Ontario Clean Water Agency
Agence Ontarienne Des Eaux

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January 15, 2021

Clerk-Administrator Jean-Pierre Barbeau and Council
The Corporation of the Municipality of West Nipissing
225 Holditch Street, Suite 101
West Nipissing, ON P2B 1T1

Re: 2020 Annual/Summary Report for the Verner Drinking Water System

Dear Jean-Pierre Barbeau and Council:

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

Annual Report

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 Verner Drinking Water System.

In accordance with 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 the 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) if 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 reports should be made available at the office of the municipality, or at a location that is accessible to the users of the water system.

Summary Report

The annual summary report must cover the period of January 1st to December 31st in a year and must be prepared not later than March 31st of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2020 Annual Summary for the Verner Drinking Water System.

As required in *Schedule 22, Summary Reports for Municipalities*, the annual summary must:

(2) (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and

(b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

(3) The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.

2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.

In addition, Section 12 (1) – 4 – gives the direction that a copy of the annual summary 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 reports should be made available at the office of the municipality, or at a location that is accessible to the users of the water system.

These reports were prepared by the Ontario Clean Water Agency on behalf of the Municipality of West Nipissing and are based on information kept on record by OCWA at the Verner WTP. The reports cover the period January 1st to December 31st 2020.

Please note that any Provincial Officers Orders or non-compliance issues that you have received directly from the MOE should be reviewed. Where non-compliance with the Order or Issue is evident and it is not included in the attached 2020 Annual/Summary Report, then we recommend that this information be added to the report.

After your review and inclusion of any additional information, this report is to be provided to the Council members representing the Municipality of West Nipissing before March 31, 2021. Please ensure this distribution.

Yours truly,
Ontario Clean Water Agency

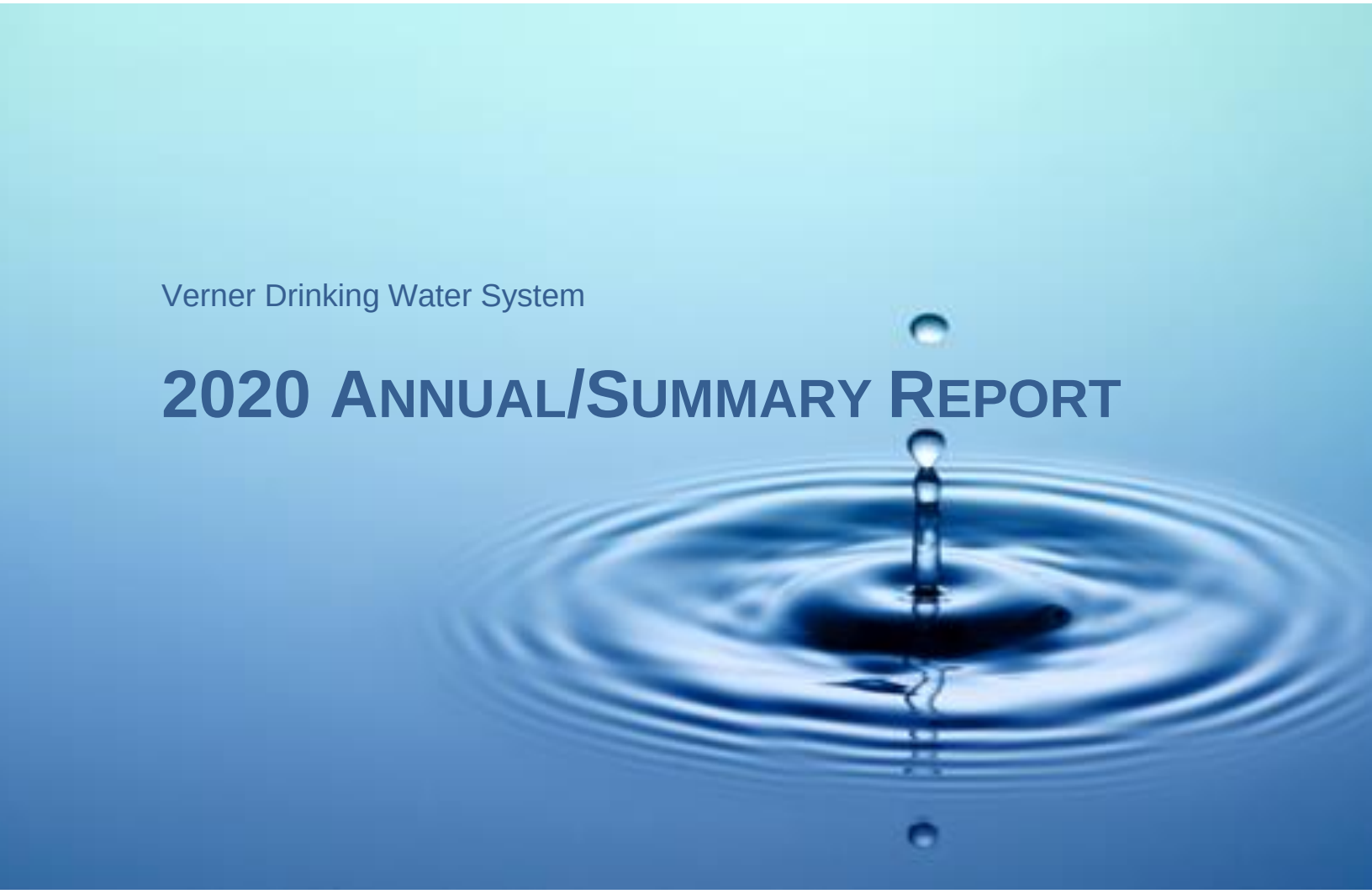
Joshua Gravelle
Process and Compliance Technician

Copy to: Lori Duquette, Drinking Water Inspector, Ministry of the Environment, Conservation and Parks

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Verner Drinking Water System

2020 ANNUAL/SUMMARY REPORT



Prepared by the Ontario Clean Water Agency
on behalf of the Municipality of West Nipissing

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INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was enacted following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This annual report must be completed by February 28th of each year.

Section 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31st of each year for the preceding calendar year.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The Safe Drinking Water Act (2002) and the drinking water regulations can be viewed at the following website: http://www.e-laws.gov.on.ca.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows,
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2020 Annual/Summary Report.

Verner Drinking Water System

Section 11

2020 Annual Report

Section 11 - ANNUAL REPORT

1.0 Introduction

Drinking-Water System Name:	**VERNER DRINKING WATER SYSTEM**
Drinking-Water System No.:	210000951
Drinking-Water System Owner:	The Corporation of the Municipality of West Nipissing
Drinking-Water System Category:	Large Municipal, Residential System
Period being reported:	January 1, 2020 to December 31, 2020

Does your Drinking Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet? Yes

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Municipality of West Nipissing
Sturgeon Falls Water Treatment Plant
11 Nipissing Street
Sturgeon Falls, Ontario P2B 1J4

Drinking Water Systems that receive drinking water from the Verner Drinking Water System

The Verner Drinking Water System provides all drinking water to the community of Verner.

The Annual Report was not provided to any other Drinking Water System Owners.

The Ontario Clean Water Agency prepared the 2020 Annual/Summary Report for the Verner Drinking Water System and provided a copy to the system owner; the Municipality of West Nipissing. The Verner Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

Notification to system users that the Annual Report is available for viewing is accomplished through:

- A notice is posted on the web at http:www.westnipissingouest.ca/pop/dep-utilities.html, and the annual report is available for viewing, at the above website.
- Discussions during public council meetings.

2.0 Description of the Drinking Water System (DWS No. 210000951)

The Verner Drinking Water System (DWS) is owned by the Corporation of the Municipality of West Nipissing and consists of a Class 3 water treatment subsystem and a Class 1 water distribution subsystem. The Ontario Clean Water Agency is designated as the Overall Responsible Operator (ORO) for the water treatment plant (WTP). The Municipality of West Nipissing provides the ORO for the Verner Water Distribution System.

The Verner DWS has an approved rated capacity of 1054 m^3/day and provided a potable water supply to Verner.

Raw Water Supply

The Verner Municipal Water System is a surface water system that draws water from the Veuve River. The Veuve River is part of the Lake Nipissing watershed. The intake structure is located 12 kilometers (km) upstream of Lake Nipissing and 48 km downstream of the source. The Veuve River, upstream from the intake, has a catchment area of approximately 92,000 hectares (ha). This area is well developed and includes: Highway (Hwy) 17 corridor; Canadian Pacific Railway (CPR) railway tracks; housing and cottage development. The water treatment plant's intake facility consists of an intake structure located 5 meters (m) below the low river level, connected to a raw water wet well by a 42.7 m long, 250 millimeter (mm) ductile iron pipe. The intake structure is approximately 20 m from the riverbank. In accordance with the Permit To Take Water (PTTW), the allowable rate of water taking is 12.25 litres per second (L/s) with a maximum daily volume of 1059 cubic meters per day (m^3/d).

Water Treatment

The Verner WTP was originally commissioned in 1975 and underwent major regulatory upgrades in 2005 which included replacement of all chemical feed system equipment and tanks; replacement of the plant instrumentation and controls; installation of a Ultra-Violet Irradiation (UV) system for primary disinfection; installation of piping and valves to provide treatment-to-waste functionality; new raw water and treated water magnetic flow meters; and the installation of a 125 kilowatt (kW) standby diesel generator. Also, radio telemetry equipment was installed at the elevated storage tank to permit treatment plant-elevated tank communication and control. The Verner WTP is a conventional treatment facility, with a designed capacity of 1059 m^3/d. Conventional treatment is comprised of coagulation, flocculation, sedimentation & dual media rapid sand filtration, primary disinfection & secondary disinfection. Furthermore, disinfection is achieved through the use of UV (primary disinfection) and chlorine gas (secondary disinfection). Chemically assisted filtration is through the use of an "Ecodyne Graver Monoplant" package treatment plant. The Ecodyne Graver Monoplant package treatment plant consists of a mixing zone; flocculation zone; settling compartment and flock barriers; blowdown valve and rapid flow by gravity sand and GAC filters. Chemical treatment includes the addition of polymer, aluminum sulphate (Alum), pre and post soda ash, chlorine gas for disinfection and chlorine dioxide for iron and manganese removal to control taste and odour. An occupancy alarm was installed at the WTP in 2017 and set to dial out after 64 hours. Recently plant is undergoing a polyaluminum chloride (PACl) trial and using PACl as coagulant. Also, potassium permanganate trial is now successful and currently in use full time to rid the system of chlorine dioxide and the various disinfection by products it causes, such as chlorite and chlorate.

Water Storage and Pumping Capabilities

There are four (4) below grade clear wells connected in series having a total area, total capacity and useable capacity of 134 square meters (m^2), 269 cubic meters (m^3) and 234 m^3 respectively. The high lift pumping station has a firm capacity of 1,090 m^3/d with three (3) identical vertical turbine high lift pumps each having a capacity of 545 m^3/d at a total dynamic head (TDH) of 53.3 m.

Waste Management

A backwash handling system includes a 4.56 m by 3.05 m deep waste equalization tank which collects waste sludge, backwash water, all in-plant drainage and sanitary waste; one (1) submersible pump that pumps 272.2 m^3/d at a TDH of 7.0 m discharging to the municipal sanitary sewage system.

Emergency Power

Standby emergency power is supplied at this plant by a 125 kW standby diesel generator with automatic switchover controls installed as part of the 2005 plant upgrades.

Distribution System

The Verner Water Supply System is classified as a Large Municipal Residential Drinking Water System which serves a population of approximately 1100 consumers. The Verner Water Distribution System consists of approximately 8 km of water main. The system includes an offsite water storage facility located on the west side of Dubeau Street (192 m north of the intersection of Dubeau Street and Vercheres Avenue). The facility is a steel and concrete elevated storage tank, having a total storage capacity of 568 m^3 and about 40 m above ground equipped with low level alarm and an overflow. The system has approximately 50 hydrants. The distribution system undergoes routine flushing twice a year, in the spring and in the fall.

3.0 List of Water Treatment Chemicals Used Over the Reporting Period

The following chemicals were used in the treatment process at the Verner Water Treatment Plant.

- Aluminum Sulphate (Alum) - Coagulation/Flocculation
- Polyaluminum Chloride (PACl) – Coagulation/Flocculation
- Chlorine dioxide is produced on site by combining Chlorine solution and Sodium Chlorite – Iron and Manganese Control
- Potassium Permanganate ($KMnO_4$) – Iron and Manganese Control
- Chlorine Gas – Secondary Disinfection
- Magnafloc LT 20 Poly Acrylamide Polymer – Coagulant Aid
- Sodium Carbonate (Soda Ash) –Alkalinity and pH Adjustment
- Sodium Chlorite – Iron and Manganese Control

4.0 Significant Expenses Incurred in the Drinking Water System

OCWA is committed to maintaining the assets of the drinking water system and maintains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS). OCWA implemented a new Workplace Management System (Maximo) in 2015 which better maintains and optimizes facility assets. All routine maintenance activities conducted at the water treatment plant were accomplished in 2020.

Significant expenses incurred in the drinking water system include:

- New frames, stands and ABS pipes installed with low lift pumps. All pumps are back in service.
- Programming was completed to lock out low lift pumps on high flows to prevent raw water flow exceedances and to prevent exceedances of flows through UV units.
- Critical spare low lift pump ordered.
- June 9, 2020, potassium permanganate trial started. Potassium permanganate trial proving to be a success. It is so effective that chlorine dioxide could likely be eliminated. This would eliminate chlorate and chlorite formation in the drinking water. It would also do away with the H&S issues surrounding the generation of chlorine dioxide onsite with old equipment.
- Point of entry (POE) turbidity analyzer issues. Replacement ordered.
- Programmable logic controller (PLC) and dialer uninterruptible power supply (UPS) failed and was replaced.
- Intake dive inspection completed.
- Preparations under way to switch coagulant from alum to PACl.
- PACl trial started on October 10, 2020.
- Failed POE turbidity analyzer replaced with new turbidity analyzer.

5.0 Drinking Water System Highlights

- The first Ministry of the Environment, Conservation and Parks (MECP) inspection took place on January 21, 2020. The inspection included a physical assessment of the Verner water treatment plant and a document review. The system received a risk rating of 7.10%, with a final inspection rating of 92.90%. There were four non-compliance issues identified during the inspection. See info on page 13. The second MECP inspection took place on November 18, 2020. The system received a risk rating of 0.0% with a final inspection rating of 100%. There were zero non-compliance issues and one best management practice identified.

- SAI Global conducted an off-site external 12 Month Surveillance audit of the Verner Drinking Water Systems' Quality and Environmental Management System (QEMS). The system and processes associated with the QEMS were evaluated on February 18, 2020 to ensure implementation of the Operational Plan and procedures and conformance to the Drinking Water Quality Management Standard version 2.0. There were no findings. Re-accreditation was achieved on December 18, 2018.

- Schedule C Amendment approved to allow for Potassium Permanganate trail. Six month trial began June 9, 2020 to help solve the ongoing chlorite issue. Trial was so successful that the chlorine dioxide system is no longer in use. Director's Notification submitted December 9, 2020.

- Polyaluminum chloride trial started October 10, 2020 to help improve plant performance.

6.0 Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Action Center

Based on information kept on record by OCWA, zero (0) adverse water quality incidents (AWQI) was reported to the Ministry of the Environment's Spills Action Centre (MOE SAC) in 2020.

7.0 Microbiological Testing Performed During the Reporting Period

Summary of Microbiological Data

Sample Type	No. of Samples	Range of *E. coli* Results *(min to max)*	Range of Total Coliform Results *(min to max)*	# of HPC Samples	Range of HPC Results *(min to max)*
Raw (River)	53	0 to 1200	0 to 28000	0	N/A
Treated	53	0 to 0	0 to 0	53	0 to 12
Distribution	156	0 to 0	0 to 0	52	0 to 3

Maximum Allowable Concentration (MAC) for *E. coli* = 0 Counts/100 mL
MAC for Total Coliforms = 0 Counts/100 mL
"<" denotes less than the laboratory's method detection limit.
NDOGT = No Data, Overgrown with Target
NDOGHPC = No Data, Overgrown with HPC

Notes: One microbiological sample is collected and tested each week from the raw and treated water supply. A total of three microbiological samples are collected and tested each week from the Verner distribution system.

Refer to *Appendix A* for a monthly summary of microbiological test results.

8.0 Operational Testing Performed During the Reporting Period

Continuous Monitoring in the Treatment Process

Parameter	No. of Samples	Range of Results *(min to max)*	Unit of Measure
Filter #1 and #2 Combined Turbidity	8760	0.0 to 1.0	NTU
Free Chlorine	8760	0.54 to 5.00	mg/L

Notes: For continuous monitoring 8760 is used as the number of samples.

Effective backwash procedures, including filter to waste are in place to ensure that the effluent turbidity requirements are met all times. The plant is configured to shut down and creates a callout whenever turbidity reaches 1.0 NTU for 0 seconds. At 0.35 NTU after 800 seconds automatic backwashes are triggered.

Summary of Chlorine Residual Data in the Distribution System

Parameter	No. of Samples	Range of Results *(min to max)*	Unit of Measure	Standard
Free Chlorine	367	0.37 to 1.99	mg/L	0.05

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

Summary of Nitrate & Nitrite Data *(sampled at the water treatment plant)*

Date of Sample	Nitrate Result Value	Nitrite Result Value	Unit of Measure	Exceedance
January 15	0.129	< 0.003	mg/L	No
April 15	0.073	< 0.003	mg/L	No
July 15	<0.006	< 0.003	mg/L	No
October 15	0.064	< 0.003	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L
MAC for Nitrite = 1 mg/L

Summary of Chlorate and Chlorite Data *(sampled at the water treatment plant)*

Date of Sample	Chlorite Result Value	Chlorate Result Value	Unit of Measure	Exceedance
January 15	0.36	0.13	mg/L	No
April 15	0.27	0.18		
July 15	<0.01	<0.01		
October 15	<0.01	<0.01		

Maximum Allowable Concentration (MAC) for Chlorate = 1 mg/L
MAC for Chlorite = 1 mg/L

Summary of Total Trihalomethane Data *(sampled in the distribution system)*

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 15	46.0	ug/L	70.0	No
April 15	45.0			
July 15	93.0			
October 15	96.0			

Maximum Allowable Concentration (MAC) for Total Trihalomethanes (THMs) = 100 ug/L (Four Quarter Running Average)

Summary of Total Haloacetic Acids Data *(sampled in the distribution system)*

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 15	53.5	ug/L	79.875	No
April 15	50.5			
July 15	117.0			
October 15	98.5			

Maximum Allowable Concentration (MAC) for Total Haloacetic Acids (HAAs) = 80 ug/L (Four Quarter Running Average)

Summary of Most Recent Lead Data

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

The Verner Drinking Water System was eligible to follow the "Exemption from Plumbing Sampling" as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L for lead. As such, the system was required to test for total alkalinity, lead and pH in two distribution sample collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.
Two rounds of alkalinity and pH testing were carried out on February 12th and two rounds of lead, alkalinity and pH testing were carried out on September 14th of 2020. Results are summarized in the table below.

Summary of Lead, pH & Alkalinity Data

Date of Sample	No. of Samples	Sample Location/ID	Field pH	**Lead** (mg/L)	**Alkalinity** (mg/L)
Feb. 12	1	B/O Telesphore	7.09	N/A	56.0
Feb. 12	1	B/O Hwy 64	7.05	N/A	59.1
Sept. 14	1	B/O Telesphore	6.85	<0.001	23.5
Sept. 14	1	B/O Hwy 64	6.82	<0.001	24.7

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<MDL 0.09	ug/L	6	No
Arsenic	0.3	ug/L	10	No
Barium	13.1	ug/L	1000	No
Boron	9.0	ug/L	5000	No
Cadmium	0.017	ug/L	5	No
Chromium	0.25	ug/L	50	No
Mercury	<MDL 0.01	ug/L	1	No
Selenium	0.06	ug/L	50	No
Uranium	0.003	ug/L	20	No

Note: Sample required every 12 months (sample date = *January 15, 2020)*

Most Recent Schedule 24 Organic Data Tested at Water Treatment Plant

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2020/01/15	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - T	2020/01/15	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L) - TW	2020/01/15	<MDL 0.05	20.0	No	No
Benzene (ug/L) - TW	2020/01/15	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2020/01/15	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2020/01/15	<MDL 0.33	5.0	No	No
Carbaryl (ug/L) - TW	2020/01/15	<MDL 0.05	90.0	No	No
Carbofuran (ug/L) - TW	2020/01/15	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2020/01/15	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L) - TW	2020/01/15	<MDL 0.02	90.0	No	No
Diazinon (ug/L) - TW	2020/01/15	<MDL 0.02	20.0	No	No
Dicamba (ug/L) - TW	2020/01/15	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/01/15	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/01/15	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2020/01/15	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/01/15	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) -	2020/01/15	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/01/15	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) -	2020/01/15	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW	2020/01/15	<MDL 0.4	9.0	No	No
Dimethoate (ug/L) - TW	2020/01/15	<MDL 0.06	20.0	No	No
Diquat (ug/L) - TW	2020/01/15	<MDL 1.0	70.0	No	No
Diuron (ug/L) - TW	2020/01/15	<MDL 0.03	150.0	No	No
Glyphosate (ug/L) - TW	2020/01/15	<MDL 1.0	280.0	No	No
Malathion (ug/L) - TW	2020/01/15	<MDL 0.02	190.0	No	No
Metolachlor (ug/L) - TW	2020/01/15	<MDL 0.01	50.0	No	No
Metribuzin (ug/L) - TW	2020/01/15	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - T	2020/01/15	<MDL 0.3	80.0	No	No
Paraquat (ug/L) - TW	2020/01/15	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2020/01/15	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L) - TW	2020/01/15	<MDL 0.15	60.0	No	No
Phorate (ug/L) - TW	2020/01/15	<MDL 0.01	2.0	No	No
Picloram (ug/L) - TW	2020/01/15	<MDL 1.0	190.0	No	No
Prometryne (ug/L) - TW	2020/01/15	<MDL 0.03	1.0	No	No
Simazine (ug/L) - TW	2020/01/15	<MDL 0.01	10.0	No	No
Terbufos (ug/L) - TW	2020/01/15	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2020/01/15	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/01/15	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2020/01/15	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L) - TW	2020/01/15	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/01/15	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (	2020/01/15	<MDL 0.12	100.0	No	No
Trifluralin (ug/L) - TW	2020/01/15	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L) - TW	2020/01/15	<MDL 0.17	1.0	No	No

Note: Sample required every 12 months (sample date = *January 15, 2020)*

Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

Most Recent Sodium Data Sampled at the Water Treatment Plant

Date of Sample	No. of Samples	Result Value	Unit of Measure	Standard	Exceedance
February 22, 2016	1	39.8	mg/L	20	Yes
February 29, 2016 (resample)	1	27.3			
January 17, 2019	1	44.2			
January 15, 2020	1	44.0			

Note: Sample required every 60 months. Next sampling scheduled for January 2021. AWQI reported in 2016.

It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians. The adverse sodium result was reported to MOE SAC and the North Bay Parry Sound District Health Unit on Feb. 25, 2016 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 128400).

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	No. of Samples	Result Value	Unit of Measure	Standard	Exceedance
January 17, 2019	1	<MDL 0.06	mg/L	1.5	No
January 15, 2020	1	<MDL 0.06			

Note: Sample required every 60 months. Next sampling scheduled for January 2025.

Summary of Additional Testing Performed in Accordance with a Legal Instrument.

1. Schedule C, Section 1.6 of Municipal Drinking Water Licence #202-101 requires the UV disinfection system to maintain a continuous pass-through UV dose of at least 40 millijoules per square centimeter (mJ/cm^2) which is equal to 12.7 watts per square meter (W/m^2) throughout the life span of the UV lamps. Refer to Appendix B.

   A primary disinfection system consisting of two (2) Trojan UV swift SC model B08 low pressure UV irradiation units, each rated at 1,320 m^3/d at 85% Ultra-Violet Light Transmittance (UVT) with design dose of 40 mJ/cm^2 complete with electrically actuated control valves to allow switchover between units, automatic on-line cleaning systems, and treatment-to-waste functionality. The standby reactor will be brought into service in the event that the duty reactor faults or fails to provide the required UV dosage of 40 mJ/square cm. If the duty reactor fails the following would occur:

   - the low lift and high lift pumps would shut off
   - the (failed) duty UV reactor's water inlet valve would close
   - an alarm would be generated and sent through the emergency call-out system to alert operators of the failure of the duty reactor
   - an operator would respond and manually get standby reactor online

   Table 4 of the licence also requires the following parameters related to the UV disinfection system to be continuously monitored and recorded every four (4) hours:

UV Intensity Measured continuously by the UV system. UV intensity is monitored by each individual unit's control module and should the light intensity of the unit fall outside the specified range, the unit will automatically shut down and a standby unit will be activated by the on call operator. Such an event will be recorded by the UV control system.

Flow Rate The maximum flow rate though each of the units is 12.2 to 12.8 L/s (see table 4 in Section 1.6 of Schedule C in the municipal drinking water licence #202-101) which is continuously measured by the raw water flow meter. Each UV unit is equipped with a flow control valve and an electronically activated water shut-off valve which will automatically close in the event of a UV equipment malfunction, loss of power or ceases to provide an appropriate level of disinfection.

UV Transmittance Under Section 7.0 of Schedule B in the Drinking Water Works Permit #202-201, it states that UVT shall be monitored monthly.

Lamp Status Monitored by each unit's control module. Should the lamp status fail, the unit will automatically shut down and a standby unit will be activated by an on call operator. Such an event will be recorded by the UV control system.

Verner Drinking Water System

Schedule 22

2020 SUMMARY REPORT

FOR MUNICIPALITIES

Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 Introduction

Drinking-Water System Name:	**VERNER DRINKING WATER SYSTEM**
Municipal Drinking Water Licence (MDWL) No.:	202-101-3 (issued Dec. 6, 2016)
Drinking Water Work Permit (DWWP) No.:	202-201-3 (issued Dec. 6, 2016)
Permit to Take Water (PTTW) No.:	2278-ASEKZJ (issued October 26, 2017)
Period being reported:	January 1, 2020 to December 31, 2020

2.0 Requirements the System Failed to Meet

According to information kept on record by OCWA, there were zero incidences where OCWA was required to report an Adverse Water Quality Incident.

The first MECP inspection report of 2020 took place on January 21, 2020, which identified four non-compliance issues from 2019, two of which were discussed in the 2019 Annual Report. The other two non-compliances were identified by the inspector after completion of the 2019 Annual Report and are identified below. A second MECP inspection took place on November 18, 2020, which identified zero non-compliance issues and one best practice recommendation. According to information kept of record by OCWA; there were zero non-compliance issues that occurred in 2020.

Issue Identified in Report/Order	Required Action or Recommendation Identified in Report/Order	Responsibility for Action Item? *(Client, OCWA, Joint)*	Issue Analysis	Status *(Complete or In Prog.)*
1. The owner was not in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA. The flow rate entering the UV disinfection units was exceeded on December 25, 2019 when the raw water flow rate spiked on December 25, 2019, for a period of 48 minutes to a flow rate between 15.76 and 16.02 L/second. Although, some of the raw water flow overflowed the filters and was wasted, as the raw water flow rate has historically been used to assess the flow rate entering the UV units and as there is no method to measure the	**Action(s) Required:** No further action is required as on January 8, 2020 the operating authority programmed a raw water high flow alarm with a 10 second delay that will trigger the Verner WTP to shut-down if the raw water flow rate exceeds 10 L/seconds.	OCWA	MECP mentions it is assumed that the maximum flow rate of 12.8 L/s entering the UV unit was exceeded for the 48 minute period. However, according to the manufacturers design the filters are rated for 194 USGPM or 12.2 L/s. MECP approvals mentions that the filters can push more than what they are designed to. Based on inspector's discussion with the Senior Water Engineer, it was indicated that the designed capacity flow rate is not necessarily the maximum volume that may pass through a filter under worst case condition. It is the maximum flow rate at which the filters are designed to function properly. Therefore, without flow data of the volume entering the filter, entering the UV disinfection unit or overflowing the highest flow rate provided was used to assess the operation of the Verner WTP during the 48 minute flow spike. Please note that the onus would be on the owner or operating authority to	Complete

overflow , it is assumed that the maximum flow rate of 12.8 L/s entering the UV unit was exceeded for the 48 minute period on December 25, 2019.			determine/demonstrate what the maximum filter effluent flow rate could be under worst case condition (i.e. high flow, filter status, valve position, underdrain condition, etc) and to assess whether the worst case condition flow rate is at or below the design capacity value. Furthermore, UV trends, UVT and flow rates provided to MECP Approvals for the time period in question and all disinfection credits were met. Due to the fact, that the UV system always operates at a higher intensity than required.	
2. When the primary disinfection equipment, other than that used for chlorination or chloramination, has failed causing an alarm to sound or an automatic shut-off to occur, a certified operator did not respond in a timely manner and/or did not take appropriate actions. At the time of the inspection, it was noted there was one incident that occurred on December 25, 2019 that did not appear to have been responded to appropriately as the operator failed to recognize that the raw water flow rate spike was not only a PTTW exceedance but also an "off spec" event for the UV disinfection unit. As there was no flow data documenting the flow rate of water which overflowed from the filters and went to waste, the operator could not conclusively determine that the flow rate going through the UV unit was below the maximum value of 12.8 L/s when the raw water flow meter was registering between 15.76 L/s and 16.02 L/s. Additionally, on December 27, 2019 when a water inspector followed up on the raw water flow exceedance to determine if the increase in flow rate affected primary disinfection and the operation of the UV unit, the operator indicated that this was not a UV exceedance. For this reason, it was determined that the operator failed to respond appropriately to an alarm relating to primary	**Action(s) Required:** The municipality and operating authority must ensure that appropriate action is taken when responding to all alarms are associated with UV disinfection criteria. The following actions have been taken by the operating authority: - On January 8, 2020 a raw water flow alarm was programmed to trigger a plant shutdown if the raw water flow exceeded 10 L/seconds for greater than 10 seconds. - On January 24, 2020, the SOP entitled "UV Monitoring Requirements" and sign were amended to provide clarity in the UV disinfection unit operational criteria and requirement for notification of improperly disinfected water if the UV unit is "off spec" for greater than 10 consecutive minutes. - On February 10, 2020, confirmation that the operator in question received training on the UV	OCWA	Training completed with operator in question regarding the “UV Monitoring Requirements” SOP. Raw water flow lockout if exceeds 10 L/seconds for greater than 10 seconds, which will avoid future occurrences. Also, it should be noted that this incident occurred on Christmas Day after a large fire on Christmas Eve that drained the tower and clearwell.	Complete

disinfection.	operational criteria and requirement for notification to the Ministry and MOH of improperly disinfected water if the UV disinfection unit is operating "off spec" for greater than 10 minutes. No further action required.			

3.0 Summary of Quantities and Flow Rates

Flow Monitoring

MDWL No. 202-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of treated water that flows from the treatment subsystem the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

Water Usage

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2020 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Raw Water

2020 - Monthly Summary of Water Takings from the Source (Veuve River)
Regulated by Permit to Take Water (PTTW) #2278-ASEKZJ , issued October 26, 2017

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	9766	8708	9353	8824	9991	11280	12186	11139	10619	9768	9597	7833	119063
Average Volume (m^3/d)	315	300	302	294	322	376	393	359	354	315	320	253	325
Maximum Volume (m^3/d)	356	338	362	316	394	483	473	423	425	410	416	294	483
PTTW - Maximum Allowable Volume (m^3 /day)	1059	1059	1059	1059	1059	1059	1059	1059	1059	1059	1059	1059	1059
Maximum Flow Rate (L/min)	297	287	287	309	341	361	369	478	343	385	376	391	478
PTTW - Maximum Allowable Flow Rate (L/min)	735	735	735	735	735	735	735	735	735	735	735	735	735

The system's Permit to Take Water #2278-ASEKZJ allows the municipality to withdraw a maximum volume of 1059 cubic meters from the Veuve River each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 483 m^3 in June 2020. The Permit also allows a maximum flow rate of 735 litres per minute (L/min). A review of the flow rate indicates that the system never exceeded this allowable limit having a maximum recorded flow of 478 L/minute in August 2020.

Treated Water

2020 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #202-101 - Issue 3, issued Dec. 6, 2016

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	8382	7468	8196	7965	8831	10019	10927	9996	9431	8845	8094	7957	106110
Average Volume (m^3/d)	270	258	264	265	285	334	352	322	314	285	270	257	290
Maximum Volume (m^3/d)	304	291	305	277	331	413	426	362	370	309	317	311	426
MDWL - Rated Capacity (m^3/day)	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054

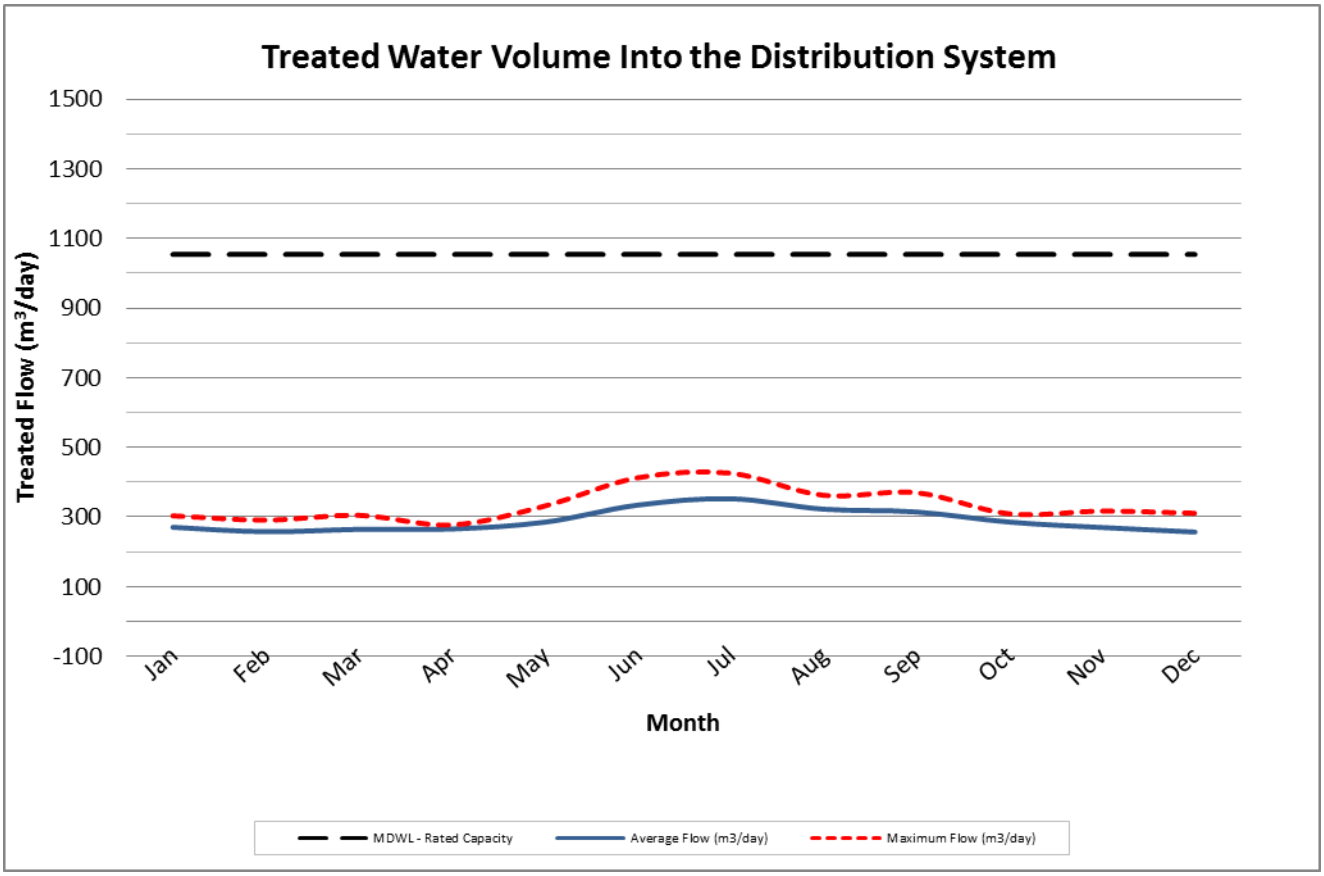
Schedule C, Section 1.1 of MDWL No. 202-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 1054 m^3 on any calendar day. The Verner DWS complied with this limit having a recorded maximum volume of 426 m^3/day in July 2020, which is 40.4% of the rated capacity.

Figure 1 compares the average and maximum flow rates into the distribution system to the rated capacity of the system identified in the MDWL. This information enables the Owner to assess the system's existing and future planned water usage needs.

Comparison of the Flow Summary to Systems Licence & Permit

Rated Capacity of the Plant (MDWL)	1054 m^3/day	
Average Daily Flow for 2020	290 m^3/day	27.5% of the rated capacity
Maximum Daily Flow for 2020	426 m^3/day	40.4% of the rated capacity
Total Treated Water Produced in 2020	106,110 m^3	

The Verner water treatment plant is rated to produce 1054 cubic meters of water per day as specified in the system's Municipal Drinking Water Licence. The average daily flow was 290 m^3 per day, which is 27.5% of the rated capacity. This information clearly shows that the plant is well within its rated capacity and is able to meet current demands of consumers.



CONCLUSION

In 2020, according to information kept of record by OCWA, the Verner Drinking Water System (DWS) met the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence having zero incidents of non-compliance and zero adverse water quality incident during the reporting period. The system was able to operate within the water taking limits of the permit and in accordance with the rated capacity of the licence while meeting the community's demand for water use.

APPENDIX A

Monthly Summary of Microbiological Test Results

Verner Drinking Water System
Monthly Summary of Microbiological Test Results

From: 01/01/2020 to 31/12/2020

Report extracted 01/14/2021 19:10

Facility Org Number: 5920

Facility Works Number: 210000951

Facility Name: VERNER DRINKING WATER SYSTEM

Facility Owner: Municipality: The Corporation of the Municipality of West Nipissing

Facility Classification: Class 3 Water Treatment

Total Design Capacity: 1054.0 m3/day

		01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	Total	Avg	Max	Min
Distribution / E. Coli - cfu/100mL																	
Count Lab		12	12	15	12	12	15	12	15	12	12	15	12	156			
Max Lab		0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab		0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab		0	0	0	0	0	0	0	0	0	0	0	0				0
Distribution / HPC - cfu/mL																	
Count Lab		4	4	5	4	4	5	4	5	4	4	5	4	52			
Max Lab		0	0	2	1	0	0	0	1	0	0	0	3			3	
Mean Lab		0	0	0.4	0.25	0	0	0	0.2	0	0	0	0.75		0.135		
Min Lab		0	0	0	0	0	0	0	0	0	0	0	0				0
Distribution / Total Coliform: TC - cfu/100mL																	
Count Lab		12	12	15	12	12	15	12	15	12	12	15	12	156			
Max Lab		0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab		0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab		0	0	0	0	0	0	0	0	0	0	0	0				0
Raw Water / E. Coli: EC - cfu/100mL																	
Count Lab		4	4	5	4	4	5	4	5	4	4	5	5	53			
Max Lab		38	39	40	20	16	15	120	200	140	100	1200	30			1200	
Mean Lab		22.5	21	24.6	7.75	8.25	8	53.25	84.4	69.75	39.25	251.6	19.4		50.8125		
Min Lab		11	12	14	1	1	0	20	2	10	7	3	4				0
Raw Water / Total Coliform: TC - cfu/100mL																	
Count Lab		4	4	5	4	4	5	4	5	4	4	5	5	53			
Max Lab		660	780	7000	820	460	2100	500	28000	2800	2200	10200	1330			28000	
Mean Lab		515	525	2626.2	361.25	182.25	438.8	210.75	10440	921.25	793.5	2290	642		1815.491		
Min Lab		380	400	111	85	51	0	83	1900	103	89	50	240				0
Treated Water / E. Coli: EC - cfu/100mL																	
Count Lab		4	4	5	4	4	5	4	5	4	4	5	5	53			
Max Lab		0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab		0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab		0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / HPC - cfu/mL																	
Count Lab		4	4	5	4	4	5	4	5	4	4	5	5	53			
Max Lab		0	0	1	0	0	0	0	0	0	0	0	12			12	
Mean Lab		0	0	0.2	0	0	0	0	0	0	0	0	2.6		0.264		
Min Lab		0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / Total Coliform: TC - cfu/100mL																	
Count Lab		4	4	5	4	4	5	4	5	4	4	5	5	53			
Max Lab		0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab		0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab		0	0	0	0	0	0	0	0	0	0	0	0				0

APPENDIX B

Monthly Summary of Operational Data

Verner Drinking Water System
Monthly Summary of Operational Data

From: 01/01/2020 to 31/12/2020

Report extracted 01/15/2021 14:03

Facility Org Number: 5920

Facility Works Number: 210000951

Facility Name: VERNER DRINKING WATER SYSTEM

Facility Owner: Municipality: The Corporation of the Municipality of West Nipissing

Facility Classification: Class 3 Water Treatment

Total Design Capacity: 1054.0 m3/day

		01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	Total	Avg	Max	Min
Distribution / Cl Residual: Free DW1 - mg/L																	
Count IH		9	8	9	8	9	9	9	9	8	9	9	9	105			
Total IH		11.4	10.8	10.39	10.81	12.32	11.33	13.32	11.15	10.25	11.21	11.83	9.94	134.75			
Max IH		1.36	1.55	1.49	1.7	1.59	1.99	1.78	1.49	1.9	1.49	1.68	1.25			1.99	
Mean IH		1.267	1.35	1.154	1.351	1.369	1.259	1.48	1.239	1.281	1.246	1.314	1.104		1.283		
Min IH		1.19	1.2	0.96	1	1.2	0.98	1.16	1.03	0.82	1.09	1.08	0.83				0.82
Distribution / Cl Residual: Free DW2 - mg/L																	
Count IH		9	8	9	8	9	9	9	9	8	9	9	9	105			
Total IH		9.3	8.99	8.79	9.03	9.73	9.19	10.38	9.05	9.03	8.83	9.06	7.47	108.85			
Max IH		1.2	1.29	1.21	1.39	1.4	1.79	1.49	1.2	1.88	1.2	1.19	1.01			1.88	
Mean IH		1.033	1.124	0.977	1.129	1.081	1.021	1.153	1.006	1.129	0.981	1.007	0.83		1.037		
Min IH		0.87	0.98	0.83	0.98	0.91	0.79	0.83	0.83	0.73	0.77	0.92	0.56				0.56
Distribution / Cl Residual: Free DW3 - mg/L																	
Count IH		9	8	9	8	9	9	9	9	8	9	9	9	105			
Total IH		8.39	7.99	8.02	8.35	8.89	7.65	9.13	7.49	6.86	7.21	8.04	6.44	94.46			
Max IH		1.1	1.13	1.1	1.25	1.33	1.35	1.26	0.98	1.8	0.93	1.06	0.84			1.8	
Mean IH		0.932	0.999	0.891	1.044	0.988	0.85	1.014	0.832	0.857	0.801	0.893	0.716		0.9		
Min IH		0.72	0.89	0.71	0.86	0.79	0.37	0.76	0.68	0.48	0.59	0.56	0.39				0.37
Distribution / Cl Residual: Free DW4 - mg/L																	
Count IH		4	4	5	4	4	5	4	5	4	4	5	4	52			
Total IH		3.74	3.94	4.41	3.9	3.78	4.27	4.35	3.73	2.49	2.6	3.97	2.41	43.59			
Max IH		1	1.09	1.02	1.19	1.26	1.26	1.16	0.77	0.83	0.73	1.03	0.76			1.26	
Mean IH		0.935	0.985	0.882	0.975	0.945	0.854	1.088	0.746	0.623	0.65	0.794	0.602		0.838		
Min IH		0.87	0.86	0.69	0.73	0.64	0.48	0.98	0.7	0.45	0.51	0.49	0.46				0.45
Filter 1 & 2 Combined / Turbidity - NTU																	
Max OL		0.64	0.45	0.45	0.39	0.41	0.98	0.28	0.24	0.56	1.0	1.0	1.0			1.0	
Mean OL		0.107	0.09	0.099	0.11	0.075	0.097	0.097	0.088	0.101	0.123	0.083	0.057		0.094		
Min OL		0	0.07	0.07	0.07	0.06	0.06	0.07	0.07	0	0.04	0.04	0.04				0
Treated Water / Cl Residual: Free - mg/L																	
Max OL		2.85	3.09	2.41	3.05	5	5	3.17	3.66	2.98	3.46	3.02	2.29			5	
Mean OL		1.821	1.784	1.79	1.94	1.774	1.805	2.044	1.834	2.013	2.249	1.854	1.577		1.874		
Min OL		0.76	1.38	1.0	1.19	0.79	0.78	0.7	1.08	0.54	1.06	0.96	0.56				0.54
UV 1 / UV Intensity (W/m2) - W/m²																	
Max OL		49.65	49.22	0	0	0	0	0	0	0	29.36	0	35.09			49.65	
UV 2 / UV Intensity (W/m2) - W/m²																	
Max OL		0	60.74	62.22	60.74	51.69	49.45	55.84	53.38	83.6	99.82	74.88	63.59			99.82	