



Public Water System Annual Report

-2022-

Prepared By:

Doug Harper, Operator-in-Charge



Annual Water System Operation Report – 2022

The Municipality of Boissevain-Morton strives to provide high quality drinking water in sufficient quantity to meet the needs of the public. It is our goal to meet all the regulatory requirements governing the provision of drinking water in a safe and cost effective manner.

It is our belief that the public has a right to access information related to drinking water they consume. Therefore, the following report has been prepared for the Boissevain-Morton water system.

Where do we get our water from?

Our raw water consists of 85% surface water from the Boissevain Reservoir, and the other 15% comes from 5 wells 1.5 miles south of the reservoir. It is pumped from the wetwell located at the west end of the reservoir.

Why do we treat our water?

We treat our water to ensure that safe and pleasing drinking water is supplied to the homes and businesses in Boissevain. Provincial Regulations have set health based drinking water standards for all public water systems. The Municipality of Boissevain-Morton is committed to meeting or exceeding the water quality standards set by the province.

What type of water treatment do we use?

We treat our water in a lime softening process to remove the hardness and the iron as well as the removal of microbial contaminants such as bacteria and organic materials that are naturally found in surface water. There are 4 rapid gravity filters as well as 2 Granular Activated Carbon (GAC) filters to help polish the treated water.



Why and how do we disinfect our water?

The final step in the treatment of our water is disinfection. The Drinking Water Safety Act requires that the water is disinfected before it leaves the water treatment facility, and that an adequate amount of disinfectant is in the distribution system to ensure the water is safe right to the consumer's tap.

Chlorine gas is what is used as our disinfection treatment for our water supply to kill bacteria and viruses that are commonly found in surface water. An adequate amount of chlorine is added to the water as it enters the storage reservoir to ensure an effective kill of any bacteria and to provide disinfectant residual in the 14 km of water piping throughout the Town of Boissevain.

Are any other chemicals added to our water? Why?

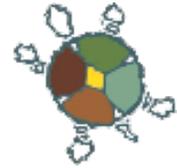
Fluoride is added as part of the Provincial Fluoridation Program at levels that help prevent tooth decay. Manitoba Health, Seniors, and Active Living funds and monitors this program, not the Office of Drinking Water.

How much water storage do we have?

A reservoir beneath the water treatment plant has a capacity of 814,150 litres. The reservoir is designed so that the water is always moving so it never gets stale.

What is the distribution system?

The water distribution system is the network of underground pipes used to carry the treated water from the water treatment facility to the homes and businesses in Boissevain. We have 10.7 km of 6" transite pipe, 0.6 km of 8" transite pipe, and 2.5 km of 6" C900 PVC pipe throughout the Town of Boissevain. The piping is interconnected (looped) to ensure that fresh safe water is continuously supplied. We carry out regular maintenance in the distribution system such as our seasonal flushing program.



Is our water tested? What for? When?

Water tests are performed daily at the water treatment plant to ensure the water is safe and to monitor how well the treatment plant is performing. We also test the distribution system at various times and locations and have all results submitted to the Provincial Office of Drinking Water for review.

Bacterial Testing: We test the raw water (untreated water), the treated water (leaving the reservoir), and the water in the distribution system (within the Town of Boissevain) every two weeks (bi-weekly) for the presence of Total Coliform and for E. coli bacteria. If these bacteria are present in the water it is an indication that disease causing organisms may also be present.

Disinfectant Testing: We test the level of chlorine in the treated water every day and continuously to ensure that the water leaving the water treatment facility has enough chlorine to ensure proper disinfection. Chlorine testing is also done when the bacterial samples are taken from the distribution system.

Turbidity Testing: Turbidity is a measurement of the clarity of the water. We use turbidity to see how well our treatment system is working. Turbidity is tested daily as the raw water enters the system and continuously after each filter and daily as it leaves the Water Treatment Plant.

Trihalomethane (THM) Testing: Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. Studies have shown a link between high levels of THMs and cancer. The province has set the base standard for THMs of 0.10 mg/L of water. The THM standard is based on an average of four samples per year. Our license requires we test for THMs every second year. We had to take samples in 2022, and the results are in the chart below.

Haloacetic Acids (HAA) Testing: HAAs are a group of disinfection by-product chemicals that are similar to THMs. The HAA standard of 0.08 mg/L is now



applied as the standard in all water sources. Our license requires we test for HAAs every second year as we do with the THM sampling. Our license requires we test for HAAs every second year and we did sample in 2022 and the results are in the chart below.

Manganese Testing: Studies suggest there is an association between exposure to manganese in drinking water and neurological issues in infants and children such as changes in behavior, lower IQ, speech and memory difficulties, and lack of coordination and movement control. Our license requires that we test for manganese quarterly every year, and the results are in the chart below.

What are the results of these tests? Can we get copies?

The following tables summarizes all the treated water results for 2022.

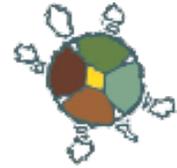
Parameter	Raw	Treated
Arsenic – Less than or equal to 0.01mg/L	0.00444 mg/L	0.00089 mg/L
Fluoride – Less than or equal to 1.5 mg/L	0.198 mg/L	0.496 mg/L
Lead – Less than or equal to 0.005 mg/L	0.000087 mg/L	0.000191 mg/L
Nitrate – Less than or equal to 10 mg/L	0.446 mg/L	0.339 mg/L
Nitrite – Less than or equal to 1 mg/L	0.0102 mg/L	<0.0010 mg/L
Uranium – Less than or equal to 0.02 mg/L	0.00162 mg/L	0.000128 mg/L



Parameter	Treated	Distribution
Total Coliform – Less than one detected/100 mL	100% (26/26 samples)	100% (26/26 samples)
E.Coli – Less than one detected/100 mL	100% (26/26 samples)	100% (26/26 samples)
Free Chlorine – Entering the distribution system 0.5 mg/L	100% (365/365 samples)	100% (26/26 samples)

Parameter	Frequency	Results
Turbidity – Less than or equal to 0.3 NTU* in 95% of measurements in a month for each filter compartment	Continuous	100% compliance
Total Trihalomethanes – Less than or equal to 0.10 mg/L annual average of quarterly samples	Quarterly	Not in compliance 0.162 mg/
Total Haloacetic acids – Less than or equal to 0.08 mg/L annual average of quarterly samples	Quarterly	100% compliance 0.08 mg/L
Manganese – Less than or equal to 0.02 mg/L annual average of quarterly samples	Quarterly	100% compliance 0.0103 mg/L

*Nephelometric Turbidity Units (NTU)



How do we plan to meet the Standard Objective for Trihalomethanes (THMs)?

We have reached out to the engineering firm WSP Global to look into a solution for our Trihalomethane issues.

What do we have in place to alert Public Works Staff to water emergencies?

There is an alarm system in the SCADA program at the water plant. If there is an alarm, the computer dials the "On Call" cell phone to notify the person on call. There is always a water plant operator on call and are available at any time to respond to emergencies as they arise.

Were there any emergencies, regulatory compliance issues or other operational issues to report in 2022?

There were two regulatory compliance issues in 2021.

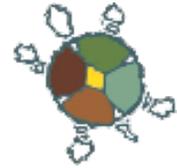
We failed to meet the required THM standard of 0.10 mg/L.

We also failed to meet the required HAA standard of 0.08 mg/L. The average was minimal at 0.081 mg/L, and the Office of Drinking Water was notified as such.

We also had a water main break in August.

Summary of Drinking Water Safety Orders

There were no safety orders issued to the Boissevain PWS in 2022.



Summary of Boil Water/Water Quality Advisories

We had a boil water advisory on the first weekend in August. We had to repair a water main break. The Office of Drinking Water was notified and proper procedures were followed under their guidance.

Summary of any charges laid/Enforcement Issued

There were none issued to the Boissevain PWS in 2022.

Were there any major expenses incurred in 2022?

The only major expense in 2022 was repairs to the air compressor. We replaced both compressor heads, one electric motor, and the main panel on the compressor.

Will there be any major projects in 2022?

We are going to replace the filter media and nozzles in our gravity filters this year, which will cost approximately \$50,000.00.

Who can we call with questions or concerns regarding our drinking water?

For any questions during regular business hours, call the Boissevain-Morton administration office at (204)534-2433. Business hours are 8:30 am to 4:30 pm Monday to Friday. If the administrator cannot answer your questions, he will refer you to the operator in charge.



OPERATING LICENCE NUMBER: PWS-08-115-02

Municipality of Boissevain-Morton Water Treatment Plant Operators:

- **Doug Harper, Operator in Charge – 32 years of service in Water Treatment Level III operator**
- **Dustin Pugh, 15 years of service in Water Treatment – Level II operator**
- **Bryce Adams, 8 years of service in Water Treatment – Level II operator**
- **Joe Goodon, 3 years of service – Operator in Training**

Training of operators is continuously on going and is funded by the Municipality of Boissevain-Morton. The certification of operators and classification of the facility is done through the Water and Wastewater Facility Operators Regulation under the Environment Act.