

Public Water System Annual Report

Town of Melita & Water Treatment Plant

2010

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Introduction:

The 2010 Annual Report for the Town of Melita summarizes the water utility's ability to produce safe potable water and meet or exceed provincial regulations. We hope that the following report answers any and all questions regarding the new water system. It is our belief that the public has a right to access information related to the drinking water they consume. To that end the following report has been prepared for the residents of the Town of Melita and rural users.

1. Description of the Water System

The Melita Public Water System (PWS) provides safe potable drinking water to the residents of Melita through the distribution system and to rural residents by means of the Truck Fill System at the new Water Treatment Plant (WTP). Treated water produced from the WTP meets or exceeds all health and aesthetic objectives as stated in the *Guidelines for Canadian Drinking Water Quality*.

The Melita Water Treatment Plant



Truck Fill



1.1. Water Supply Source

The WTP receives groundwater from two wells located at 16 km North East of Melita @ NW23-5-27W. The wells draw groundwater from the Oak Lake Aquifer. Both wells were drilled to a depth of 33 feet. Raw water pumped from the wells into a 200 mm (8 inch) pipeline where it flows directly into the WTP for processing and treatment.



Well Site 1

During 2007-2008, the Town of Melita developed a new Public Water System (PWS) which includes two groundwater wells, a Water Treatment Plant (WTP) in NW6-4-26W, and a raw water pipeline between the wells and the WTP. During the initial 6 months of operation it was determined the water supply wells have insufficient capacity due to the presence of impervious clay ridges which were not detected during the initial groundwater sourcing study. As a result, a new well field was developed on municipal right-of-way between SE24-5-27W and SW19-5-26W which is located 3.2kms east of the existing wells. This well field consists of two 760 mm (30 inch) wells, however, only the north well was mechanised and connected to the raw water supply line. This site will not be operational until spring 2010.

As water flows through the ground it dissolves metals and minerals. In the case of the Melita water supply, the water has come into contact with primarily iron and manganese. These items do not pose health concerns, rather they are known as aesthetic water quality parameters. On September 23, 2010 the new well field was brought online. On December 16, 2010 it was decided to test the water coming from the new well field for Iron Bacteria due to production issues at the WTP. The tests came back positive and the decision was made to stop pumping and bring the original well field back online.

1.2. Water Treatment Process

Raw water is pumped to the WTP where approximately 84% of the flow is directed through a combination of nano-filtration and reverse osmosis membranes. The remaining 16% by-passes through a sand-filter prior to blending with membrane permeate. Blended flow is chlorinated with sodium hypochlorite and then stored in a 1,000,000 litre concrete reservoir for distribution. Since membranes remove most dissolved minerals, blending permeate with filter water allows the operation to produce treated water with a more desirable hardness and PH. Approximately 20% of membrane flow (14% of the raw water) is discharged as membrane concentrate to the Souris River. Treated water is distributed to the Town of Melita and a bulk water (truck) fill is available for rural usage.



The R.O. Unit



The Sand Filter

1.3. Distribution System

Treated water from the reservoir, located underneath the WTP, is pumped throughout the Melita distribution system via three 7.5 horsepower duty pumps, with one 30 horsepower emergency standby pump for firefighting purposes. The Town of Melita has 3 different types of pipe in its distribution system; they consist of PVC, cast iron and ductile iron, which run for a total of about 12-15 km in total length. The WTP also has a natural gas powered generator located in the building that powers the distribution pumps during times of a power failure.

The Distribution Pumps



The Generator

1.4. Storage Reservoir

The storage reservoir for the Town of Melita's drinking water has a capacity of 1,000,000 litres or 220,000 Imperial Gallons, which gives us an available storage time of 3 days without plant operation. Currently the plant runs daily keeping the reservoir full, the main reason for this is to have enough water on hand for firefighting and domestic use. It also helps to keep the water fresh and well circulated.

1.5. Number of Connections, Population Served and types of Water Users

The Melita distribution system is comprised of 592 service connections, with a population of 1056 (2006 Statistics Canada Census) approximately. The distribution system also services a few rural connections located directly around town in the RM of Arthur.

In June of 2010 Phase 1 of the Rural Pipeline began construction and the South West Regional Water Co-op was formed which includes to date the Town of Melita, R.M. of Arthur, R.M. of Brenda, Village of Waskada and the Waskada Rural Water Co-op.

In phase 1; Arthur has 14 rural service connections, Brenda has 74 service connections 12 are rural connections 38 in Napinka and 24 in Medora. Currently only 5 connections are online in the R.M. of Arthur on the Northeast section of the pipeline, as the Southwest section has not been completed yet.

1.6. Classification and Certification

- The Melita WTP is classified as a Class 2 Water Treatment Facility.
- Certification Level of Operators;
 - Brock Bolton, Level 2
 - Kelly Fry, Level 1
 - Rob McCutcheon, currently in the process of obtaining certification.
 - Darla Ternovetsky, currently in the process of obtaining certification.

1.7. Hydrological Investigations

In 2005, KGS Group conducted a groundwater sourcing study near the Broomhill truck loader station approximately 16 km north of Melita. The objective of the study was to carry out exploratory drilling and installation of a production well with sufficient capacity for the Town's water supply. KGS Group conducted an EM34 survey and drilled approximately 20 test-holes and installed 15 monitoring wells. A 96.5 hour pump test at a constant 15 L/s pump rate was completed and drawdown was monitored. In October 2005, a 200 mm (8 inch) production well was installed on the NW23-5-27W on the Broomhill Wildlife Management Area (WMA). The water level was recorded to be 1.8 meters below ground at the time of drilling. A second production well was installed 15 meters south of the first in 2007 so that one well could act as a backup supply.

After commissioning the WTP in 2009, a monitoring well system was installed which showed a significant water table drop over the first 6 months of operation. Subsequent test drilling by KGS Group showed that the aquifer was not continuous as originally determined from the 2005 investigations. Newer test drilling at close intervals showed the presence of clay ridges that separated the larger aquifer into smaller basins. It was determined that these clay ridges result in an "egg carton" or "ice cube tray" effect such that once the water table dropped below the top of the ridges, the production wells, which are located into a much smaller basin, are unable to sustain withdrawals necessary to sustain Melita.

1.8. Artificial Recharge

Test drilling activities in 2009 revealed at least three separate basins in close proximity to the well field. The basins are referred to as the south, middle and north basins whereby the production wells are located in the south basin. In addition, the Broomhill truck loader station is also located in the south basin. Due to the water table drop, the pump in the truck fill had to be lowered to maintain its operation.

Recharge infrastructure include a 760 mm (30 inch) well was installed in both the middle and north basin. A 75 mm pipe line was installed from the middle basin well to the south production well. This would allow groundwater from the middle basin to be pumped to the production well site and artificially recharge the south basin. However, due to Manitoba Hydro power restrictions, this well can only be pumped while the production well is not in operation. The WTP generally requires water for about 10 hours a day such that the middle basin is pumping for about 12 hours a day. The switch-over from the production well to the recharge well currently requires the operator to travel to the well site. An automatic switch-over is planned in the near future. Pumping groundwater from the middle basin to the south basin commenced on August 26th.



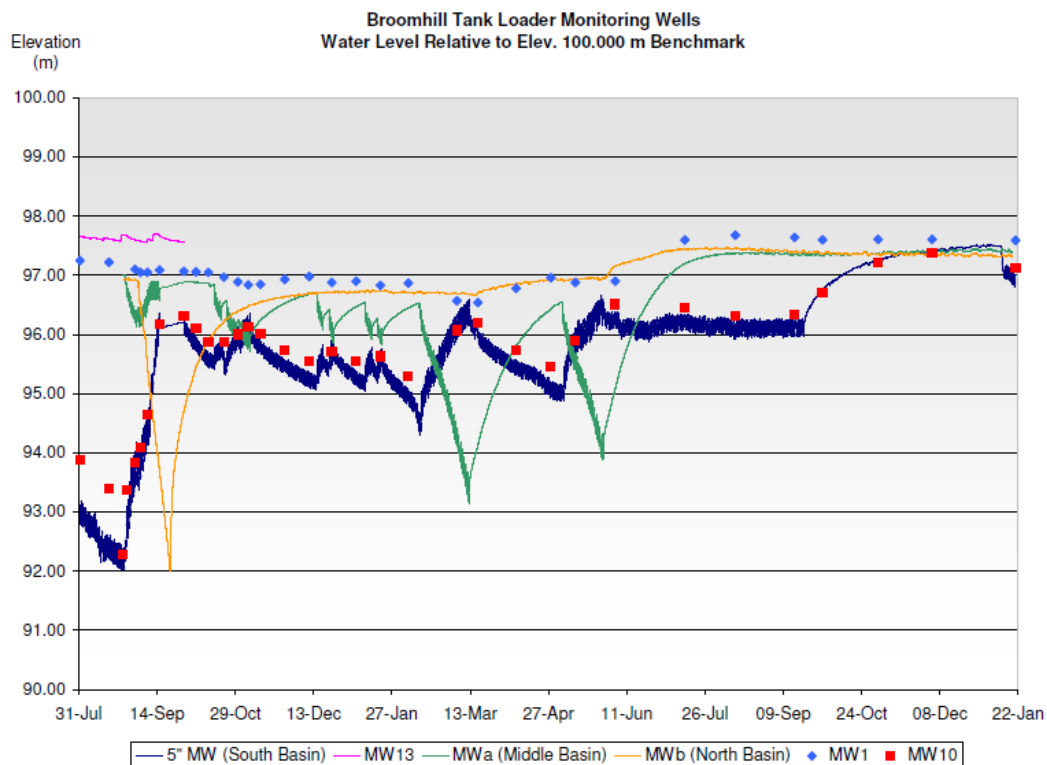
Recharge Wells

Since the middle basin could only be pumped intermittently, the north basin well was temporarily equipped with a pump, generator and overland pipeline to speed up the water table recovery. Pumping from this basin occurred from September 3rd to September 21st until

water levels significantly recovered and the north basin water table prevented further pumping. The water table in the north basin has since recovered. Currently, the middle basin well is intermittently pumped to the production well site in an attempt to maintain water levels until the new well field located on the SE24-5-27W can be put into operation. KGS Group determined that pumping from all three basins will not be sustainable to meet Melita demands and recommended developing the new well site.

1.9. Groundwater Levels and Monitoring

Groundwater monitoring commenced in July 2009. As many as four pressure transducers were initially set-up and currently three pressure transducers are continuous and manual readings. This graph uses a benchmark of 100.00 m in order to compare levels in each the three basins.



The locations of all monitoring wells are shown in the appendices. 5" MW represents the water table depth near the production well, while MWa and MWb represent the water table depth in the middle and north basins.

In 2007, the Manitoba Water Services Board (MWSB) developed a groundwater monitoring plan for the existing well field (site 1) as required in Environment Act license No. 2745 issued to the Town of Melita. On October 5, 2009, MWSB requested a minor alteration to this license to include the new well field (site 2) located on the SE24-5-27W. As a result, Manitoba Conservation requires a revised water level monitoring plan.

Once operational, site 2 will become the main supply for the Town of Melita. Site 1 will remain as a backup supply. Therefore, the groundwater monitoring plan will include monitoring of both sites. The following groundwater monitoring plan is proposed for a period of two years commencing site 2 operation. After two years, the location and frequency of groundwater monitoring is proposed to be re-evaluated.

Site 1 – NW23-5-27W

In 2009, three new monitoring wells were installed at site 1. A 125 mm monitoring well (MW-21) was installed 15 m east of the production wells in the south basin, a 50 mm monitoring well (MW-22) located 110 m north of the north production well in the middle basin, and a 50 mm monitoring well (MW-23) located 245 m north of the north production well in the north basin. All three monitoring wells were equipped with pressure transducers. However, it is proposed to maintain two pressure transducers at MW-21 and MW-22 for continuous monitoring. A manual water level reading with an electronic tape is proposed semi-annually at MW-10, MW-23 and MW-14. The monitoring of these wells will provide water level data on each of the three basins as well as MW-14 located outside of the basins.

Site 2 – SE24-5-27W

The proposed monitoring system for site 2 will include pressure transducers installed in MW-103 near the proposed production well and in MW-104 located adjacent to the Harmon farmstead. Manual level readings are proposed semi-annually at MW-100, MW-101 and MW-102. MW-100 is located near the Miner and Carr properties. Each monitoring well is protected with a locked steel cover. However at each monitoring well location, a second 50 mm monitoring well (without steel cover and lock) was provided for public observations.

2. Water Testing

Water tests are taken daily on a routine basis to ensure that the water is safe and to monitor how well the treatment process is performing. We test the water at the WTP and in the distribution system. We perform daily tests at the WTP on 6 different aspects of the treatment process.

- Distribution Tests (*water taken from a point in the distribution system*) on average 6 tests per day.
- Treated Tap (*water taken from a point in the WTP before it leaves the plant*) on average 6 tests per day.
- Raw (*untreated well water as it enters the WTP*) on average 4 tests per day.
- Permeate (*water from the R.O. Unit before chemical addition*) on average 2 tests per day.
- Sand-filter (*treated water from the sand-filter, before it blends with R.O. water*) 6 tests per day, 4 when chlorine isn't used as a pre-treatment.
- MTU or Main Treatment Unit (*water from all 12 vessels*) 12 tests per day for conductivity.

There are on average 38 tests performed a day at the WTP, or 1,160 tests a month, 13,921 tests a year.

2.1. Bacterial Testing

We sample the raw water (untreated well water), the treated water (water leaving the treatment plant) and the water in two locations in the distribution system one from the Melita lodge because of its location on the system and the other from a list of strategic locations (within the Town of Melita) every two weeks (bi-weekly) for the presence of Total Coli forms (TC) and E. Coli (EC) bacteria. If these bacteria are present in the water it is an indication that disease causing organisms may also be present. These 4 samples are then sent via courier to a provincially sanctioned lab in Winnipeg for testing.

2.2. Disinfection

The final step in the treatment of safe water is disinfection. Disinfection is the selective destruction or inactivation of potential disease causing organisms in water. Per the *Drinking Water Safety Act* the Melita PWS must ensure that a disinfection residual of at least:

- 0.5 mg/L of free chlorine per litre of water is detectable at the point where water enters the distribution system, after a minimum contact time of 20 minutes.
- 0.1 mg/L of free chlorine per litre of water is detectable at all time at in any point in the distribution network.

2.3. Type of Disinfection Used

The Melita WTP disinfects by adding a 12% sodium hypochlorite solution to the water via 3 chlorinator pumps. One for the raw water before it enters the sand-filter (pre-treatment) and two for the blended water before it enters the reservoir.

2.4. Equipment Redundancy and Monitoring Requirements

As required by the *Drinking Water Safety Act* the Melita PWS ensures continuous disinfection is maintained at the WTP by keeping in stock all spare parts required for the chlorinators, as well there are two spare chlorinator pumps kept at the plant. Disinfection residuals are monitored continuously by an online monitor that monitors the water continuously as it leaves the WTP. We



Online Monitoring Equipment

also monitor the residuals daily at the WTP and in the distribution system; these tests are performed at the WTP after the samples are collected. The results of all tests are recorded on our records at the WTP as well as Monthly Chlorination Report forms which are sent to the regional *Drinking Water Officer* at the end of each month, to check for standard compliance.

2.5. Turbidity Testing

Turbidity is a measurement of the clarity of water. We use turbidity as another means to tell us how well our treatment system is working and to remove particles and other contaminants that can cause the water to look cloudy and affect our disinfection process. Turbidity is tested daily, the raw, treated, sand-filter and distribution by a portable testing meter. The water from the sand-filter and the blended permeate (combined waters from the R.O. Unit and sand-filter) before it enters the reservoir are monitored continuously while the plant is in operation, by two separate online turbidity monitors. The results of all turbidity tests are recorded on our records at the WTP as well as Monthly Turbidity Report forms which are sent to the regional *Drinking Water Officer* at the end of each month to check for standard compliance.

2.6. Other Testing Performed at the WTP

- Iron Testing: Is performed daily on the following samples, distribution, treated tap, sand-filter. Every 5 days on the raw and every 10 days on permeate.
- Manganese Testing: Is performed daily on the following sample, sand-filter and every 7 days on the distribution, treated tap, raw and permeate.
- PH Testing: Is performed daily on the following samples, treated tap, raw, permeate and concentrate.
- Hardness Testing: Is performed every 10 days on the following samples, raw and treated tap.
- Fluoride Testing: Is performed daily on the distribution sample. See section 5 for more on fluoride.
- Chlorine Testing: Is performed daily on the following samples, distribution, and treated tap and sand-filter. As previously described in sections 2.2 and 2.3.
- Conductivity Testing: Is performed daily on the following samples, permeate, distribution, treated tap, raw, sand-filter and all 12 vessels on the RO unit.

2.7. Plant Operation

The WTP is monitored continuously by the computer system; it is continuously taking readings from 60 different locations by sensors, probes and meters. This information is displayed in real-time on a different number of screens (*see Figure A, B, C which show three different computer screens*) and is also recorded and compiled in the form of a trend. These trends can be accessed at anytime and show a history of plant operation in various areas (*see Figure D for an example of a trend screen*).

Figure A

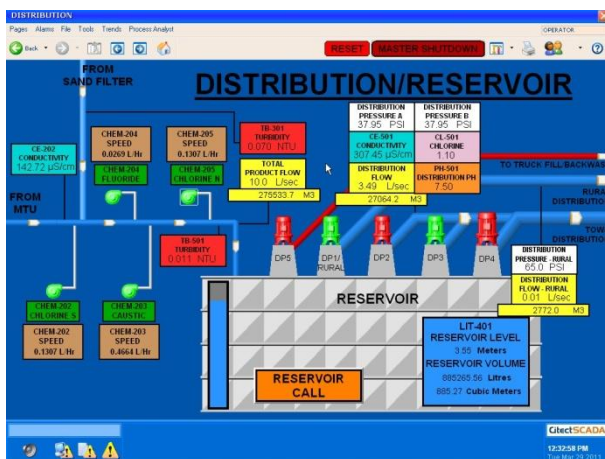
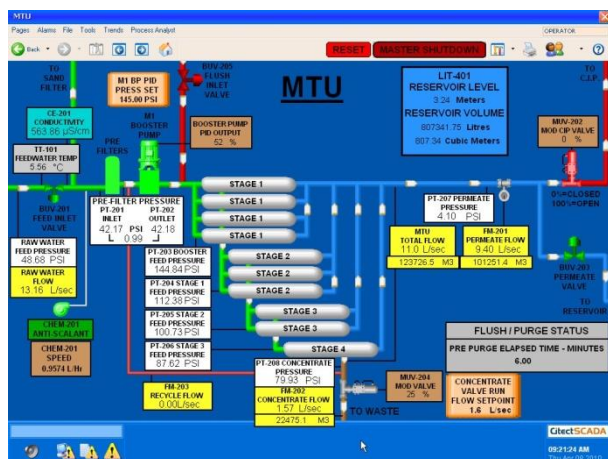


Figure B

Figure C

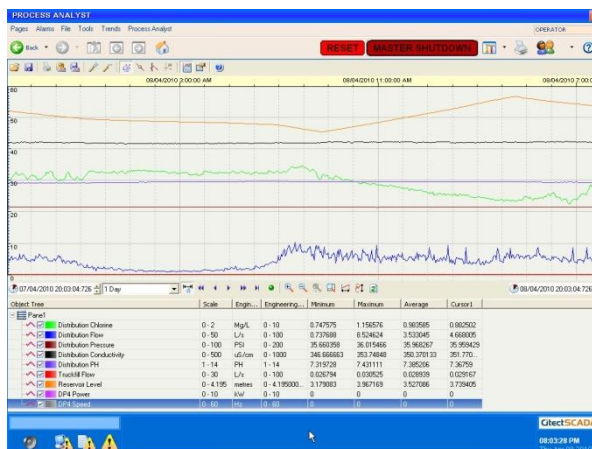
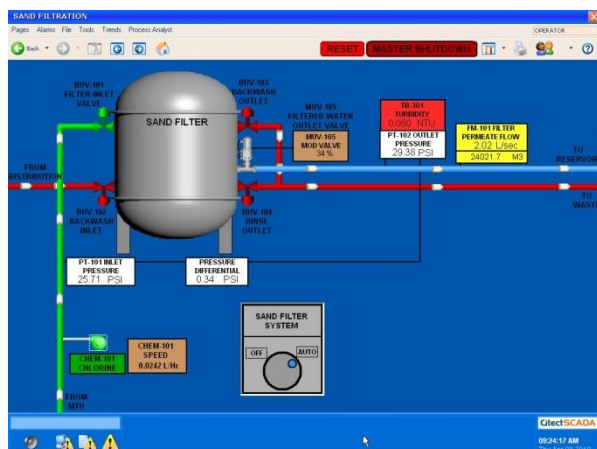


Figure D

2.8. Chemicals Added to our Water and Why

- Sodium Hypochlorite 12%: (Chlorine) Disinfectant, source of available chlorine.
- Pre-Treat Plus: (Antiscalant) Injected in the raw water before the membranes to protect them.
- Sodium Hydroxide 50%: (Caustic Soda) Acid neutralization raises PH.
- Fluorosilicic Acid 23-27%: Water fluoridation.

3. Disinfectant Residual, Turbidity, Bacteria and Overall Performance Results

For 2010, the Melita PWS has met all regulatory requirements in regard to monitoring and reporting in the WTP, leaving the WTP and in the distribution system (*see Appendix "B" – Annual Audit – 2010*).

3.1. 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 and two regulations under the *Drinking Water Safety Act*. A copy of the Annual Audit – 2010 from the Office of Drinking Water is located in **Appendix "B"**.

4. Water System Incidents and Corrective Actions

In 2010 the Melita PWS repaired 21 water main breaks, 5 residential service lines, 3 sewer mains and completed 2 new service installations.

5. Additional Records Required

As part of Manitoba Health's fluoridation program, water samples are collected on a daily basis from the distribution system and tested at the WTP. Daily fluoride results are recorded and a 14 day composite sample is submitted by-weekly for analysis (*see Appendix "C" – 2010 Fluoridation Results*). The Melita PWS strives to maintain a 1.00 mg/L fluoride level. The operating range for fluoride, as identified by Manitoba Health, is 0.80 – 1.20 mg/L. In 2009 fluoride levels exceeded the 1.20 mg/L recommended level 2 times. Fluoride levels were also below the 0.80 mg/L recommended level 8 times. The reasons for straying outside the recommended range were due to primarily chemical pump issues or problems, other reasons were differences in solution strength between barrels and injector failures.

Daily Log Sheets are also kept to check plant performance, copies of these forms are sent into the Water Services Board for review.

R. O. Data Sheets are also kept to check plant performance, a copy of these forms is sent into Sapphire Group for review.

Conductivity Sheets are also kept to check plant performance, copies are also sent into the Water Services Board for review.

6. Drinking Water Safety Orders and Actions Taken in Response

In 2010, no drinking water safety orders were issued for the Melita PWS.

7. Boil Water Advisories Issued and Actions Taken in Response

1 Boil Water Advisory issued, Events that took place and actions taken are as follows.

11-Aug-10

- Received call from lab @ 11:45am.
- Phoned drinking water officer @ 11:49am.
- Called affected business where failed sample was taken and advised them not to drink the water @ 11:55am.
- Made appropriate phone calls to staff and notified council.
- Started flushing line @ 1:30pm through old #2 WTP.
- Started collecting samples @ 2:15pm. Collected 6 samples from 5 different locations, 4 were from around the affected business.
- Collected chlorine sample from old #2 WTP (end of flush point) @ 4:00pm. Free 0.26, Total 0.39.
- Boil water advisory was issued by the office of drinking water @ 5:02pm.
- Notices were copied.
- Radio stations were contacted around 5:30pm to help get the advisory out.
- Notices started being delivered door to door @ 5:45pm.
- Flushing was stopped @ 6:30pm, a tap was left open in old #2 WTP and water was allowed to run from that line.
- Collected chlorine sample from old #2 WTP was taken @ 7:00pm. Free 0.43, Total 0.57. Tap was left open after sample was collected.
- Door to Door campaign was finished at 9:30pm.
- Tap in old #2 WTP was checked @ 9:50pm.
- Readings were checked in WTP @ 10:00pm.
- Drove around and checked for main breaks @ 10:20pm.
- Collected chlorine sample from tap in old #2 WTP @ 11:00pm. Free 0.68, Total 0.73.
- Collected chlorine sample from distribution tap in WTP @ 11:25pm. Free 1.16, Total 1.19.

12-Aug-10

- Communication was ongoing between town staff, council and the Office of Drinking Water. The regional Health Inspector as well as the Department of Food and Agriculture were also contacted and various aspects of the situation and how it was impacting the residents and businesses in town were discussed.
- Further information was provided to the town for the local food industry business to have.
- Council decided it would be more diligent to distribute this information by hand and did so.

13-Aug-10

- Around 4pm Friday afternoon the town office received word from the Office of Drinking Water that all 6 of the re-samples that had been sent to the lab on Wednesday had passed testing and come back with negative results for bacteria.
- The Office of Drinking Water immediately lifted the boil water advisory and sent out written notification to be distributed.
- Radio stations were notified.
- The written notices were delivered to businesses and posted in public locations around town.

8. Warnings Issued/Charges Laid in Accordance with the Drinking Water Safety Act

In 2010, no warnings were issued or charges laid for the Melita PWS.

9. Major Expenses Incurred

A series of 16 water breaks in February that occurred in one afternoon, which took additional equipment and manpower to repair over a number of weeks.

10. Future System Expansion and/or Increased Production

In 2011, phase 2 of the rural pipeline is scheduled to begin, expanding the existing rural pipeline, servicing the Village of Waskada and also tying into the Waskada Rural Water Co-op which borders the RM's of Brenda and Arthur.

11. Water Production/Usage for 2010

The treatment system capacity was designed to meet a 20 year future demand for Melita as well as additional capacity for a rural water system. The water system production and usage are summarized in the following charts in ***Appendix "A" – Usage Charts.***

Appendix “A” – Usage Charts

Truck Fill

Date	Reading	Total Gals	Highest Day	Lowest Day	Daily Average
31-Dec-09	650.37				
31-Dec-10	4336.20				
Total	3685.83	811,857	17,048	0	2,216


Raw

Date	Reading	Total Gals	Highest Day	Lowest Day	Daily Average
31-Dec-09	150,302				
31-Dec-10	300,133				
Total	149,811	32,998,018	202,643	0	90,433

Distribution


Date	Reading	Total Gals	Highest Day	Lowest Day	Daily Average
31-Dec-09	128,827				
31-Dec-10	250,959				
Total	122,132	26,901,322	183,921	51,762	74,297

Appendix "B" – Annual Audit 2010

 Water Stewardship Office of Drinking Water		Public Water System Annual Audit Report		Reporting Period:	Date:
				2010	2011-02-14
Water System:	Code:	Owner:	Operator in Charge:		
Melita PWS	137.00	Manitoba Water Services Board	Brock Bolton		
Address:	Phone:	Owner Representative:	Operating Licence Number:		
2022 Currie Blvd Brandon MB R7A 6Y9	726-6076	Ray Forman	PWS-09-394		

Water Quality Standards		Percent Compliance	Corrective Action Forms
Bacterial			
Total coliform and E. coli	Less than one E. coli and total coliform bacteria detectable per 100mL in all treated and distributed water	100%	1
Comments:			
Disinfection			
Chlorine residual	A free chlorine residual of at least 0.5 mg/L in water entering the distribution system following a minimum contact time of 20 minutes	100%	14
	A free chlorine residual of at least 0.1 mg/L at all times at any point in the water distribution system	100%	-
Comments:			
Physical			
Turbidity	Less than or equal to 0.1 NTU in 99% of the measurements in a month of the combined effluent from the particulate filter and each membrane filtration unit.	100%	20
	Not exceed 0.3 NTU for any daily measurement.	100%	n/a
Comments:			

Monitoring Requirements		Percent Compliance
Bacterial		
Total coliform and E. coli	Bi-weekly sampling program with each set of samples consisting of one raw, one treated and a minimum of one distribution sample. Consecutive sample sets must be separated by at least 12 days.	100%
Comments: Only one sample set collected in January.		
Disinfection		
Free chlorine (treated water)	Continuous sampling of water entering the distribution system following at least twenty minutes of contact time.	100%
	A confirmatory sample to be taken weekly at a location established by the Drinking Water Officer.	100%
Free chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling.	100%

	Water Stewardship Office of Drinking Water		Public Water System Annual Audit Report		Reporting Period:	Date:
					2010	2011-02-14
Water System: Melita PWS	Code: 137.00	Owner: Manitoba Water Services Board		Operating Licence: PWS-09-394		

Total chlorine (treated water)	One sample per day of water entering the distribution system following at least twenty minutes of contact time.	100%
Total chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling.	100%
Comments:		
Physical		
Turbidity	One raw water sample per day.	100%
	One sample per day of the combined effluent from the particulate filters and membrane filtration units.	100%
	A confirmatory sample to be taken weekly at location(s) established by the Drinking Water Officer.	100%
Comments:		
Chemistry		
General chemistry (to include arsenic, benzene, fluoride, nitrate, trichloroethylene, tetrachloroethylene and uranium)	One raw and one treated water sample once every three years.	N/A
Trihalomethanes (THMs)	One preserved distribution system samples taken on a quarterly basis during February, May, August, and November, every second year.	N/A
Lead	As per the instructions of the Drinking Water Officer	N/A
Comments:		

Other Regulatory Requirements	
Emergency Response Plan	
Due Date	September 1, 2011
Date Received	
Comments:	
Engineering Assessment	
Due Date	September 1, 2010
Date Received	
Comments:	
Your Engineering Assessment of Water System infrastructure and Water Supply Sources, as set out in clause 2.7 of your Operating Licence is overdue. A third party engineer must prepare your engineering assessment as set out in the Terms of Reference document available on our web site.	
Compliance Plan	
Due Date	Prior to March 1, 2012
Date Received	
Comments:	
A compliance plan must be submitted on how your system will achieve 99.9% (3-log) inactivation or reduction of Giardia and Cryptosporidium, as well as any other non compliance issues that result from the engineering assessment. A guidance document to assist with preparing a compliance plan is available on our web site.	

Appendix "C" – 2010 Fluoridation Results

Sampling Period	Dates	Results in mg/L
21	January 2 - 15	0.33
22	January 16 - 29	0.35
23	January 30 - February 12	0.43
24	February 13 - 26	0.62
25	February 27 - March 12	0.65
26	March 13 - 26	0.83
1	March 27 - April 9	0.84
2	April 10 - 23	0.67
3	April 24 - May 7	0.69
4	May 8 - 21	0.99
5	May 22 - June 4	0.45
6	June 5 - 18	0.96
7	June 19 - July 2	1.15
8	July 3 - 16	1.14
9	July 17 - 30	1.15
10	August 1 - 14	1.20
11	August 15 - 27	1.33
12	August 28 - September 10	1.11
13	September 11 - 24	0.98
14	September 25 - October 8	1.04
15	October 9 - 22	1.11
16	October 23 - November 5	0.88
17	November 6 - 19	1.06
18	November 20 - December 3	1.35
19	December 4 - 17	0.91
20	December 18 - 31	0.94

Average Reading for 2010	0.89 mg/L
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