

Colleen Johnson CAO

Rm of Whitemouth

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Introduction:

The 2021 Public Water System Annual Report summarizes the ability of the RM of Whitemouth to produce and provide safe potable water to our constituents which meets provincial regulations.

1. Description of the Water System:

The RM of Whitemouth Public Water System provides potable drinking water to a population of approximately 1100 residents. Treated water from the water treatment plant meets all health as stated in the *Guidelines for Canadian Drinking Water Quality* as well as provincial regulations. Aesthetic objectives in the *Guidelines for Canadian Drinking Water Quality* met all.

1.1 Water Supply Source

The RM of Whitemouth Water Treatment Plant draws its supply water from Natalie Lake of the Winnipeg River. The Winnipeg River has an abundant supply of high-quality water which is easily treated to meet all standards.

The Water Treatment Plant intake is approximately 12 feet below the surface of the river. The water is then pumped into the Water Treatment Plant situated in Seven Sisters Falls, Mb on Waterline Road.

1.2 Water Treatment Processes

The high quality of water which comes out of the Winnipeg River requires a minimal amount of treatment to meet all provincial requirements. Upon entering the water treatment plant and entering our Actiflo treatment system the raw water is injected with a product called Hydrex 3613 Polymere, which is a flocculating agent, and Aluminum Sulphate Solution, which is a further flocculating agent, and Actisand, which is fine silica sand. These processes are geared mainly towards treating the turbidity and colour of the raw water. The raw water comes out of the Winnipeg River with an average turbidity between 3-10 nephelometric turbidity units (NTU). The Actiflo processes drop this figure to on average between 0.5 -0.7 NTU. The water which has been treated through the Actiflo. After going through the filter, the treated water is at approximately 0.030-0.050 NTU. This number is approximately 11% of our regulated limit. The legal requirement for our treated water is 0.3 NTU after these filters. The water is then stored in a 873,000 litre reservoir.

A result of the Actiflo/ Chemical processes is that the water pH drops to approximately 6.3-6.5. This water is then treated with Sodium Hydroxide 25% solution to raise the pH from 6.3-6.5 to a level of 7.6-7.8. This means that the treated water is very close to neutral which aids in controlling corrosion and deposits. The reservoir water is further treated with Sodium Hypochlorite 12% as a disinfecting agent. Our distribution water must leave the water treatment plant with a minimum of 0.5mg per litre of free chlorine residual and have a minimum of 0.1 mg per litre in all areas of the distribution.

1.3 Water Treatment and Distribution Capacities

The RM of Whitemouth Water Treatment Plant operates at an incoming rate of 15 litres per second and runs for approximately 8 - 12 hours per day using two 20hp distribution duty pumps. We treat approximately 450000 litres daily on average. Distribution system pressure is maintained at between 50-57psi using frequency drive pumps and a pressure relief system.

1.4 Distribution System

RM of Whitemouth's water distribution system is approximately 80 kilometres long and is comprised of approximately 50% PVC and 50% HDPE. Distribution piping varies in size from 8" to 2".

1.5 Number of Connections, and water user types

RM of Whitemouth has approximately 500 connections with a large different type of users from residential, commercial, and farms. From small users to large users. From year round to seasonal connections. In 2019 the RM of Whitemouth started selling water to the RM of Lac Du Bonnet which added another 100 connections

1.6 System Classification and Certification under the Water and Wastewater Facility Operators Regulation under the Environment Act.

A Class 2 Water Treatment Facility

A Class 1 Water Distribution System

2. Disinfection System in Use.

The RM of Whitemouth uses Sodium Hypochlorite 12% as our disinfection method. Disinfection is the selective destruction or inactivation of potential disease-causing organisms in water. As per the *Drinking Water Safety Act* the RM of Whitemouth Public Water System must ensure that we maintain a free disinfectant residual of at least:

- 0.5 mg of free chlorine per litre of water is detectable at the point where water enters the distribution system, after a minimum contact time of 20 minutes
- 0.1 mg of free chlorine per litre of water is detectable at all times at any point in the distribution network.

2.1 Type of Disinfection System Used

The RM of Whitemouth Water Treatment Plant disinfects using Sodium Hypochlorite 12% concentration. Chlorine is added to the system using 2 peristaltic pumps, one as primary one as backup should one fail or fault the other will automatically switch.

2.2 Need for Redundancy and Monitoring

The “Drinking Water and Safety Act” requires that disinfection is continuously maintained. To ensure this we use two separate chlorine pumps allowing for redundancy in the system itself where one side can be turned off and the disinfecting needs will be met by the remaining side and some spare parts which are more prone to fail or need replacing.

Disinfectant total and free residuals are checked and recorded daily at the water treatment plant and bi-weekly at points throughout the distribution system. Results are recorded on the appropriate monitoring forms and are sent to the regional Drinking Water Officer at the end of each month. SCADA system that records free chlorine levels on a continuous basis.

2.3 Disinfectant Residual Overall Performance and Results

For the year 2021 the RM of Whitemouth Public Water System has met 100% of the regulatory requirements for treated water and 100% for distributed water.

3. List of Water Quality Standards

The Province of Manitoba has adopted a number of water quality standards from the *Guidelines for Canadian Drinking Water Quality*, developed by Health Canada. The parameters are health-based and they express the maximum acceptable concentrations for drinking water. Concentration values in excess of the standards constitute a possible health related issue and require corrective actions. The 2021 results for the RM of Whitemouth Public Water System are summarized in the following tables:

3.1 Disinfection Monitoring and Reporting

	Regulatory Requirement	Water System Performance
Free Chlorine Residual entering the Distribution System	≥0.5 mg/L	Meets requirements
Frequency of Testing	Daily	Meets requirements
Free Chlorine Residual in the Distribution System	≥0.1 mg/L	Meets requirements
Frequency of Testing	Bi-Weekly	Meets requirements
Report Submissions	Monthly	Meets requirements

3.2 Bacteriological Monitoring and Reporting

	Regulatory Requirement	Water System Performance
Number of Raw/Incoming Water Samples	Bi-weekly	Meets requirements
Number of Treated Water Samples	Bi-weekly	Meets requirements
Number of Distribution Water Samples	52	Meets requirements
Frequency of Testing	Bi-weekly	Meets requirements
Total Coliform (TC) Present in Water Samples	0 TC per 100mL	Meets requirements
E. Coli (EC) Present in Water Samples	0 EC per 100mL	Meets requirements

3.3 Turbidity Monitoring and Reporting

	Regulatory Requirement	Water System Performance
Chemically assisted, rapid gravity filtration process	≤ 0.3 NTU in at Least 95% Of samples	Meets requirements
Standard	Never to exceed 1.0 NTU	Meets requirements
Frequency of Testing	Continuous	Meets requirements
Report Submissions	Monthly (An effective treatment barrier through monitoring / reporting)	Meets requirements as of June 29/21 Protozoa 3&4 log removal

3.4 Disinfection By-products Monitoring and Reporting

	Regulatory Requirement	Water System Performance
Trihalomethane sampling requirements	Quarterly	Testing required every 2 nd year completed 2021
Total Trihalomethane Standard	<0.1mg/L	Passed 0.0858 2021 results
Haloacetic Acid sampling requirements	Quarterly	Testing required every 2 nd year completed 2021
Haloacetic Acid Standard	<0.08mg/L	Passed 0.0532 2021 results

4. Water System Alterations, Incidents and Corrective Actions

4.1 Water Breaks

All waterline repairs were done while the waterline was still under minimal positive pressure to ensure no in line contamination. After repairs were completed waterlines were flushed and checked to make sure that a satisfactory disinfectant residual was maintained prior to being put back into service. All repairs were done in such a way as to minimize down time for users and as much advance notice given as possible. The RM of Whitemouth had 12 repairs in 2021.

4.2 Water Hook-Ups

During 2021 the RM had 7 new water hookups. A water hookup is when the infrastructure is in the ground and curb stop turned on and left on. We had 2 others that the infrastructure was in the ground but not turned on till 2021. Giving a total of 9 new hookups.

4.3 Other Incidents or Corrective Actions

During 2021 the RM of Whitemouth Public Water System had no incidents or corrective actions required

5. Drinking Water Safety Orders on Water System and Corrective Actions Taken

During 2021, there were no Drinking Water Safety Orders issued for the RM of Whitemouth Public Water System.

6. Boil Water Advisories Issued on Water System and Corrective Actions Taken

During 2021 the RM of Whitemouth Public Water System did have two boil water advisories. These advisories were for the town of Whitemouth only. These advisories were issued on April 28/21 and November 5/21. These advisories were the result of work that was going on for the expansion to the Whitemouth Reservoir.

7. Warnings Issued or Charges Laid on Water System in Accordance with The Drinking Water Safety Act

During 2021 the RM of Whitemouth Public Water System did not have any warnings or charges.

8. Major Expenses Incurred in 2021

In 2021 we had some unexpected expenses. We had to order a new distribution pump for Whitemouth reservoir which has been replaced, raw water pump for the Water Treatment Plant wet well and has been ordered but not replace yet, and a chlorine pump for the Water Treatment Plant and has been ordered and not replaced yet. We also had to order a new UPS/battery backup and a new display for the HMI for the PLC display for the Water Treatment Plant.

9. Anticipated Future Major Cost Items, System Expansion and/or Increased or Decreased Production

Now with Covid restrictions easing, we plan on continuing our utility inspections. We are doing our due diligence to find water breaks and to lower the difference between what we put out of the water treatment plant to what we bill out. It has been indicated in the past we were as high as 30% by the PUB. Over the last few years, we have been focusing on lowering this number and the latest with all the work that we have done, we have gotten that down to +/-15%. Industry standards that are acceptable is around 10% to what is billed out to what is put out by a treatment plant. The lower the number the better but no system is 100% efficient.

February 8, 2022

2021 Annual Compliance Audit

Water System: WHITEMOUTH - PWS	Code: 249.25
Water System Owner: Rural Municipality of Whitemouth	Address: Box 248, 49 Railway Avenue, Whitemouth, MB R0E2G0
Operating Licence: PWS-08-127-02	Expiry Date: November 30, 2022
Water System Assessment Due Date: March 1, 2025	
Public Water System Annual Report Due Date: March 31, 2022	Advisory Notification Plan Due Date: May 1, 2022

- 1) This report documents compliance of the Whitemouth Public Water System for the period from January 1 to December 31, 2021.
- 2) This report provides specific information on the non-compliance incidents identified in the summary below.
- 3) Other than the information provided in this report, the water supplier has complied with The Drinking Water Safety Act, its supporting regulations, and the terms and conditions of the water system's current operating licence.
- 4) This report is based on information submitted by the water supplier, agents of the water supplier, and / or the Province of Manitoba.
- 5) Where non-compliance items are identified, the issues do not necessarily translate into increased public health risk. The Office of Drinking Water uses processes, including boil water advisories, to notify water users of a public health risk.

Non-compliance with Treatment Standards:

Water system was compliant in the audited time period.

Non-compliance Incidents:

Water system was compliant in the audited time period.

If you have any questions, please do not hesitate to contact me at (204) 371-3885.

Sincerely,



Shannon Ganter
Regional Drinking Water Officer



RM of Whitemouth Rural Pipeline
ATTN: GLEN CAMPBELL
Whitemouth Rural Pipeline
Box 248
Whitemouth MB R0E 2G0

Date Received: 26-OCT-21

Report Date: 02-NOV-21 15:15 (MT)
Version: FINAL

Client Phone: 204-348-2574

Certificate of Analysis

Lab Work Order #: L2655624

Project P.O. #:	Contract#: 5648 (MICROCHEM)
Job Reference:	WHITEMOUTH - PWS 249.25
C of C Numbers:	
Legal Site Desc:	7238

Kianna Brown

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ANALYTICAL REPORT

Physical Tests (WATER)

		ALS ID		L2655624-1	L2655624-2
		Sampled Date		26-OCT-21	26-OCT-21
		Sampled Time		07:55	08:05
		Sample ID			
Analyte	Unit	Guide Limit #1	Guide Limit #2	RM OF WHITEMOUTH RURAL PIPELINE 1 -	RM OF WHITEMOUTH RURAL PIPELINE 2 -
Colour, True	CU	15	-	16.4	<5.0
Conductivity	umhos/cm	-	-	104	172
Hardness (as CaCO3)	mg/L	-	-	55.1 HTC	54.1 HTC
Langelier Index (4 C)	No Unit	-	-	-1.0	-1.2
Langelier Index (60 C)	No Unit	-	-	-0.22	-0.42
pH	pH units	7.00-10.5	-	7.71	7.62
Total Dissolved Solids	mg/L	500	-	70	97
Transmittance, UV (254 nm)	%T/cm	-	-	57.7	88.9
Turbidity	NTU	-	-	5.94	0.23

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		L2655624-1	L2655624-2
		Sampled Date		26-OCT-21	26-OCT-21
		Sampled Time		07:55	08:05
		Sample ID			
Analyte	Unit	Guide Limit #1	Guide Limit #2	RM OF WHITEMOUTH RURAL PIPELINE 1 -	RM OF WHITEMOUTH RURAL PIPELINE 2 -
Alkalinity, Total (as CaCO3)	mg/L	-	-	50.2	42.7
Ammonia, Total (as N)	mg/L	-	-	0.014	<0.010
Bicarbonate (HCO3)	mg/L	-	-	61.2	52.1
Bromide (Br)	mg/L	-	-	<0.010	<0.010
Carbonate (CO3)	mg/L	-	-	<0.60	<0.60
Chloride (Cl)	mg/L	250	-	1.96	5.00
Fluoride (F)	mg/L	-	1.5	0.050	<0.020
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34
Nitrate (as N)	mg/L	-	10	0.0200	0.0204
Nitrite (as N)	mg/L	-	1	0.0010	<0.0010
Sulfate (SO4)	mg/L	500	-	3.20	34.3

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		L2655624-1	L2655624-2
		Sampled Date		26-OCT-21	26-OCT-21
		Sampled Time		07:55	08:05
		Sample ID			
Analyte	Unit	Guide Limit #1	Guide Limit #2	RM OF WHITEMOUTH RURAL PIPELINE 1 -	RM OF WHITEMOUTH RURAL PIPELINE 2 -
Dissolved Organic Carbon	mg/L	-	-	9.80	4.75
Total Organic Carbon	mg/L	-	-	9.31	3.98

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		L2655624-1	L2655624-2	L2655624-3
		Sampled Date		26-OCT-21	26-OCT-21	26-OCT-21
		Sampled Time		07:55	08:05	09:00
		Sample ID				
Analyte	Unit	Guide Limit #1	Guide Limit #2	RM OF WHITEMOUTH RURAL PIPELINE 1 -	RM OF WHITEMOUTH RURAL PIPELINE 2 -	RM OF WHITEMOUTH RURAL PIPELINE 3 -
Aluminum (Al)-Total	mg/L	0.1	2.9	0.144	0.130	0.185
Antimony (Sb)-Total	mg/L	-	0.006	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	-	0.01	0.00099	0.00033	0.00038
Barium (Ba)-Total	mg/L	-	2	0.0114	0.00988	0.00975
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	0.016	0.012	0.011
Cadmium (Cd)-Total	mg/L	-	0.005	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	-	-	14.7	14.2	14.4
Cesium (Cs)-Total	mg/L	-	-	0.000021	<0.000010	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	0.00027	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	1	2	0.00131	0.00057	0.00064
Iron (Fe)-Total	mg/L	0.3	-	0.160	<0.010	0.049
Lead (Pb)-Total	mg/L	-	0.005	0.000134	<0.000050	<0.000050
Lithium (Li)-Total	mg/L	-	-	0.0017	0.0015	0.0015
Magnesium (Mg)-Total	mg/L	-	-	4.49	4.50	4.45
Manganese (Mn)-Total	mg/L	0.02	0.12	0.0104	0.00038	0.00046
Molybdenum (Mo)-Total	mg/L	-	-	0.000175	0.000151	0.000167
Nickel (Ni)-Total	mg/L	-	-	0.00080	0.00096	0.00121
Phosphorus (P)-Total	mg/L	-	-	<0.050	<0.050	<0.030
Potassium (K)-Total	mg/L	-	-	0.901	0.844	0.869
Rubidium (Rb)-Total	mg/L	-	-	0.00162	0.00123	0.00128
Selenium (Se)-Total	mg/L	-	0.05	0.000149	<0.000050	0.000086
Silicon (Si)-Total	mg/L	-	-	0.88	0.54	0.54
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	200	-	2.96	15.8	16.5
Strontium (Sr)-Total	mg/L	-	7	0.0276	0.0267	0.0270
Sulfur (S)-Total	mg/L	-	-			11.5
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)

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		Sampled Time		07:55	08:05	09:00
		Sample ID				
Analyte	Unit	Guide Limit #1	Guide Limit #2	RM OF WHITEMOUTH RURAL PIPELINE 1 -	RM OF WHITEMOUTH RURAL PIPELINE 2 -	RM OF WHITEMOUTH RURAL PIPELINE 3 -
Titanium (Ti)-Total	mg/L	-	-	0.00385	<0.00030	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.000106	<0.000010	<0.000010
Vanadium (V)-Total	mg/L	-	-	0.00088	<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)

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