



Town of Morden **Public Water System Annual Report** 2010

This report is available online at the Town of Morden website - www.mordenmb.com as of March 31st, 2011

Email Town address is: 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 2010

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 (400-870 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 constructed in ground.. 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
PVC	30,200

The mains are flushed via hydrants, regular maintenance including hydrant inspection and testing is performed annually, typically 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 done daily on the treated water leaving the water plant and 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?

The Office of Drinking Water has determined (in it's 2010 Audit report for the Town of Morden Public Water System) that the Morden PWS has fulfilled it's obligations in 2010 in complying with the terms and conditions of Operating Licence (PWS-08-113) With the exception of the following items:

Water Quality Standards- Total Trihalomethanes- annual average exceeds standard.

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	0.35	1.02	-	1.5	Mg/L
Nitrate and Nitrite	N	1.98	2.12	-	10	Mg/L
Antimony	Sb	0.00047	0.00044	-	0.006	Mg/L
Arsenic	As	0.00393	0.00094	-	0.010	Mg/L
Barium	Ba	0.0348	0.00498	-	1.0	Mg/L
Boron	B	0.163	0.122	-	5	Mg/L
Cadmium	Cd	0.000035	< 0.00001	-	0.005	Mg/L
Chromium	Cr	< 0.0010	0.0010	-	0.05	Mg/L
Lead	Pb	0.000365	0.000174	-	0.01	Mg/L
Selenium	Se	0.0030	0.0026	-	0.01	Mg/L
Uranium	U	0.0179	0.00061	-	0.02	Mg/L

Details of Water Analysis results for the water we are purchasing from PVWC. can be obtained by contacting the office of Pembina Valley Water Co-op in Altona Mb. Ph # 204-324-1931

BI-WEEKLY BACTERIAL TESTS

Date	#1 Raw	#2 Treated @ WTP	#3 Distribution @ PWG	#4 Distribution @ PVWC	#5 Distribution @ Morden Rec.
January 12, 2010					
Chlorine Free	0	0.82	0.11	0.62	0.12
Chlorine Total	0	1.16	0.63	1.05	0.40
Total Coliforms	11	0	0	0	0
Escherichia Coli	0	0	0	0	0
January 27, 2010					
Chlorine Free	0	0.79	0.19	0.76	0.10
Chlorine Total	0	1.25	0.72	1.14	0.52
Total Coliforms	8	0	0	0	0
Escherichia Coli	0	0	0	0	0
February 9, 2010					
Chlorine Free	0	1.03	0.10	0.56	0.12
Chlorine Total	0	1.38	0.71	0.97	0.44
Total Coliforms	2	0	0	0	0
Escherichia Coli	0	0	0	0	0
February 22, 2010					
Chlorine Free	0	1.59	0.22	0.34	0.13
Chlorine Total	0	1.96	0.65	0.77	0.41
Total Coliforms	4	0	0	0	0
Escherichia Coli	0	0	0	0	0
March 9, 2010					
Chlorine Free	0	0.93	0.19	0.85	0.26
Chlorine Total	0	1.26	0.44	1.13	0.48
Total Coliforms	5	0	0	0	0
Escherichia Coli	0	0	0	0	0
March 23, 2010					
Chlorine Free	0	0.68	0.14	0.98	0.23
Chlorine Total	0	1.03	0.57	1.45	1.43
Total Coliforms	165	0	0	0	0
Escherichia Coli	0	0	0	0	0
April 7, 2010					
Chlorine Free	0	0.65	0.16	1.02	0.10
Chlorine Total	0	0.97	0.53	1.25	0.41
Total Coliforms	>200	0	0	0	0
Escherichia Coli	1	0	0	0	0
April 20, 2010					
Chlorine Free	0	0.80	0.27	0.89	0.10
Chlorine Total	0	1.23	0.63	1.14	0.38
Total Coliforms	114	0	0	0	0
Escherichia Coli	0	0	0	0	0
May 4, 2010					
Chlorine Free	0	0.56	0.27	0.55	0.11
Chlorine Total	0	1.23	0.61	0.81	0.38
Total Coliforms	38	0	0	0	0
Escherichia Coli	0	0	0	0	0
May 18, 2010					
Chlorine Free	0	0.95	0.17	1.00	0.12
Chlorine Total	0	1.22	0.67	1.53	0.46
Total Coliforms	165	0	0	0	0
Escherichia Coli	3	0	0	0	0
May 31, 2010					
Chlorine Free	0	0.82	0.14	0.87	0.22
Chlorine Total	0	1.24	0.46	1.25	0.60
Total Coliforms	>200	0	0	0	0
Escherichia Coli	14	0	0	0	0
June 15, 2010					

Chlorine Free	0	0.98	0.55	0.45	0.10
Chlorine Total	0	1.43	1.19	0.86	0.42
Total Coliforms	145	0	0	0	0
Escherichia Coli	0	0	0	0	0
June 29, 2010					
Chlorine Free	0	0.89	0.11	0.52	0.11
Chlorine Total	0	1.50	0.53	0.82	0.42
Total Coliforms	165	0	0	0	0
Escherichia Coli	1	0	0	0	0
July 13, 2010					
Chlorine Free	0	0.81	0.22	0.24	0.11
Chlorine Total	0	1.84	0.72	0.65	0.44
Total Coliforms	>200	0	0	0	0
Escherichia Coli	1	0	0	0	0
July 29, 2010					
Chlorine Free	0	1.00	0.11	0.20	0.12
Chlorine Total	0	1.62	0.61	0.68	0.48
Total Coliforms	>200	0	0	0	0
Escherichia Coli	11	0	0	0	0
August 12, 2010					
Chlorine Free	0	1.06	0.24	0.10	0.11
Chlorine Total	0	1.74	0.74	0.49	0.47
Total Coliforms	>200	0	0	0	0
Escherichia Coli	2	0	0	0	0
August 25, 2010					
Chlorine Free	0	1.12	0.17	0.22	0.14
Chlorine Total	0	1.74	0.61	0.64	0.48
Total Coliforms	165	0	0	0	0
Escherichia Coli	2	0	0	0	0
September 9, 2010					
Chlorine Free	0	0.98	0.14	0.53	0.17
Chlorine Total	0	1.59	0.63	1.06	0.53
Total Coliforms	>200	0	0	0	0
Escherichia Coli	3	0	0	0	0
September 21, 2010					
Chlorine Free	0	0.47	0.12	0.36	0.11
Chlorine Total	0	1.10	0.50	0.95	0.39
Total Coliforms	+200	0	1	0	0
Escherichia Coli	3	0	0	0	0
September 23, 2010					
Chlorine Free			RETEST		
Chlorine Total			0.40		
Total Coliforms			0.96		
Escherichia Coli			0		
October 5, 2010					
Chlorine Free	0	0.69	0.10	0.10	0.11
Chlorine Total	0	1.34	0.68	0.58	0.55
Total Coliforms	145	0	0	0	0
Escherichia Coli	0	0	0	0	0
October 20, 2010					
Chlorine Free	0	0.81	0.11	0.12	0.10
Chlorine Total	0	1.33	0.76	0.53	0.50
Total Coliforms	18	0	0	0	0
Escherichia Coli	0	0	0	0	0
November 2, 2010					
Chlorine Free	0	0.58	0.15	0.23	0.10
Chlorine Total	0	1.53	0.89	0.93	0.55
Total Coliforms	>200	0	0	3	0
Escherichia Coli	118	0	0	0	0
November 3, 2010					
Chlorine Free				RETEST	
				0.20	

Chlorine Total				0.81	
Total Coliforms				0	
Escherichia Coli				0	
November 16, 2010					
Chlorine Free	0	0.79	0.20	0.24	0.10
Chlorine Total	0	1.26	0.86	0.79	0.68
Total Coliforms	>200	0	0	0	0
Escherichia Coli	1	0	0	0	0
December 2, 2010					
Chlorine Free	0	0.90	0.61	0.12	0.11
Chlorine Total	0	1.48	1.42	0.78	0.57
Total Coliforms	165	0	0	0	0
Escherichia Coli	1	0	0	0	0
December 10, 2010					
Chlorine Free	0	0.80	0.18	0.06	0.11
Chlorine Total	0	1.44	0.84	0.65	0.73
Total Coliforms	3	0	0	0	0
Escherichia Coli	0	0	0	0	0
December 30, 2010					
Chlorine Free	0	0.90	0.15	0.10	0.10
Chlorine Total	0	1.52	0.64	0.74	0.61
Total Coliforms	8	0	0	0	0
Escherichia Coli	0	0	0	0	0

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

The Town has tried various operational methods to reduce THM's , we have not been able to meet standards . Subsequently an engineering assessment will be forthcoming and the resultant findings will determine an action plan.

Trihalomethane Test Results

Date	#1 Public Works Garage	#2 Recreation Centre
February 24, 2010		
THM Preserved		
• Bromodichloromethane	0.0339	0.0336
• Bromoform	< 0.00050	< 0.00050
• Chloroform	0.107	0.106
• Chlorodibromomethane	0.00591	0.00591
• THMs	0.147	0.146
May 17, 2010		
THM Preserved		
• Bromodichloromethane	0.020	0.020
• Bromoform	ND	ND
• Chloroform	0.097	0.088
• Chlorodibromomethane	0.003	0.003
• THMs	0.120	0.110
August 16, 2010		
THM Preserved		
• Bromodichloromethane	0.0421	0.0356
• Bromoform	<0.00050	<0.00050
• Chloroform	0.135	0.104
• Chlorodibromomethane	0.00815	0.00667
• THMs	0.185	0.146
November 12, 2008		
THM Preserved		

• Bromodichloromethane	0.0522	0.0492
• Bromoform	<0.00050	<0.00050
• Chloroform	0.109	0.114
• Chlorodibromomethane	0.00886	0.00864
• THMs	0.170	0.172

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 2010?

There were no regulatory issues in 2010, the following water main and related incidents were as follows:

- Repaired broken Fire Hydrant @ #914 Northwood Dr.
- Repaired broken Fire Hydrant @ #874 Parkview Pl.
- Repaired broken Fire Hydrant @ #300 8th St.
- Repaired broken Fire Hydrant @ #855 Southlane.
- Repaired broken Fire Hydrant @ #221 Birchwood Dr.
- Excavated and replaced Fire Hydrant @ #254 2nd St.
- Excavated and repaired water main valve @#883 Northwood Dr.
- Excavated and repaired water main valve @#584 Thornhill St.
- Excavated and repaired water main valve @#101 Conner Hill Dr.
- Excavated and replaced water main valve @ #650 Thornhill.
- Excavated and repaired water main break @ #452 5th St.
- Excavated and repaired water main break @ #444 9th St.
- Excavated and repaired water main break @ #654 South Railway.
- Excavated and repaired water main break @ #347 8th St.
- Excavated and repaired water main break @ #840 Alvey St.
- Excavated and repaired water service connection @ #109 Jefferson St.
- Excavated and repaired water service connection @ #171 Pembina Dr.
- Excavated and repaired water service connection @ #1 Cairo Bay.
- Excavated and repaired water service connection @ #231 15th St.
- Excavated and repaired water service connection @ #150 Wardrop St.
- Excavated and repaired water service connection @ #233 Tulip St.
- Excavated and repaired water service connection @ #537 North Railway.

Were there any major expenses incurred in 2010?

No major expenses were incurred outside of the operating budget

Future system expansion or expenses expected?

To be compliant with THM standards the water plant will likely require process equipment purchase. The water storage tanks will be assessed this year as well, if these need to be replaced, considerable costs are anticipated. The costs for these 2 projects are not known at this time,

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