Ontario Clean Water Agency
Agence Ontarienne Des Eaux

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February 2021

Mayor John MacEachern and Council
The Corporation of the Township of Manitouwadge
1 Mississauga Drive
Manitouwadge, Ontario
P0T 2C0

Re: O. Regulation 170 - 2020 Section 11 Annual Report for the Manitouwadge Drinking-Water System

Ontario's Drinking-Water Systems Regulation (O.Reg. 170/03), made under the *Safe Drinking Water Act, 2002*, requires that the owner of a drinking water system prepare an annual report on the operation of the system and the quality of its water.

The annual report must cover the period of January 1st to December 31st in a year and must be prepared not later than February 28th of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2020 Annual Report for the Manitouwadge Drinking-Water System. Pursuant to the legislative requirements, Section 11 (6): the annual report must:

(a) contain a brief description of the drinking-water system, including a list of water treatment chemicals used by the system during the period covered by the report;

(b) summarize any reports made to the Ministry under subsection 18 (1) of the Act or section 16-4 of Schedule 16 during the period covered by the report;

(c) summarize the results of tests required under this Regulation, or an approval or order, including an OWRA order, during the period covered by the report and, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;

(d) describe any corrective actions taken under Schedule 17 or 18 during the period covered by the report;

(e) describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment; and

(f) in the case of a large municipal residential system or a small municipal residential system, include a statement of where a report prepared under Schedule 22 will be available for inspection under subsection 12 (4). O. Reg. 170/03, s. 11 (6)

In addition, Section 11 (7) gives the direction that a copy of an annual report for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The report should be made available at the office of the municipality, or at a location that is accessible to the users of the water system.

Yours truly,

Patrick Albert

Patrick Albert
Senior Operations Manager
Northwestern Ontario Regional Hub
807-853-0650

Copy to: Owen Cranney – Acting CAO
Terry Bangs – Public Works Superintendent
Operations Staff – Manitouwadge Drinking Water System

2020 Section 11 Annual Report

Manitouwadge Drinking Water System

February 2021

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Ontario Drinking-Water Systems Regulation O. Reg. 170/03

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000219**
Drinking-Water System Name:	Manitouwadge Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Township of Manitouwadge
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2020

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [ ] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** *The Corporation of the Township of Manitouwadge* *1 Mississauga Drive* *Manitouwadge, ON* *P0T 2C0*	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]**

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
N/A	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [ ] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

- **[ ] Public access/notice via the web**
- **[X] Public access/notice via Government Office**
- **[ ] Public access/notice via a newspaper**
- **[X] Public access/notice via Public Request**
- **[ ] Public access/notice via a Public Library**
- **[] Public access/notice via other method**

Describe your Drinking-Water System

Raw water is extracted from five (5) wells, considered to be GUDI with adequate in-situ filtration.
The first well-head site consists of wells #1 and #2, which are located at the pump house within the WTP boundaries. A 400 kW diesel engine generator is located at the WTP to provide emergency power. Wells #3 and #4 are located at the second well-head site adjacent to the west end of Manitouwadge Lake southeast of Oshweken Road. The second well-head site is supplied back-up power from the sewage lift station diesel generator. Well #5 is located in a separate building approximately 30 m southwest of well #3, for a total of three well-head sites. Each well is equipped with a submersible pump rated at 30.3 L/s. The raw water pumped from the wells is controlled by the treated water reservoir level. When the reservoir level falls to the 'low operating level,' the duty well pump will start drawing water until the reservoir reaches its 'high operating level.' Other well pumps will activate if required in order to meet water demands. The speed of the pumps are controlled by VFDs providing a more flexible and efficient operation.
The Manitouwadge WTP consists of a two-stage disinfection process, involving UV and chlorine disinfection. There are three UV reactors, one at each well-head site. UV treatment (primary disinfection) is provided at the well-head site as soon as the duty raw water well starts. Two UV reactors of rated flow rate of 63 L/s are provided for well-head sites #1 & #2 and another UV reactor with a rated flow rate of 31.5 L/s is provided for well-head site #3. The UV reactors operate using a 254 nm spectrum, and were specifically designed to achieve maximum inactivation of pathogens at a minimum dosage rate of 42 mJ/cm^2.
After the primary disinfection, water is passed through an aerator unit. There are two aerator units located at the main water treatment plant. The first aerator unit treats water coming from well-head site #1, whereas the second aerator treats water coming from both well-head sites #2 & #3. The aerator units are provided to scrub off the naturally occurring hydrogen sulfides and CO_2 in addition to controlling the pH of the raw water.
Water from the aerators is combined and transmitted through a common header; 400 mm diameter pipeline located at the main water treatment plant. Sodium hypochlorite (12% NaOH) is injected at the common header to provide secondary disinfection. There are two (2) microprocessor-controlled metering pumps capable of delivering 3.78 L/hr of sodium hypochlorite (12% NaOH). Following chlorination, 22.56 m downstream in the common header, water flow is split through a joint reducer and transmitted through two 44.3 m long pipes of 300 mm in diameter that feeds into the reservoir.
Water is stored in a concrete underground reservoir consisting of two cells separated by a sluice gate. There are two clear-wells joint to each separate cell, located underneath the high-lift pumps. The water is pumped from the clear-wells to the distribution system. The two clear-wells are also separated by sluice gates, which provide the operational flexibility for the maintenance purposes. The dimensions of both reservoir and clear-well combined is approximately 43 m long, 20 m wide and 5 m in height. The total volume for storage by the unit is approximately 4,060 m^3. Water is distributed and supplied by four

high lift pumps with VFD's. Two turbine fire pumps are used as a back up to the high lift pumps. Each high lift pump has a total rated capacity of 40.5 L/s. Fire pumps are also rated at 40.5 L/s.
Average daily and peak flows are 854.17 m^3/day (10 L/s) and 1,218.9 m^3/day (14 L/s), respectively. The WTP's average day flow demand is well below its rated capacity of 10,472 m^3/day (121 L/S) (approximately 20% of the rated capacity). Consequently, the operator only requires one well pump and one high lift pump to meet water demands under normal circumstances. A secondary standby well pump is selected to meet the additional demand. Similarly, a fire pump would be used in case of an increase in water demands.
Monitoring equipment includes five flow meters to measure the water coming from each well. There are two additional flow meters; one (1) flowmeter that measures the combined flow of all five wells before it enters the reservoir and one (1) treated water flow meter prior to the distribution network. A free chlorine analyzer is used to measure the free chlorine residual at the point of entrance to the distribution system. A turbidimeter is also set up at the same location as the free chlorine analyzer in order to measure the turbidity of the treated water just before the distribution

List all water treatment chemicals used over this reporting period

- Sodium Hypochlorite

Were any significant expenses incurred to?

[ ] Install required equipment
[X] Repair required equipment
[ ] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Install	Repair	Replace	Description	Expense
	X		Hydrant repairs	$7,500

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
03-Feb-2020	Received adverse test results of a sodium sample. Treated sample result was 39.9mg/L, exceeding the standard.	39.3	mg/L	The township notified the public. Resample was taken on Feb 13, result 42.2mg/L, exceeding the limit of 20mg/L.	14-Feb-2020
01-Sept-2020	Bacteriological – Total coliforms detected in a distribution sample.	Present	-	Flush and resample	08-Sept-2020

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	255	0	0	N/A	N/A
Treated	53	0	0	53	0 – 3
Distribution	212	0	0	212	0 – 42

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity		
Raw Well 1	12	0.34 – 13.2 NTU
Raw Well 2	12	0.17 – 1.49 NTU
Raw Well 3	12	0.26 – 2.41 NTU
Raw Well 4	12	0.29 – 2.05 NTU
Raw Well 5	12	0.17 – 2.15 NTU
Treated	8760	0.00 – 1.00 NTU
Chlorine		
Treated	8760	0.03 – 2.00
Distribution	366	0.00 – 7.29
Fluoride (If the DWS provides fluoridation)	N/A	N/A

NOTE: For continuous monitors use 8760 as the number of samples.

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
N/A	N/A	N/A	N/A	N/A

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	28-Jan-2020	<0.6	µg/L	No
Arsenic	28-Jan-2020	<1.0	µg/L	No
Barium	28-Jan-2020	47.0	µg/L	No
Boron	28-Jan-2020	<50.0	µg/L	No
Cadmium	28-Jan-2020	<0.1	µg/L	No
Chromium	28-Jan-2020	<1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	28-Jan-2020	<0.1	µg/L	No
Selenium	28-Jan-2020	<1.0	µg/L	No
Sodium	10-Feb-2020	45.5	mg/L	Yes
Uranium	28-Jan-2020	2.8	µg/L	No
Fluoride	28-Jan-2020	0.071	mg/L	No
Nitrite	07-Jan-2020 06-Apr-2020 06-Jul-2020 05-Oct-2020	<0.010 <0.010 <0.010 <0.010	mg/L mg/L mg/L mg/L	No No No No
Nitrate	07-Jan-2020 06-Apr-2020 06-Jul-2020 05-Oct-2020	1.21 1.29 1.17 0.88	mg/L mg/L mg/L mg/L	No No No No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	0	N/A	N/A
Distribution	0	N/A	N/A

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	28-Jan-2020	<0.1	µg/L	No
Atrazine	28-Jan-2020	<0.1	µg/L	No
Atrizine & Metabolites	28-Jan-2020	<0.2	µg/L	No
Azinphos-methyl	28-Jan-2020	<0.1	µg/L	No
Benzene	28-Jan-2020	<0.5	µg/L	No
Benzo(a)pyrene	28-Jan-2020	<0.005	µg/L	No
Bromoxynil	28-Jan-2020	<0.2	µg/L	No
Carbaryl	28-Jan-2020	<0.2	µg/L	No
Carbofuran	28-Jan-2020	<0.2	µg/L	No
Carbon Tetrachloride	28-Jan-2020	<0.2	µg/L	No
Chlorpyrifos	28-Jan-2020	<0.1	µg/L	No
Diazinon	28-Jan-2020	<0.1	µg/L	No
Dicamba	28-Jan-2020	<0.2	µg/L	No
1,2-Dichlorobenzene	28-Jan-2020	<0.5	µg/L	No
1,4-Dichlorobenzene	28-Jan-2020	<0.5	µg/L	No
1,2-Dichloroethane	28-Jan-2020	<0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	28-Jan-2020	<0.5	µg/L	No
Dichloromethane (methylene chloride)	28-Jan-2020	<5.0	µg/L	No
2-4 Dichlorophenol	28-Jan-2020	<0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	28-Jan-2020	<0.2	µg/L	No
Diclofop-methyl	28-Jan-2020	<0.2	µg/L	No
Dimethoate	28-Jan-2020	<0.1	µg/L	No
Diquat	28-Jan-2020	<1.0	µg/L	No
Diuron	28-Jan-2020	<1.0	µg/L	No
Glyphosate	28-Jan-2020	<5.0	µg/L	No
Haloacetic acids (HAA)* (NOTE: show latest annual average)	05-Oct-2020 2020 Averate	29.7 28.7	µg/L	No

Malathion	28-Jan-2020	<0.1	µg/L	No
Metolachlor	28-Jan-2020	<0.1	µg/L	No
Metribuzin	28-Jan-2020	<0.1	µg/L	No
Monochlorobenzene	28-Jan-2020	<0.5	µg/L	No
Paraquat	28-Jan-2020	<1.0	µg/L	No
Pentachlorophenol	28-Jan-2020	<0.5	µg/L	No
Phorate	28-Jan-2020	<0.1	µg/L	No
Picloram	28-Jan-2020	<0.2	µg/L	No
Polychlorinated Biphenyls(PCB)	28-Jan-2020	<0.035	µg/L	No
Prometryne	28-Jan-2020	<0.1	µg/L	No
Simazine	28-Jan-2020	<0.1	µg/L	No
THM (NOTE: show latest annual average)	05-Oct-2020 2020 Average	12.5 11.8	µg/L µg/L	No No
Terbufos	28-Jan-2020	<0.2	µg/L	No
Tetrachloroethylene	28-Jan-2020	<0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	28-Jan-2020	<0.5	µg/L	No
Triallate	28-Jan-2020	<0.1	µg/L	No
Trichloroethylene	28-Jan-2020	<0.5	µg/L	No
2,4,6-Trichlorophenol	28-Jan-2020	<0.5	µg/L	No
Trifluralin	28-Jan-2020	<0.1	µg/L	No
Vinyl Chloride	28-Jan-2020	<0.2	µg/L	No
MCPA	28-Jan-2020	<0.2	µg/L	No

***Parameter exceedance not reportable until 2020**

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
Sodium	42.2	mg/L	10-Feb-2020