



MUNICIPALITY OF ROBLIN

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The Municipality of Roblin **2018 Water Treatment Plant Annual Report** has been completed and has been posted to our Website: www.roblinmanitoba.com. We have additional copies that are available at our Municipal Office, the Public Works shop, and the Water Treatment Facility.

We have notified our residents through inserts in their water bills that they can access this information in those locations.

This report describes our water treatment process, our means of disinfection, the chemicals we use in the water treatment process, a list of our water quality testing and its performance, as well as any major expenses for this reporting period and future expenses to be incurred over the next several years.

If there are questions about this report, please contact Jason Boguski at 204-937-3379.

Twyla Ludwig, Chief Administrative Officer
Municipality of Roblin

MUNICIPALITY OF ROBLIN
PUBLIC WATER SYSTEM ANNUAL REPORT

- 2018 -

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MUNICIPALITY OF ROBLIN

WATER TREATMENT PLANT 2018 ANNUAL REPORT

1. **WATER SOURCE:** The Municipality of Roblin receives its water from two deepwater wells, located within town limits. Both wells draw water from a depth of 253 Ft using 50 HP (well #1) and 50 HP (well #2) pumps. Our water supply source contains high concentrations of Iron and Manganese, as well as high levels of Calcium Carbonate, which represents hardness in the mid 600-mg/l range, and for this reason the former Town of Roblin had undertaken the construction of a new Reverse Osmosis treatment facility, in 2011, to combat these problems. The new Water Treatment Plant has all but eliminated the iron and manganese from the product water, as well as successfully taken the hardness down to the mid 100 – 200 mg/l range.
2. **WATER TREATMENT PROCESS:** Raw water is brought to the treatment plant where it is split into two treatment streams:
 - a.a.1) a Manganese Green Sand pressure filter, which helps remove Iron and Manganese, and is blended back into the product water stream from the RO units to maintain hardness levels. The pressure filter can treat approx 4.4 l/s at max flow, and
 - a.a.2) two identical Reverse Osmosis trains that strip the raw water of minerals and hardness ions. The RO units can treat approx. 8.8 L/s each for a max treated flow of 17.6 L/s and recover approximately 70% of the raw water being treated. The remaining 30% is rejected to waste.
 - a. **DISINFECTION:** As per the Drinking Water Safety Act, the Municipality of Roblin must maintain:
 - ! 0.5 mg/l of Free Chlorine entering the distribution system
 - ! 0.1 mg/l of Free Chlorine at any point in the distribution system
 - b. **STORAGE RESERVOIR:** There is a 1,250,000 L reservoir for the treated water with two chambers each with a holding capacity of 625,000 L which can be isolated for cleaning purposes and leaves us with the capacity to maintain enough treated water volume for the community while one is out of service.
 - c. **DISTRIBUTION SYSTEM:** The Municipality's piped distribution system is comprised of primarily cast iron, ductile iron, AC and PVC pipes ranging from 6", 8" and 10" in size. Currently, we have approximately 30% cast mains left to replace, and 70% PVC now exist. The distribution pumping consists of two (2) 30 HP submersible pumps. These pumps were installed in the new Water Plant in 2011. The pumps

are set up on a duty-standby mode and the control program automatically alternates the lead pump.

There is also (1) 15 HP jockey pump, which will, under normal circumstances, run continuously and is adequate to meet the town's demand. The distribution pumps are controlled by Variable Frequency Drives, which will maintain a set point of pressure that we decide is adequate for the community. In addition to the distribution pumps, there is a 125 HP stand-by/emergency pump that will engage if the 3 distribution pumps cannot keep up with the town demand. It is capable of putting out 2,000 GPM, and is used in times of fire flow demand or loss of pressure.

d. CONNECTIONS AND POPULATION SERVED: The urban area of the Municipality of Roblin is comprised of 850 residential and commercial service connections, serving an urban population of 1,614 according to the latest census done in 2016.

e. CLASSIFICATION AND CERTIFICATION:

! **CLASS 2** Water Treatment Facility

! Certification of Operators:

Jason Boguski – WD2, WT2, WWC2, WWT2

Jason Nash – WD2, WT2, WWC1, WWT1

Langdon Campbell – WD2, WT2, WWC2, WWT2

Ken Myslichuk - WD1, WT1, WWC1, WWT1

- 3. DISINFECTION EQUIPMENT IN USE:** The Municipality of Roblin WTP disinfects by adding a 12% sodium hypochlorite neat solution to the water by means of two Grundfos Digital Dosing pumps setup for Duty/Standby operation in the event one pump fails.
- 4. DISINFECTION MONITORING:** Chlorine residuals are checked daily and recorded to monthly chlorination reports that are distributed to our Regional Drinking Water Officer at the conclusion of each month. Bi-weekly tests are done in the distribution system to ensure a 0.1 mg/l Free residual at the far end of the system when doing our Bacteriological Samples and no less than 0.5 mg/l leaving the Treatment Plant. As per regulations, we test the raw water, the treated water entering the distribution system, and sample randomly, the far ends of our system, for the presence of Total Coliforms and E.Coli.
- 5. OVERALL PERFORMANCE / RESULTS:** In 2018, the Municipality of Roblin's Free Chlorine Residual entering the distribution system was at 100% performance for the 0.5 mg/l requirement, and the Free Chlorine Residual in the distribution system was at 100% performance for the 0.1 mg/l requirement.

6. **CHEMICALS IN USE** – The water treatment process that we now have has increased the amount of chemicals that we use to treat the water. The chemicals have very specific purposes that control certain factors of the treatment process.

Sodium Hypochlorite – commonly known as **Chlorine**, is used to help protect the water after being treated by the RO unit and Green Sand Filter by maintaining a free residual in the system to guard against any waterborne threats.

Sodium Hydroxide – commonly known as **Caustic Soda** is used as a PH adjuster. The water coming out of the Reverse Osmosis membranes is around a PH of 5.0 which even after some treated water from the Green Sand filter has been added is not in our target range. We use the Caustic Soda to adjust the PH back to a more neutral state between 7.4 - 7.6.

Potassium Permanganate – is an oxidation agent that we add to the raw water before it enters the Manganese Green Sand filter so that we can remove the Iron and Manganese particles, which are the major causes of staining in the home. This chemical does not enter the distribution system.

Aquapure 3673 – is an anti-corrosion agent that is injected into the treated water to help protect our older cast iron mains and also the copper plumbing in the system, by forming a coating on them so that iron and manganese deposits will not leach back into the water. It also acts to keep the mineral deposits that remain in the water in solution so that they do not precipitate out in the home.

Vitec 3000 – is an anti scaling agent that is injected prior to the Reverse Osmosis membranes to help keep the calcium hardness ions in solution so they do not deposit onto the membranes and foul them up. The hardness ions, because of this process, are rejected and sent to waste, which has decreased the hardness of our water from 700 mg/l to around 150 mg/l. This chemical does not enter the distribution system.

- 7. WATER QUALITY STANDARDS:** Numbers reflect the 2018 testing year which was done by Manitoba Water Stewardship. The next set of complete tests will be done in 2021 as it is only required every 3 years.

Source	Parameter	Standard	Frequency	Test Results
GROUND WATER	Total Coliform	0 TC / 100ml	Bi-weekly	100%
	E.Coli	0 EC / 100ml		100%
	Free Chlorine (WTP)	>0.5 mg/l	Daily	100%
	Free Chlorine (Distribution)	>0.1 mg/l	Bi-weekly	100%
	Arsenic	0.010 mg/l	One Raw and One Treated water sample Once every Three Years	0.00416 mg/l
	Benzene	0.005 mg/l		<0.0005mg/l
	Dissolved Fluoride	1.5 mg/l		0.175 mg/l
	Nitrogen	As Nitrate 10mg/l		<0.010 mg/l
		As Nitrite 1mg/l		<0.0020 mg/l
	Tetrachloroethene	0.01 mg/l		<0.00050 mg/l
	Trichloroethene	0.005 mg/l		<0.00050 mg/l
	Uranium	0.02 mg/l		<0.00138 mg/l
	Lead	0.01 mg/l		As per instructions by the ODW

8. WATER SYSTEM INCIDENTS AND CORRECTIVE ACTIONS:

There were no records of any corrective action incidents for the 2018 testing year.

9. ADDITIONAL RECORDS:

None.

10. DRINKING WATER SAFETY ORDERS ON OUR SYSTEM AND ACTIONS TAKEN IN RESPONSE:

There were no Drinking Water Safety Orders issued for the Municipality of Roblin in 2018.

11. BOIL WATER ADVISORIES ISSUED AND ACTIONS TAKEN IN RESPONSE:

There were no Boil Water Advisories issued for the Municipality in 2018.

12. WARNINGS ISSUED OR CHARGES LAID ON THE SYSTEM IN ACCORDANCE WITH THE DRINKING WATER SAFETY ACT:

There were no warnings issued or charges laid on the Municipality in 2018.

13. MAJOR EXPENSES INCURRED IN 2018

- ! \$7,744.97 (training and education)
- ! \$24,633.78 (support contracts)
- ! \$21,463.50 (insurance)
- ! \$4,207.76 (postage, telephone and internet)
- ! \$28,219.11 (hydro and gas)
- ! \$50,377.07 (chemicals)
- ! \$1,651.84 (water testing)
- ! \$13,417.05 (freight)
- ! \$6911.98 (flushing reject line)
- ! \$4,845.22 (misc services and supplies)
- ! \$1,480.68 (water meter repairs)
- ! \$8,545.51 (repair materials and parts-equipment)
- ! \$8,170.26 (production wells hydro, insurance, misc. goods, repairs)

14. FUTURE SYSTEM EXPANSION AND/OR INCREASED PRODUCTION:

One of our main operational expenses is the cost of chemical, which is expected to be about \$53,000.00 in 2019 as well as general repairs budgeted at \$25,000.00 and concentrate pit pump for \$5,000.00.

Other costs include:

- ! \$15,500.00 (training and education)
- ! \$15,000.00 (process control upgrade)
- ! \$1,000.00 (laptop upgrade)
- ! \$170,000.00 (watermain renewals)
- ! \$33,000.00 (watermain, curb stop and hydrant repairs)
- ! \$15,000.00 (bulk water upgrade)
- ! \$8,000.00 (engineered assessment planned for 2020)
- ! \$26,000.00 (acidizing wells in 2021/22)
- ! \$10,000.00 (membrane replacement reserve fund)

Other expenses 2019 include: service, contracts, GenSet maintenance and repairs, reject line flushing, well repairs, reject line repairs, alarm monitoring system, water distribution stock, hydrant supplies, aqua-flo maintenance and RF meter maintenance for an estimated cost of \$48,050.00.







