



2020 Summary Report

for the

Town of Minto

**MINTO PINES SUBDIVISION
DRINKING WATER SYSTEM**

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1.0 INTRODUCTION

1.1 Background

In December 2002, the Safe Drinking Water Act (SDWA) was enacted. Subsequently, on June 1, 2003, under the SDWA, a new *'Drinking-Water Systems Regulation'*, Ontario Regulation 170/03 (O. Reg. 170/03), was enacted. In addition, several supporting regulations and procedures were also enacted to assist with the administration of O. Reg. 170/03. The list of relevant drinking-water legislation is presented in Appendix A.

The SDWA identifies the responsibilities of owners and operating authorities of municipal drinking water systems (SDWA, Sections 11 and 19). Their duties include ensuring that:

- All water provided by the drinking-water system meets prescribed drinking-water quality standards;
- The drinking-water system is operated in accordance with the Act and regulations and is kept in a good state of repair;
- All facilities are appropriately staffed and supervised;
- All sampling, testing and monitoring requirements are complied with;
- All reporting requirements are complied with; and
- Only persons holding valid operator's certificates operate the drinking-water-system.

O. Reg. 170/03 establishes the standard for protection of drinking water. It includes sets of schedules, specific to municipal residential systems that define requirements for:

- Minimum treatment levels;
- Operational checks;
- Chemical and microbiological sampling and testing;
- Adverse results reporting;
- Corrective procedures; and
- Report documentation and retention.

The system's Municipal Drinking Water Licence (MDWL), Drinking Water Works Permit (DWWP) and Permit To Take Water (PTTW) imposes system specific rules and conditions applicable to the standards set out in O. Reg. 170/03.

1.2 Objective

This Summary Report for the Minto Pines Drinking Water System is being prepared in fulfillment of Schedule 22 of O. Reg. 170/03 and will be given to members of the Municipal Council. This report covers the period from January 1, 2020 to December 31, 2020.

This Summary Report lists any requirements of the Act, the regulations, the PTTW, the MDWL, the DWWP and any order that the system failed to meet, during the period of this report. For any such failure, the measures that were taken to correct the failure are detailed. The report also includes relevant information that will assist the Town of Minto to assess the water work's capability to meet existing and future planned uses of the system.

1.3 Description of Drinking Water System

Minto Pines is a subdivision located within the Town of Minto at the northwest corner of Wellington County. The subdivision consists of 35 single-family estate residence lots. It was a private subdivision until December 2003, when the Town of Minto took it over.

Minto Pines subdivision is serviced by a single primary production well that is located within a wellhouse. The well is equipped with a submersible well pump, which is capable of supplying water at a rate of 3.78 L/s at a total dynamic head of 90 m. The well has a 200 mm diameter casing that extends to a depth of 23.9 m. The total depth of the well is 41.5 m.

Raw ground water is discharged into the wellhouse for flow measurement and treatment. In the wellhouse, the raw water supply is injected with 12% sodium hypochlorite for disinfection.

The wellhouse is equipped with alarms for high and low free chlorine residuals (*and corresponding lockout of the well pump*), low distribution water pressure and intrusion. **NOTE:** The corresponding lock out of well pump for high and low chlorine residuals was disabled with an onsite audible alarm installed on August 26, 2020 per MECP recommendations with Directors Notification. The wellhouse has continuous monitoring analyzers for chlorine. In the event of a power outage, the wellhouse is equipped with an automatic back-up power supply.

The treated water leaves the wellhouse and enters an underground contact pipe and is discharged into the distribution system after adequate contact time is achieved.

A SCADA System provides monitoring and data capabilities. The SCADA System continuously monitors pre and post contact pipe free chlorine residuals and flows.

The Minto Pines Drinking Water System operates under MDWL 106-104, DWWP 106-204, and PTTW #6114-8QKKLE.

2.0 SUMMARY OF UPGRADES

2.1 Upgrades Completed in 2020

The disinfection treatment system in the Minto Pines Drinking Water System meets all of the standards imposed by O. Reg. 170/03 and the MECP's *"Procedures for Disinfection of Drinking Water in Ontario"*.

Typically, maintaining the system includes repairs and/or replacement of individual components as necessary. In 2020 no capital projects were necessary.

The following purchases were also made on equipment that is shared between all of Minto's water systems. \$23,423 on the water meters, \$7,112 on equipment and \$22,522 on the modelling program that will allow us to run scenarios for risk assessment planning.

Preventative maintenance measures are being followed to ensure proper operation of the Drinking Water System.

2.2 Upgrades Scheduled to be Completed in 2021

In 2021, the Town of Minto is planning to spend \$50,000 on engineering and drilling a second well.

The following will also be purchased to be shared within the water department. \$5,000 for computer hardware and software, \$55,000 on the SCADA monitoring system and \$20,000 for water meters. \$100,000.00 on watermain replacement (location to be determined), \$15,000 on pumps and/or valves \$10,000 on equipment and \$15,000 for engineering of future water system needs.

3.0 OPERATION OF THE DRINKING WATER SYSTEM

3.1 Summary of the Quantities and Flow Rates of Water Supplied

O. Reg. 170/03 stipulates that a summary of the quantities and flow rates of the water supplied from the Minto Pines Well must be included in the Summary Report. Table 3.1 provides a summary of quantities and flow rates supplied during 2020, on a monthly basis.

Table 3.1
Minto Pines Drinking Water System
Treated Water Flow, Turbidity, and Disinfectant Residual
January 1, 2020 – December 31, 2020

Month	Raw Water Flow (Max Flow Rate = 3.8 L/s)			Chlorine Monthly Total (L)	Monthly Averages				Distribution System Disinfectant No. of Samples Collected
	Operator Observed Peak Flow (L/s)	Maximum Day Flow (m ³ /day)	Monthly Total (m ³)		Treated Water Turbidity		Treated Water Disinfectant Point of Entry		
					No. of Samples Collected	Monthly Average Turbidity (NTU)	No. of Treated Samples Collected	Monthly Average Residual (mg/L)	
January	3.4	19.347	515	7	8	0.37	31	1.32	22
February	3.3	19.378	453	9.5	5	0.56	30	1.36	20
March	3.3	24.537	581	6.75	1	0.91	31	1.37	22
April	3.3	46.235	599	9.5	1	0.64	31	1.39	21
May	3.3	31.558	605	10.25	1	0.87	31	1.30	21
June	3.3	27.374	706	8.75	2	0.64	30	1.30	22
July	3.3	41.004	689	12	3	0.61	31	1.22	22
August	3.3	26.716	606	10.25	4	0.74	32	1.14	21
September	3.3	23.265	535	6.25	0	0.00	31	1.23	22
October	3.3	22.342	517	8.5	6	0.35	31	1.28	22
November	3.3	21.419	538	5.75	4	0.48	30	1.31	20
December	3.2	27.871	563	16.25	3	0.24	31	1.33	22
Total			6,906	110.75	38		370		257
Average	3.3		576			0.53		1.30	
Maximum		46.235							

* monitored continuously

Disinfectant Compound Used: **12% Sodium Hypochlorite**
 Form of Residual Displayed: **Free**
 Quantity of Disinfectant Used During 2020: **110.75 L**
 Distribution System Minimum Target Residual: **0.2 mg/L**

3.2 Comparison of Actual Rates and Maximum Allowable Rates

O. Reg. 170/03 stipulates that a summary of the quantities and flow rates of the water supplied from the Minto Pines well be included in the Summary Report and compared against the rated capacity and flow rate for the system.

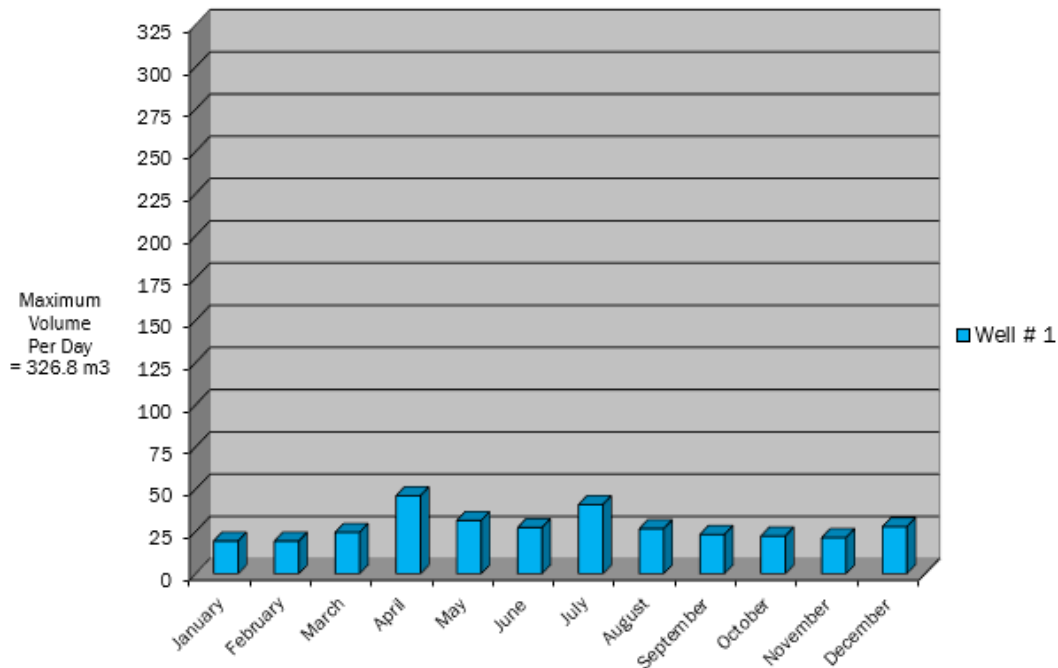
The SCADA system continuously monitors the flow rate of the water being pumped. As such, a comparison of the instantaneous peak flow to the PTTW’s rated capacity is included and a comparison of the maximum daily flow to the MDWL’s rated capacity is included in Table 3.2.

Table 3.2
Comparison of Flow Rates and Flow Capacities
TO
Rated Flow Rate (PTTW) and Rated Capacity (MDWL)

Well Supply	PTTW Max. Flow Rate	Operator Observed Peak Flow	Percent of Maximum Allowable	MDWL Schedule C Maximum Daily Quantity	Maximum Daily Flow	Percent of Maximum Allowable
	L/s	L/s	%	m ³ /day	m ³ /day	%
Well #1	3.8	3.4	89	326.8	46	14

The MDWL stipulates, “*The maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in Schedule C Table 1.*”

Table 3.3
Maximum Water Usage Per Day by Month



Short-term peaks, in excess of permitted values, may occur at pump start up, while doing specific maintenance procedures or during emergency demand situations.

The time and duration of any flow exceedance is recorded for each event along with the reason for the occurrence. There were no extended exceedances or exceedances over the daily permitted rate in the Minto Pines Drinking Water System.

3.3 Raw Water Quality and Required Treatment

The Minto Pines Drinking Water System has no naturally occurring chemical parameters that exceed MAC (maximum acceptable limit) or IMAC (interim maximum acceptable limit).

The Minto Pines wellhouse utilizes continuous monitoring analyzers for free chlorine residual. The chlorine analyzer is equipped with an alarm to a call centre who contacts the Town of Minto. The average monthly turbidity and free chlorine residual measurement for treated water are presented in Table 3.1.

There were no turbidity readings exceeding 1.0 NTU in 2020. 0.10 0.87 The minimum, maximum and average turbidity readings for raw water from each well are presented in Table 3.4.

12% Sodium Hypochlorite is the disinfectant used. The free chlorine residual in the distribution system ranged between 0.72 mg/L and 1.70 mg/L.

O. Reg. 170/03, Schedule 1-2 stipulates that the free chlorine residual can never be less than 0.05 mg/L. In addition, O. Reg. 170-03, Schedule 1-4 stipulates that the water treatment equipment must be “...capable of achieving, at all locations with the distribution system, a free chlorine residual of 0.2 mg/L ...”. The Minto Pines Drinking Water System meets both of these requirements.

Table 3.4
2020 Annual Summary of
Raw Water Turbidity and Free Chlorine Residual
For Minto Pines Drinking Water System

Location	Range	Raw Water Turbidity	Free Chlorine Residual at POE
		NTU	mg/L
Well #1	Minimum	0.10	0.93
	Maximum	0.87	1.72
	Average	0.45	1.30

3.4 Summary of Treatment Chemicals Used

The disinfectant chemical used in the Minto Pines Drinking Water System is 12% Sodium Hypochlorite. Measurements of free chlorine residuals are recorded on a continuous basis. In 2020, a total of 115 L of Sodium Hypochlorite was used; the average dosage rate was 2.09 mg/L.

Table 3.5
2020 Annual Summary of
Treatment Chemical Used
for Minto Pines Drinking Water System

Treatment Chemical	Well	Volume Used	Mass Used	Annual Flow	Dosage Rate
		L	kg	m ³	mg/L
12 % Sodium Hypochlorite	Minto Pines	110.75	13.3	6,906	1.92

4.0 COMPLIANCE

4.1 Assessment of Compliance

The objective of the Summary Report is to list any requirements of the Act, the regulations, the PTTW, the MDWL, the DWWP and any MOECP order that the system failed to meet from January 1, 2020 to December 31, 2020, and the corresponding corrective measure(s) taken. Compliance was assessed as follows:

- MECP Completed Inspection of the Minto Pines system completed July 16, 2020. Final inspection rating 95.61%
- On October 27, 2019 the SCADA system lost communications with Minto Pines, due to a UPS failure when the system transferred back to grid power from generator power. This caused a loss of 5 minute data points. The MECP was notified of the situation on October 28, 2019.
- There were **no MECP Orders** issued to the Minto Pines Drinking Water System in 2020.
- The MDWL imposes the specific rules and conditions governing the standards set out in O. Reg. 170/03. It is an important instrument in defining the requirements of compliance of a Drinking Water System.
- O. Reg. 170/03 establishes the standard for protection of drinking water; specifically, through 12 schedules that municipal residential drinking systems must follow to meet the requirements of the regulation.
- The SDWA clearly identifies the responsibilities of owners and operating authorities of municipal drinking water systems. It places a recommended statutory standard of care on those who have oversight of municipal drinking-water systems. In essence, the standard of care has two themes: be informed and exercise diligent oversight.

- Adverse Test Results reported under the Safe Drinking Water Act, 18(1) or O Reg.170/03, Schedule 16-4
 - a) Adverse Water Quality Incidents (AWQI) refer to any unusual test results that do not meet provincial water quality standard or situation where the disinfection of the drinking water may be compromised.

**Table 4.1
 Adverse Water Quality Incidents**

AWQI #	Date	Issue	Corrective Action
150681	2020/07/15	Total Coliform/E.Coli NDOGN cfu/100mL	2020/07/15 Resample
150772	2020/07/17	Total Coliform 16 cfu/100mL	2020/07/17 Resample and inspect sample tap
150811	2020/07/20	Total Coliform 1 cfu/100mL	2020/07/22 Resample and replace sample tap

- A Boil Water was issued as a result of an adverse water sample with a result of that was “too numerous to count”, meaning the lab was unable to tell if the adverse was E-coli or Total Coliform. After re-sampling, a 2nd and 3rd adverse sample result was received, all from the same outside yard hydrant sample point. The outside yard hydrant sample point was replaced with a new yard hydrant. Once we received clean sample results on July 22, 2020, the Boil Water was lifted.

4.2 Summary of Compliance

The Town of Minto works diligently to maintain compliance with all the requirements of the SDWA, O. Reg. 170/03, as well as the Minto Pines Water Work’s MDWL 106-104, DWWP 106-204 and PTTW #6114-8QKKLE.

Table 4.2 identifies any non-compliances related to the following: SDWA, O. Reg. 170/03, and the MDWL, the DWWP and the PTTW.

**Table 4.2
 Minto Pines Drinking Water System
 Requirements the System Failed to Meet**

Compliance With	Description of Item the System Failed to Meet	Correction of This Situation How/When
MDWL # 106-104	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the MDWL</i>	
DWWP # 106-204	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the DWWP</i>	

O. Reg. 170/03	<i>Minto Pines Drinking Water System failed to meet SCHEDULE 6, section 6.5</i>	<i>SCADA data gap caused by UPS Failure, Notified MECP on Oct. 28th 2020</i>
SDWA	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the SDWA.</i>	
PTTW #6114-8QKKLE	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the PTTW</i>	

Dated this 9th day of March 2021.



Todd Rogers
Water Foreman