



## Town of Morden **Public Water System Annual Report** 2009

This report is available online at the Town of Morden website - [www.mordenmb.com](http://www.mordenmb.com) as of March 31<sup>st</sup>, 2010

Email Town address is: [tmorden@mordenmb.com](mailto:tmorden@mordenmb.com)

Paper copies are available at the Morden Civic Center office at 100-195 Stephen St.

Notifications will be in the quarterly water bills, the Quarterly Newsletter and on the Town of Morden website, indicating how users can acquire copies of the report.



## **Town of Morden Annual Water System Operation Report 2009**

### ***Where does our water come from?***

The Town of Morden gets its water supply from Lake Minnewasta. Lake Minnewasta is a reservoir created by the construction of a PFRA dam on Dead horse Creek. The reservoir is approximately 1.4 km long and 500m wide at its widest point. The watershed of the creek upstream from the reservoir encompasses about 130 sq km of land area

The Town also purchases a portion of their treated water from Pembina Valley Water Co-op to ensure an alternate water supply for drought protection.

### ***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 the Town of Morden. Provincial Regulations have set health based drinking water standards for all public water systems and are becoming more stringent all the time. The Town of Morden is committed to meeting or exceeding these new standards set by the province to provide the best tap water possible to the Town of Morden.

### ***What type of treatment do we use?***

Due to the high hardness count (400-600 Mg/l) of Morden's raw water supply we use a Lime- Soda Ash softening process followed by filtration. These processes are designed to soften and clarify the water and remove microbial contaminants, such as bacteria and organic materials that are naturally found in lake waters.

### ***Why and how do we disinfect our water?***

The final step in the treatment of safe drinking water is disinfection. Disinfection is the selective destruction or inactivation of disease causing organisms in water. The Drinking Water Safety Act and Office Of Drinking Water require that water is disinfected to a set standard before it leaves the water treatment plant and that an adequate amount is maintained in the distribution system to ensure the water is safe right to the consumer's tap. The Town of Morden disinfects its water through chlorination. Chlorine is added to kill bacteria and viruses that are commonly found in surface waters such as rivers and lakes. An adequate amount of Chlorine is

added before the water leaves the treatment plant to ensure an effective kill of bacteria and to provide a disinfectant residual throughout the distribution system to combat any contamination in the system.

*Are chemicals added to our water? Why?*

We add Powder Activated Carbon and Fluoride to the water

Powder Activated Carbon is added to the water to help control taste and odour issues caused by Algae etc.

Fluoride is added as part of the Provincial Fluoridation Program at regulated levels to help prevent tooth decay. This process is monitored by Manitoba Health and Health Living

***How much water storage do we have?***

When the new water plant was built a 450,000 gal reservoir was built underneath it. We also have a water tower and elevated standpipe with a combined capacity of 750,000 gals for a total capacity of 1.2 million gallons. At current levels of water use that works out to 1 to 2 days worth of storage.

**What is the “distribution system”?**

The system is a network of underground pipes that supply water to all areas of Town. The chart shown below identifies the type and length of watermain piping in service.

Type of Waterline	Total Meters
Asbestos cement	36273.21
Ductile iron	1760.08
Plastic	30,101

The mains are flushed through hydrants and regular maintenance including hydrant testing is done annually usually in fall.

***Is our water tested? What for? When?***

Water tests are taken on a routine basis to ensure the quality and safety of our water and to monitor how well the treatment facility is operating. We daily test the water at the water plant for: Chlorine residual, hardness, PH, turbidity, Alkalinity, Fluoride. All water test results associated with water safety are submitted to the Office Of Drinking Water for review. The tests sent to The Office of Drinking Water are: Bacterial tests, Trihalomethane , Turbidity and Chlorine. Flouride results are sent to Manitoba Health and Health living.

Bacterial testing: We test the raw water (untreated lake water), the treated water leaving the plant, and the water in the distribution system, every two weeks for the presence of Total coliforms and E-Coli bacteria at a provincially accredited lab in Wpg.

Disinfectant testing is conducted via on-line continuous monitoring similar to turbidity , and is performed daily on the treated water leaving the water plant , chlorine levels are also tested in the distribution system every time we take samples for bacterial sampling to ensure there is a proper Chlorine residual in the system.

Turbidity testing is done via on-line continuously monitoring equipment and verified daily by desktop testing. Turbidity is measurement of the clarity of the water and is used to determine how well our treatment system is working.

Trihalomethane (THM) testing: Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. The province has set a standard based on an average of four samples per year. We test THM levels in two locations on a quarterly basis.

Fluoride sampling: Daily sampling of Fluoride levels are done at the water plant and every two weeks a composite sample for that period is submitted for testing and verification at a provincially credited lab

In addition to the above a detailed chemical analysis is performed each year.

***What are the results of the tests? Are copies available?***

As a result of the testing the Office of Drinking Water has determined that “ The Town of Morden has been fulfilled the majority its obligations with regard to bacteriological and disinfection monitoring and reporting” with the exception that one distribution sample was missed due to the regular operator who normally takes the samples being on holidays.

Copies of test results are kept at the Water plant and copies can be made available by contacting the foreman at the Water plant. Ph# 204-822-5707.

The table below lists the chemicals that have a designated Maximum Acceptable Concentration level. For a detailed list of all chemicals tested please contact the foreman at the Water Treatment Plant.

**ANNUAL WATER ANALYSIS**

Type		Raw	Treated	Distribution	Max Acceptable Concentration	Units
		-	-	-		
Dissolved Fluoride	F	0.54	1.01	-	1.5	Mg/L
Nitrate and Nitrite	N	0.426	0.512	-	10	Mg/L
Antimony	Sb	0.00059	0.00055	-	0.006	Mg/L
Arsenic	As	0.00489	0.00129	-	0.010	Mg/L
Barium	Ba	0.0310	0.00474	-	1.0	Mg/L
Boron	B	0.131	0.118	-	5	Mg/L
Cadmium	Cd	< 0.00001	< 0.00001	-	0.005	Mg/L
Chromium	Cr	< 0.0001	0.0001	-	0.05	Mg/L
Lead	Pb	0.000391	<0.000116	-	0.01	Mg/L
Selenium	Se	0.0018	0.0014	-	0.01	Mg/L
Uranium	U	0.0180	0.00045	-	0.02	Mg/L



Chlorine Total	0	1.06	0.44	1.45	0.61
Total Coliforms	<200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>May 5, 2009</b>					
Chlorine Free	0	0.58	0.24	0.11	0.62
Chlorine Total	0	1.08	0.65	0.48	0.90
Total Coliforms	165	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>May 20, 2009</b>					
Chlorine Free	0	0.63	0.34	0.37	0.62
Chlorine Total	0	1.01	0.64	0.73	0.88
Total Coliforms	29	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>June 2, 2009</b>					
Chlorine Free	0	0.65	0.24	0.78	0.11
Chlorine Total	0	1.10	0.51	1.04	0.44
Total Coliforms	29	0	0	0	0
Escherichia Coli	1	0	0	0	0
<b>June 17, 2009</b>					
Chlorine Free	0	0.63	0.16	0.10	0.96
Chlorine Total	0	0.99	0.50	0.44	1.07
Total Coliforms	>200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>June 30, 2009</b>					
Chlorine Free	0	0.67	0.21	0.12	0.29
Chlorine Total	0	1.06	0.61	0.46	0.60
Total Coliforms	>200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>July 15, 2009</b>					
Chlorine Free	0	0.35	0.14	0.10	0.55
Chlorine Total	0	0.73	0.59	0.44	0.81
Total Coliforms	>200	0	0	0	0
Escherichia Coli	1	0	0	0	0
<b>July 28, 2008</b>					
Chlorine Free	0	0.60	0.14	0.12	0.86
Chlorine Total	0	0.99	0.56	0.51	1.19
Total Coliforms	>200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>August 11, 2009</b>					
Chlorine Free	0	0.82	0.23	0.12	0.36
Chlorine Total	0	1.21	0.87	0.51	0.79
Total Coliforms	>200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>August 26, 2009</b>					
Chlorine Free	0	0.89	0.04	0.30	0
Chlorine Total	0	1.21	0.27	0.82	0
Total Coliforms	>200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>September 9, 2009</b>					
Chlorine Free	0	0.65	0.13	0.12	0.48
Chlorine Total	0	1.04	0.55	0.41	0.82
Total Coliforms	>200	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>September 22, 2009</b>					
Chlorine Free	0	0.86	0.15	0.21	0.10
Chlorine Total	0	1.33	0.56	0.62	0.36
Total Coliforms	>200	0	0	0	0
Escherichia Coli	3	0	0	0	0
<b>October 6, 2009</b>					
Chlorine Free	0	0.86	0.32	0.23	0.12
Chlorine Total	0	1.24	0.82	0.55	0.32

Total Coliforms	>200	0	0	0	0
Escherichia Coli	6	0	0	0	0
<b>October 20, 2009</b>					
Chlorine Free	0	0.77	0.11	0.48	0.14
Chlorine Total	0	1.10	0.46	1.30	0.40
Total Coliforms	120	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>November 3, 2009</b>					
Chlorine Free	0	0.96	0.19	0.35	0.11
Chlorine Total	0	1.44	0.67	0.74	0.43
Total Coliforms	83	0	0	0	0
Escherichia Coli	2	0	0	0	0
<b>November 17, 2009</b>					
Chlorine Free	0	0.84	0.19	0.37	0.11
Chlorine Total	0	1.17	0.61	0.80	0.29
Total Coliforms	29	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>December 1, 2009</b>					
Chlorine Free	0	0.94	0.16	0.51	0.14
Chlorine Total	0	1.34	0.49	0.91	0.36
Total Coliforms	10	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>December 15, 2009</b>					
Chlorine Free	0	0.89	0.21	0.38	0.12
Chlorine Total	0	1.28	0.62	0.70	0.38
Total Coliforms	4	0	0	0	0
Escherichia Coli	0	0	0	0	0
<b>December 30, 2009</b>					
Chlorine Free	0	0.80	0.17	0.32	0.11
Chlorine Total	0	1.16	0.43	0.68	0.38
Total Coliforms	6	0	0	0	0
Escherichia Coli	0	0	0	0	0

**How do we plan to meet Standards for Trihalomethanes? (THM's)**

As stated previously Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. Because of the nature of Lime Soda-Ash softening plants and the amount of chemicals we need to add for softening the water. Treating surface water to meet trihalomethane standards can be challenging .The standard for total THMS is.1 mg/l based on a running average of quarterly samples There are four compounds which added together form the total THMS. The average THM result for 2009 was 0.131mg/L and 0.142mg/ which were both above the 0.1mg/L standard.

. We are currently trying to improve our process by fine tuning chemical rates and working with chemical suppliers to find new alternatives for treatment of THM levels.

**Trihalomethane Test Results**

Date	#1 Public Works Garage	#2 Recreation Centre
<b>March 7, 2009</b>		
THM Preserved		
• Bromoform	< 0.0005	< 0.0005
• Chloroform	0.065	0.10
	0.0061	0.0081

<ul style="list-style-type: none"> <li>• Chlorodibromomethane</li> <li>• THMs</li> </ul>	0.092	0.14
<b>May 22, 2009</b> THM Preserved <ul style="list-style-type: none"> <li>• Bromoform</li> <li>• Chloroform</li> <li>• Chlorodibromomethane</li> <li>• THMs</li> </ul>	< 0.00050 0.0731 0.00614 0.105	< 0.00050 0.0737 0.00679 0.108
<b>August 10, 2009</b> THM Preserved <ul style="list-style-type: none"> <li>• Bromoform</li> <li>• Chloroform</li> <li>• Chlorodibromomethane</li> <li>• THMs</li> </ul>	<0.00050 0.103 0.0147 0.175	<0.00050 0.108 0.0133 0.175
<b>November 9, 2009</b> THM Preserved <ul style="list-style-type: none"> <li>• Bromoform</li> <li>• Chloroform</li> <li>• Chlorodibromomethane</li> <li>• THMs</li> </ul>	<0.0002 0.120 0.0037 0.150	<0.0002 0.110 0.0041 0.140

***How do we alert Public Works Staff to water emergencies?***

The Public Works Department has staff on call 24 hrs. When emergencies arise after hours , residents who call the regular office no. are transferred to the on call staff.

***Were there emergencies, regulatory compliance issues or other operational issues to report for 2009?***

There were no regulatory issues in 2009, the following watermain and related incidents were as follows:

- Excavated and repaired water main breaks on the following dates and locations:
  - January 5<sup>th</sup> 2009. #432 5<sup>th</sup> Street.
  - January 17<sup>th</sup> 2009. #428 5<sup>th</sup> Street.
  - January 22<sup>nd</sup> 2009. #460 5<sup>th</sup> Street.
  - May 20<sup>th</sup> 2009. 6 inch water main in golf course.
  - June 25<sup>th</sup> 2009. #65 Stephen Street.
  - September 17<sup>th</sup> 2009. #80 Thornhill Street.
  - October 9<sup>th</sup> 2009. #28 Westwood Dr.
  - December 4<sup>th</sup> 2009. #926 Alvey Street.
- 5 residential service connection leaks were also repaired.

***Were there any major expenses incurred in 2009?***

No major expenses were incurred outside of the operating budget

***Future system expansion or expenses expected?***

The Town will be assessing the water tower condition in 2011. Depending on the assessment report , replacing the reservoirs may be required.

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

*For general questions during business hours , call the Town of Morden office from 9:00 a.m. to 4:30 p.m. or email [tmorden@mordenmb.com](mailto:tmorden@mordenmb.com)*