Spruce Dr. Water Treatment Plant

2017 Potable Water System Operation Report

The Town of Niverville strives to provide the highest quality drinking water in sufficient quantity to meet the needs of the residents. It is our goal to provide this water in a safe, cost effective manner while remaining in compliance with all regulatory requirements governing the provision of drinking water.
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 Town of Niverville potable water system.

Where do we get our water from?
The raw water is currently obtained from two supply wells located just south of the water treatment plant. The wells draw water from fractured limestone aquifers that do not have the designation of being groundwater under the direct influence of surface water (GUDI).
Both wells were installed in 2002 and are 127 mm in diameter. They each have a total depth of 60.9 m, with a PVC casing installed to a depth of 27.7 m. raw water from these wells are conveyed to the WTP via 150 mm PVC pipeline.
There are two additional raw water wells located near the WTP. Well #3 was installed in 2006, is 127 mm in diameter and 79.2 m deep. Well #4 was also installed in 2006, is 127 mm in diameter and 94.5 m deep. A pump test was performed on Well #4 in May 2011 and indicated the well would be suitable in providing additional raw water capacity for the 2011 treatment upgrades. It was discovered during commissioning of the new treatment equipment however, that the raw water was excessively turbid. As such, Well #4 is no longer being used and is locked out.

Due to spikes in consumption during the summer months; we made some changes to the current well field to provide the Town a short-term solution until a new well field is developed.
As previously stated, we found the water in well #4, excessively turbid, thus we removed the pump from well #4, and sealed off the well. The Town hired Friesen Drillers to do a pumping test in well #3 and found that pumping at 66 GPM we could keep the turbidity at an acceptable level. The pump that we remove from well #4 was installed in well #3. The Town connected this well and blended the raw water from wells #1-3 before entering the filtering system. The work to put Well #3 online was completed in spring 2017.
With all three wells running, the raw water flow is 11 L/s.
This was again, only a temporary solution to keep up with the spikes in consumption.

The Town is currently partnered with Manitoba Water Services Board, and with the help of Friesen Drillers and with the co-operation of the RM of Hanover a new long-term well site has been identified. We are currently in the process of getting this new well site operational with an anticipated start up date of May 1, 2018.

Why do we treat our water?
We treat our water to ensure that safe and aesthetically pleasing drinking water is supplied to our residents. The Town of Niverville is committed to meeting and/or exceeding the water quality standards (0.5mg/L of free chlorine) which is set by the province.

What is our treatment process?
Raw water is pumped from the fractured limestone aquifer to the water treatment plant. The raw water is then dosed with an anti-scalant upstream of the dual train reverse-osmosis (RO) skid. On-skid piping and controls allow up to 30% of the raw water to bypass the RO and be blended back into the permeate stream. This gives the finished water a desired hardness level and minimizes the need for stabilization chemicals. Following RO, water is dosed with sodium hydroxide (caustic soda) which adjusts the pH level of the finished water, and sodium hypochlorite (chlorine) for disinfection. The treated water is then stored in two, below grade reservoirs with a combined capacity of 1,700 m3 prior to entering the distribution system. In the unlikely event of a failure of both RO trains, an emergency bypass allows operators to sidestep the treatment process entirely. In this case, a spare chlorine feed station would be set up and the starting and stopping of the raw water pumps would be completed manually. It is expected that operators would notify the local Drinking Water Officer of their intentions to bypass treatment prior to exercising this option.

Why and how do we disinfect our water?
The final step in the treatment of safe water is disinfection. Disinfection is the selective destruction or inactivation of disease causing organisms in water. The *Drinking Water Safety Act* and supporting regulations require that water is disinfected before it leaves the water treatment facility and that an adequate amount of disinfectant is in the distribution system (water piping network) to ensure the water is safe right to the consumer's tap.
We use sodium hypochlorite (chlorine) to disinfect our water. We maintain a level of residual chlorine between 0.5 – 1.0 mg/L. The provincial standards mandate that we maintain a residual chlorine level of 0.5 mg/L leaving the water plant

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 within our Community. We have both PVC (C-900) and High density polyethylene (HDPE) piping through parts of the Town. 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 and fire hydrant testing in cooperation with the Town of Niverville Volunteer Fire Department.

Is our water tested? What for? When?

3 different water samples are taken every 2 weeks. One from the raw water (well water), one from the reservoir in the plant, and one from a resident's home within the distribution system. These samples are sent to a lab for analysis to ensure that there are no coliforms, no e-coli, and that the free chlorine level from the reservoir is above the 0.5mg/L as well as a minimum free chlorine level of 0.1mg/L standard in the distribution system set by the province.
Disinfectant testing: We test the level of chlorine in the treated water daily to ensure that we are meeting the provincial standard of 0.5mg/L. This will ensure proper disinfection.

The Town also tests for free ammonia once a week from anywhere within the distribution system. Free ammonia testing is done to insure that the water has reached breakpoint chlorination and the Town is disinfecting with free chlorine instead of mono-chloramines.

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

All certified operators are given a smart phone. In the water plant, our filtration system is run on a SCADA system. This SCADA system has set numbers for different aspects of the treatment process that need to be met. If one of these numbers is off, or somethings is not working properly an alarm will go off. Once this happens, our Auto Dialer will automatically call through a list of pre-set Operators until the alarm is acknowledged and accepted. The Operator can then log on to the SCADA system through either their phone or the PC at the water plant to determine the cause of the alarm. We have complete control of the filtering system from the SCADA system and can make changes to the system via our phones or the PC at the plant. With this, we can minimize down time.

Were there any emergencies, regulatory compliance issues or other operational issues to report for 2017?

We had four occasions where our staff had forgotten to do the daily chlorination testing.
We also had three days where our free chlorine dropped below 0.50mg/L.
We also had a positive total coliform count of 5 on our sample on August 29th. A re-sample was sent in on August 30th and the results all came back negative.

Were there any major expenses incurred in 2017?

1. With the help of Friesen Drillers, a new raw water source was identified. It will be located 1-mile West of New Bothwell. The pipeline portion of the project was tendered out with Tallieu Construction being the lowest bid. Installation of the 14" HDPE line was completed in late 2017. The mechanization of the new wells and commissioning of the new raw water supply will happen this Spring.

   Pipeline installation cost was approximately $1,600,000

2. Every 5 years the Province of Manitoba requires an engineering assessment of the entire water system. The work was tendered out with CH2M Engineering being the lowest bid. The assessment was completed in 2017

   Cost of assessment. $13,000

Future system expansion or expenses expected?

1. The Town will continue to work with Manitoba Water Services Board to complete the new raw water supply for spring 2018.

2. The Town is looking at installing about 18 fire hydrants over the next couple years in areas of Town that are currently not to spec for fire hydrant spacing. The plan is to install about 6-7 fire hydrants a year starting in 2018.

   Approximate cost per year. $90,000

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

Any and all calls regarding water (emergency or not), please call the Town of Niverville directory (204)-388-4600 ext.111 and leave a message. Someone will listen to the message within a reasonable amount of time and respond accordingly.

How can you find out about this report?
This report, as well as our water analysis and the bi-weekly testing results are available on the Town website www.whereyoubelong.ca. Paper copies are available upon request at the Town Office.
The Town will also post on our Facebook page that this report is available.
If you wish to leave an email (non-emergency) please send it to ryan@whereyoubelong.ca