Town of Arborg
Public Water System Annual Report 2021

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.)

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, 2020, the Town of Arborg distributes water to 557 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

- **Wes Gislason**
  - Water Treatment Class I Operator
  - Water Distribution Class I Operator
  - Certificate No. 2021-104 Expires May 4, 2026

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

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

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 2019 Chemistry Analysis, is attached as Schedule "C".

4. **Water System Incidents and Corrective Actions:**

Event #1 – January 22nd, 532 Woodfield Avenue. Watermain Break. No interruption in service. Repair was completed same day.

Event #2 – February 7th, 517 Crosstown Avenue. Due to underground utilities, locates were completed late on February 8th and vacuum truck was required. Repair was completed around 5 p.m. on February 8th. A large section of David Street & Crosstown Avenue residences were affected, however water service was maintained.

Event #3 – April 8th, Lot 13 Maple Lane. Low pressure service was maintained. Repair was completed same day.

Event #4 – June 14th, Corner of 529 Crosstown Avenue and 310 David Street. Due to underground utilities, locates were not able to be done until June 15th. Low pressure service was maintained, repair was completed on June 16th.

Event #5 – August 24th, 221 River Road. Watermain Break. No interruption in service. Repair completed same day.

Event #6 – August 24th, 3 Playgreen Place. Watermain Break. The water had to be shut off to repair, 4 residences were put under a boil water advisory, as a precaution, until testing was complete. Repair was completed same day. Water tests came back normal and the advisory was lifted August 27th.

Event #7 – September 1st, 390 River Road. Water Treatment Plant – Water was shut off at 5:20 a.m. to the entire town. The plant went on standby & had a temporary line hooked up by 7:30 p.m. The Town went under a boil water advisory until testing was completed on September 5th at 12:00 p.m. All tests came back normal. The plant was restored on September 3rd.

Event #8 – September 29th, 221 River Road. Slow leak from previous repair. Water service was maintained. Repair was completed same day.

The ODW Compliance Report noted a September 14th, high bacterial report for one of the random residential test sites. Retesting took place immediately with results falling into the correct parameters.

No corrective action or emergency reporting was required.

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 2021.

7. **Boil Water Advisories and Actions Taken in Response:**
   There was 1 Boil Water Advisory issued for the Town of Arborg in the year 2021. Emergency Testing took place, and when the results came back the advisory was lifted.

8. **Warnings Issued or Charges Laid on the System win Accordance with The Drinking Water Safety Act:**
   No Warnings were issued for the Town of Arborg in the year 2021.

9. **Major Expenses Incurred:**
   - There was an insurance claim for the Water Treatment Plant incident on September 1, 2021. Complete costs are unknown at this time.
   - Water Main Renewal $105,210.00

10. **Other 2021 Notables:**
    - The Manitoba Water Services Board Water & Sewer System Assessment and Upgrading Study has been completed.

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.
    - The possible digging of a second well, depending on funds
    - Filtration Upgrading at the Water Treatment Plant

2021 Public Water System
Town of Arborg

Schedule "A"

Date	Raw		Treated		Treated	
	Coliform	E. coli	Chlorine Free	Chlorine Total	Coliform	E. coli
5-Jan-21	0	0	0.91	1.10	0	0
19-Jan-21	0	0	0.86	1.04	0	0
1-Feb-21	0	0	1.08	1.28	0	0
16-Feb-21	0	0	0.99	1.21	0	0
2-Mar-21	0	0	0.92	1.20	0	0
16-Mar-21	0	0	0.87	1.18	0	0
29-Mar-21	0	0	0.96	1.20	0	0
12-Apr-21	-	-	0.94	1.18	-	-
15-Apr-21	0	0	0.89	1.16	0	0
27-Apr-21	0	0	0.87	1.13	0	0
11-May-21	0	0	0.87	1.07	0	0
25-May-21	-	-	0.89	1.09	-	-
2-Jun-21	0	0	1.01	1.28	0	0
8-Jun-21	0	0	1.09	1.35	0	0
22-Jun-21	0	0	0.97	1.14	0	0
6-Jul-21	0	0	1.18	1.37	0	0
14-Jul-21	0	0	1.04	1.21	0	0
20-Jul-21	0	0	0.95	1.13	0	0
3-Aug-21	0	0	1.03	1.18	0	0
17-Aug-21	0	0	1.10	1.25	0	0
25-Aug-21	0	0	0.72	0.85	0	0
25-Aug-21	0	0	0.70	0.83	0	0
25-Aug-21	0	0	0.83	0.98	0	0
25-Aug-21	0	0	0.78	0.91	0	0
31-Aug-21	0	0	0.94	1.04	0	0
3-Sep-21	0	0	1.02	1.17	0	0
4-Sep-21	0	0	0.97	1.14	0	0
14-Sep-21	0	0	1.33	1.46	0	0
16-Sep-21	0	0	1.21	1.40	0	0
17-Sep-21	0	0	1.23	1.43	0	0
28-Sep-21	0	0	0.97	1.15	0	0
12-Oct-21	0	0	0.88	1.02	0	0
26-Oct-21	0	0	0.89	1.00	0	0
8-Nov-21	0	0	0.87	1.06	0	0
23-Nov-21	0	0	0.92	1.03	0	0
7-Dec-21	0	0	0.92	1.12	0	0
20-Dec-21	0	0	0.90	1.07	0	0

12-Apr-21 Samples did not arrive at the lab until April 15
15-Apr-21 Retest from April 12
25-May-21 Samples did not arrive at the lab until June 1
2-Jun-21 Resample from May 25
14-Jul-21 Extra Sample - Sprinkler System work at the Hospital
25-Aug-21 Extra Samples - Water Main Breaks
3-Sep-21 Treatment Plant Samples - Boil Water Advisory Test
4-Sep-21 Treatment Plant Samples - Boil Water Advisory Test
14-Sep-21 Water results for 317 First Ave came back with a coliform of 70
16-Sep-21 Retest for Sep 14 - results came back normal
17-Sep-21 Retest for Sep 14 - results came back normal

SCHEDULE "B" 2021 PWS ANNUAL REPORT - TOWN OF ARBORG

2021 Free Chlorine – Standard 0.5 mg/l	January	February	March	April	May	June	July	August	September	October	November	December
Total Number of Measurements	31	28	31	30	31	30	31	31	29	31	30	31
Number Meeting Standard	31	28	31	30	31	30	31	31	29	31	30	31
Compliance %	100	100	100	100	100	100	100	100	100	100	100	100
2021 Free Chlorine – Standard 0.1 mg/l												
Total Number of Measurements	4	4	6	6	3	6	4	10	13	4	4	4
Number Meeting Standard	4	4	6	6	3	6	4	10	13	4	4	4
Compliance %	100	100	100	100	100	100	100	100	100	100	100	100

Town of Arborg
Water Quality Standards

Parameter	Quality Standard	Arborg Raw	Arborg Treated
Arsenic	≤ 0.01 mg/L	0.001 mg/L	0.00017 mg/L
Benzene	≤ 0.005 mg/L	<0.0005 mg/L	
Ethylbenzene	≤ 0.14 mg/L	<0.0005 mg/L	
Fluoride	≤ 1.5 mg/L	0.511 mg/L	0.502 mg/L
Lead	≤ 0.01 mg/L in the water distribution system	<0.0005 mg/L	0.000309 mg/L
Nitrate	≤ 45 mg/L ,measured as nitrate (10 mg/L measured as nitrogen)	<0.005 mg/L	0.0069 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	0.000061 mg/L	0.000055 mg/L
E. coli	≤ 1/100 ml		
Total Coliform	≤ 1/100 ml		