

Town of Arborg
Public Water System Annual Report 2022

In compliance with Section 32(1) of the *Drinking Water Safety Regulation* (MR40/2007), the Town of Arborg presents the following report on the treatment and distribution of water to its residents.

1. Description of the Water System:

In 1995, a 450,000 Imperial Gallon Reservoir and Pumping Station were constructed, adjacent to the original Water Treatment Plant (opened in 1966), to satisfy the increased demand for the Town's domestic and fire flow water requirements.

The Town of Arborg Public Water System provides potable drinking water to the Town's population of 1,279 (2021 Census), and to a number of residents located in the adjacent rural Municipality. Treated water produced from the Water Treatment Plant meets all health objectives as stated in the *Guidelines for Canadian Drinking Water Quality*.

1.1. Water Supply Source:

Located 4.5 km west of the Town of Arborg Water Treatment Plant, a groundwater well is the source of our water supply. Drilled in 1994 to a depth of approximately 95 meters, this well pumps raw water into a 250 mm pipeline. The pump is controlled by the reservoir level at the plant site. The design capacity of the well pump is 8.3L/s (132 us gpm) capable of supplying the Town's peak daily water consumption.

1.2. Water Treatment Process:

Raw water piped from the above source is pre-chlorinated as it enters the treatment facility. It is fed through a Multi Media Filtration System installed in 2005 to assist in reducing the iron content of the source water. Once through the filtration, water is chlorinated again before being stored in two reservoirs until needed. The filtration system is cleaned twice a week using a backwash effect to clear accumulation. This filtration system has reduced the high iron content of our water supply. The plant maintains treated levels at between 0.25 and 1.0 mg/l.

1.3. Distribution System:

The approximate length of the distribution system is 11,615 m. The watermains are comprised of approximately 32% Cast Iron, 67% PVC and 1% Asbestos Cement. In 2010, the length of the distribution system increased as did the use of PVC piping, reducing the amount of the Cast Iron in use. This was further reduced by the 2015 Watermain Renewal Project which was completed in 2016.

Treated water is pumped throughout the distribution system by one-5 hp pump with a pumping capacity of 70 gpm, and two-10 hp pumps with a pumping capacity of 140 gpm each. The standby pump is an electric pump with a 50hp motor rated at 2,000 USGPM (126L/s). (This electric pump replaces the diesel engine driver vertical turbine standby pump.)

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There is one distribution line exiting the Treatment Plant, from there, the distribution system is looped to avoid mass water service interruption during regular maintenance of lines, or in the event of a watermain break.

The Water Treatment Plant is alarmed and monitored on a 24 hours basis by Chubb Security. As of 2020 alerts are sent directly to the Operator's mobile phone when significant anomalies in the supply or distribution processes are detected. Prior to this, the Operator was alerted only by call from Chubb Security.

1.4. Storage Reservoir(s)

Treated Water (1) Capacity: 225,000 Imperial Gallons
Treated Water (2) Capacity: 225,000 Imperial Gallons
Water enters into and is distributed from the cells simultaneously.

1.5. Number of Connections, population served and types of water users:

As of December 31, 2022, the Town of Arborg distributes water to 560 connections within its boundaries, with 4 additional Sewer only connections. Although there are some industrial and manufacturing customers within our boundaries, the majority of users are a mixture of residential and commercial customers. Noteworthy water consumers include: 2 - Seniors Lodges; 2 - Schools; 1 - Hospital; 1 - Daycare Facility; the Recreation Centre (5 facilities including an outdoor pool); 2 - Residential Care Facilities; and 2 - Restaurants. All water service connections are metered.

Arborg also distributes to 9 properties located in the Municipality of Bifrost-Riverton, including; 16-unit apartment building, Ag Service Supplier, Fire Hall, single family dwelling and a duplex. There are also 7 additional sewer only connections to the Municipality of Bifrost-Riverton.

1.6. Classification and Certification:

- Class I Water Treatment Facility
- Class I Water Distribution Facility

Under The Environment Act's Water and Wastewater Facility Operators Regulation Certification Level of Operators:

- **Bruce B. Swanson**
 - Water Treatment Class II Operator
 - Water Distribution Class II Operator
 - Certificate No. 2012-257 Expires November 21, 2023

- **Brent A. Melsted**
 - Water Treatment Class I Operator
 - Water Distribution Class I Operator
 - Certificate No. 2014-032 Expires March 15, 2024

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- **Richard A. Robinson**
 - Water Treatment Class I Operator in Training
 - Water Distribution Class I Operator in Training
 - Certificate No. 2023-008 Expires January 9, 2028

2. Disinfection System in Use:

The Town of Arborg uses Pre and Post Chlorination disinfection systems. Raw water is pre-chlorinated as it enters the treatment facility, washed through filters, and pre-chlorinated again prior to entering the reservoirs.

2.1. Type of Disinfection System Used:

The Town of Arborg disinfects by adding Calcium Hypochlorite solution to the water via an on-line chlorinator pump; Dosage Control: Flow-Paced.

2.2. Equipment Redundancy and Monitoring Requirements:

There are 2 pumps each for pre- and post-chlorination which alternate each time they are called for. There are backup chlorine pumps, for both pre- and post-chlorination, kept on hand in the plant, along with spare parts for both.

Residuals are monitored and recorded daily in the plant and bi-weekly in the distribution system.

Monthly chlorination report forms are sent to the regional Drinking Water Officer at the end of each month with copies kept locally on file.

2.3. Disinfectant Residual Overall Performance/Results

There is a minimum free chlorine residual of at least 0.5 mg/L entering the distribution system after 20 minutes of chlorine contact time, and a minimum free chlorine residual of at least 0.1 mg/L at any point in the distribution system.

The system has the ability to meet these requirements at both the water treatment plant and in the distribution system.

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 concentration for a groundwater supply source. Concentration values in excess constitute a health-related issue and require corrective actions. The attached Schedules details the 2021 testing of samples taken from our water distribution system as well as the raw water prior to treatment.

The raw and treated water is tested on a bi-weekly basis for the presence of Total Coliform and E-coli bacteria. If these bacteria are present, it is an indication that disease causing organisms may be present. The date of testing and the corresponding

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results is included on Schedule "A". The average biweekly results of Chlorine Free and Chlorine Residual are also included on Schedule "A".

The treated water leaving the plant is tested continuously for a level of chlorine that is enough for proper disinfection in the distribution system. The minimum standard for the Arborg Water Treatment is 0.5 mg/l. Reports are sent monthly to the Office of Drinking Water as per requirements. A summary of this data is included on Schedule "B".

Information on Water quality / Treatment Standards, from the 2022 Chemistry Analysis, is attached as Schedule "C".

4. Water System Incidents and Corrective Actions:

Event #1 – April 14th, 389 Birch Street. Watermain Break. Low pressure service was maintained. Repair was completed same day.

Event #2 – July 14th, 286 Benson Street. Watermain Break. The water had to be shut off to repair, 16 residents were asked to boil their water as a precaution until the testing was complete. The repair was completed by the afternoon. Water tests came back normal and the self-managed advisory was lifted July 18th.

Event #3 – July 14th, 286 Benson Street. Watermain Break. Watermain broke a couple feet away from the original repair. The repair was completed that evening.

Event #4 – August 3rd, 390 River Road. Water Treatment Plant – mechanical pump failure causing the reservoir to run dry. The water was back up and running by morning of August 4th. The Town went under a boil water advisory until testing was completed.

5. Additional Records Required:

N/A

6. Drinking Water Safety Orders and Actions Taken in Response:

There were no Safety Orders issued for the Town of Arborg in the year 2022.

7. Boil Water Advisories and Actions Taken in Response:

There was 1 Boil Water Advisory issued for the Town of Arborg in the year 2022. Emergency Testing took place, and when the results came back the advisory was lifted.

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

No Warnings were issued for the Town of Arborg in the year 2022.

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9. Major Expenses Incurred:

- There were no major expenses incurred in 2022

10. Other 2022 Notables:

- Start of Watermain renewal project, construction for 2023
- Start of secondary well construction for 2023

11. Future System Upgrades and/or Increased Production:

- Continued upgrade of watermains from cast iron to PVC as funds permit.
 - Order of replacement has been determined and documented.
- Filtration Upgrading at the Water Treatment Plant

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Schedule "A"

Date	Raw		Treated		Treated	
	Coliform	E. coli	Chlorine Free	Chlorine Total	Coliform	E. coli
4-Jan-22	0	0	0.88	1.08	0	0
19-Jan-22	0	0	1.03	1.23	0	0
2-Feb-22	0	0	0.99	1.16	0	0
14-Feb-22	0	0	0.95	1.17	0	0
28-Feb-22	0	0	0.96	1.13	0	0
14-Mar-22	0	0	0.87	1.18	0	0
28-Mar-22	0	0	0.83	1.02	0	0
11-Apr-22	0	0	1.02	1.23	0	0
19-Apr-22	0	0	0.95	1.13	0	0
26-Apr-22	0	0	0.98	1.20	0	0
9-May-22	0	0	0.88	1.08	0	0
24-May-22	0	0	0.96	1.19	0	0
6-Jun-22	0	0	0.80	1.00	0	0
20-Jun-22	0	0	0.94	1.12	0	0
4-Jul-22	0	0	0.91	1.05	0	0
18-Jul-22	0	0	0.51	0.65	0	0
18-Jul-22	0	0	0.87	1.03	0	0
2-Aug-22	0	0	0.82	0.97	0	0
4-Aug-22	0	0	1.03	1.25	0	0
5-Aug-22	0	0	1.04	1.24	0	0
15-Aug-22	0	0	0.95	1.10	0	0
17-Aug-22	0	0	0.93	1.10	0	0
29-Aug-22	0	0	0.86	1.04	0	0
12-Sep-22	0	0	0.95	1.07	0	0
26-Sep-22	0	0	0.98	1.13	0	0
10-Oct-22	-	-	1.07	1.22	-	-
18-Oct-22	0	0	0.91	1.06	0	0
24-Oct-22	0	0	0.95	1.07	0	0
7-Nov-22	0	0	0.90	1.02	0	0
21-Nov-22	0	0	1.03	1.20	0	0
5-Dec-22	0	0	1.20	1.39	0	0
20-Dec-22	0	0	1.13	1.31	0	0

19-Apr-22 Extra Sample - Water Main Break - results came back normal

18-Jul-22 Extra Sample - Water Main Break - results came back normal

18-Jul-22 Extra Sample - Water Main Break - results came back normal

4-Aug-22 Extra Sample - Treatment Plant - results came back normal

5-Aug-22 Extra Sample - Treatment Plant - results came back normal

17-Aug-23 Extra Sample - Water Main Break - results came back normal

10-Oct-22 Sample Arrived Late

18-Oct-22 Re-sample from October 10, - results came back normal

<u>Parameter</u>	<u>Quality Standard</u>	<u>Arborg Raw</u>	<u>Arborg Treated</u>
Arsenic	≤ 0.01 mg/L	0.001 mg/L	0.00010mg/L
Benzene	≤ 0.005 mg/L	<0.0005 mg/L	
Ethylbenzene	≤ 0.14 mg/L	<0.0005 mg/L	
Fluoride	≤ 1.5 mg/L	0.486 mg/L	0.477 mg/L
Lead	≤ 0.01 mg/L in the water distribution system	<0.000191 mg/L	0.000228 mg/L
Nitrate	≤ 45 mg/L ,measured as nitrate (10 mg/L measured as nitrogen)	<0.015 mg/L	0.0065 mg/L
Nitrite	≤ 3 mg/L ,measured as nitrate (1 mg/L measured as nitrogen)	<0.001 mg/L	<0.001 mg/L
Trichloroethylene	≤ 0.005 mg/L	<0.0005 mg/L	
Tetrachloroethylene	≤ 0.01 mg/L	<0.0005 mg/L	
Toluene	≤ 0.06 mg/L	<0.0005 mg/L	
Total Xylenes	≤ 0.09 mg/L	<0.00064 mg/L	
Uranium	≤ 0.02 mg/L	0.000047 mg/L	0.000048 mg/L
E. coli	$\leq 1/100$ ml		
Total Coliform	$\leq 1/100$ ml		