Ontario Clean Water Agency
Agence Ontarienne Des Eaux

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February 14, 2024

CAO Paul Laperriere and Council
The Corporation of the Town of Mattawa
160 Water Street, P.O. Box 390,
Mattawa, ON P0H 1V0

Re: 2023 Annual/Summary Report for the Mattawa Drinking Water System

Dear Paul Laperriere 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 2023 Annual Report for the Mattawa 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 Town, 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 2023 Annual Summary for the Mattawa 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 Town, 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 Town of Mattawa and are based on information kept on record by OCWA at the Mattawa WTP. The reports cover the period January 1st to December 31st 2023.

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 2023 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 Town of Mattawa before March 31, 2024. 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

Mattawa Drinking Water System

2023 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the Corporation of the Town of Mattawa

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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 2023 Annual/Summary Report.

Mattawa Drinking Water System

Section 11

2023 Annual Report

Section 11 - ANNUAL REPORT

1.0 Introduction

Drinking-Water System Name:	**MATTAWA DRINKING WATER SYSTEM**
Drinking-Water System No.:	210001905
Drinking-Water System Owner:	The Corporation of the Town of Mattawa
Drinking-Water System Category:	Large Municipal, Residential System
Period being reported:	January 1, 2023 to December 31, 2023

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.

Town Hall at 160 Water Street and on the Municipal website at www.mattawa.ca

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

The Mattawa Drinking Water System (DWS) provides all drinking water to the community of Mattawa.

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

The Ontario Clean Water Agency prepared the 2023 Annual/Summary Report for the Mattawa DWS and provided a copy to the system owner; the Town of Mattawa. The Mattawa DWS 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 public access notice via the web and a public access notice via Town Office.
- System analysis and reports available in the water System Information Binder available for the public to review at the Town Office.

2.0 Mattawa Drinking Water System (DWS No. 210001905)

The Mattawa DWS is owned by the Corporation of the Town of Mattawa and consists of a Class II Distribution and Supply System. The Ontario Clean Water Agency (OCWA) is designated the Overall Responsible Operator for both the water supply and water distribution facilities.

Raw Water Supply

The water supply system for the Town of Mattawa consists of Well No. 1, Well No. 2, and an in-ground water storage reservoir that floats on the distribution system. These two groundwater supply wells, as well as the reservoir, provide drinking water to the residents of Mattawa. In accordance with the Municipal Drinking Water Licence, the drinking water system shall not be operated to exceed 6,540 cubic meters per day (m^3/d).

Wells No. 1 and No. 2 are located inside a single structure situated at 400 Bissett Street in the Town of Mattawa. This facility houses two well pumps, an ultraviolet (UV) disinfection system, a sodium hypochlorite disinfection system, all control, monitoring, and alarm systems, as well as a standby diesel generator.

The wells are operated by OCWA and are utilized on a duty/standby basis. Well No. 1 is operated as the duty well from 6 am to midnight. Well No. 2 is used as the duty well from midnight to 6 am, for energy conservation purposes. The switchover of duty wells is automatically done via a timer within the plant programmable logic controller (PLC).

Well No. 1 is equipped with a vertical turbine pump capable of delivering 53.0 L/s at 105.8 m of total dynamic head. Well No. 2 has a vertical turbine pump rated at 22.7 L/s with a total dynamic head of 91.5 m. Recently variable frequency drive (VFD) installed for Well #2.

Water Treatment

Primary disinfection equipment includes two UV disinfection systems, each designed to deliver the required UV dosage at the rated capacity of the facility. Chlorination equipment includes a 200 L sodium hypochlorite (NaOCl) storage tank and dual chemical feed pumps that inject liquid chlorine into the system. Output from Well No. 1 and No. 2 is governed by system demand (water level in the reservoir). As the water level in the reservoir drops to the low water level (LWL), the selected duty well pump automatically starts.

The well pumps, UV disinfection system, sodium hypochlorite injection system, and analyzers are all supervised locally via the PLC. All alarms are instantly transmitted from the PLC to the alarm panel, which dials a security company and pages the Operator-on-call. Refer to the Treatment System Process Flow Chart for more facility detail.

In 2012, a supervisory control and data acquisition (SCADA) system installed to allow for continuous monitoring and recording. It includes alarming, enhanced operator control of the waterworks, and increased security features.

Water Storage and Pumping Capabilities

There is a 795 m^3 (175,000 IMPG) in-ground storage reservoir within the distribution system located approximately 700 meters (m) northwest of the Pump-house.

Emergency Power

Stand-by power is provided by an on-site diesel generator with an automatic transfer switch. In the event of a power outage in the area, the diesel generator automatically starts, providing continuous power to the Pump-house.

Distribution System

The Mattawa DWS is categorized as a Large Municipal Residential Drinking Water System and serves an estimated population of 2150 residents. The system has approximately 1,050 service connections to residential and commercial consumers. There is approximately 20,000 m of various sized cast iron, ductile iron and polyvinyl chloride piping. There are 117 fire hydrants in the distribution system.

3.0 List of Water Treatment Chemicals Used Over the Reporting Period

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

- Sodium hypochlorite – Secondary Disinfection

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 2023, which better maintains and optimizes facility assets. All routine maintenance activities conducted at the water treatment plant accomplished in 2023.

Significant expenses incurred in the drinking water system include:

- TrojanUV Optiview failed. New seals and drive motor installed before returning to service.
- New UV #1 and #2 treatment units installed to replace old obsolete units.
- Reservoir level sensor failed and was replaced with spare. New spare purchased.
- Backflow preventer repaired.
- Free lighting upgrade to light-emitting diode (LED) using IESO's Save On Energy program.
- Purchase ultrasonic flowmeter. New flowmeter is proving to be very successful at correcting the erratic readings of the magnetic flowmeter. Ultrasonic flowmeter is not negatively affected by changes in conductivity due to sodium hypochlorite injection upstream.
- Internet speed and connectivity began failing and causing nuisance alarms. Experienced difficulties obtaining technicians for setting up the new internet provider and completing the switchover from old internet. Nuisance alarms ceased once the new internet was in place.
- Programming completed to switchover to new Bell internet service. Communications issues between the plant and reservoir are now resolved. Nuisance communication failure alarms have ceased.
- Purchased replacement for leaking chlorine drum pump.

- River crossing watermain was reinforced with riprap on the river banks and new concrete collars were used to secure the watermain to the riverbed.

5.0 Drinking Water System Highlights

- The Ministry of the Environment, Conservation and Parks (MECP) performed their last annual inspection on November 29, 2022. The inspection included a physical assessment of the Mattawa Water Treatment Plant and a document review. The inspection report identified one non-compliance issue that has been resolved. Final inspection rating of 99.13% (discussed in last year's annual report). No MECP inspections took place in 2023 .
- SAI Global conducted an off-site audit prior to the onsite Re-Accreditation of the Mattawa Drinking Water System's Quality and Environmental Management System (QEMS) on June 8, 2023. One opportunity for improvement (OFI) identified and resolved. The system and processes associated with the QEMS were evaluated on June 21, 2023 to ensure implementation of the Operational Plan and procedures and conformance to the Drinking Water Quality Management Standard version 2.0. One OFI identified and resolved. Re-accreditation achieved on June 21, 2023.

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, the Mattawa Drinking Water System had zero adverse water quality incidents reported to the MOE's Spills Action Centre (MOE SAC).

7.0 Microbiological Testing Performed During the Reporting Period

Summary of Microbiological Data

Sample Type	# 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 (Well No. 1)	52	0 to 0	0 to 2	0	N/A
Raw (Well No. 2)	52	0 to 0	0 to 4	0	N/A
Treated	52	0 to 0	0 to 0	52	0 to 14
Distribution	156	0 to 0	0 to 0	42	0 to 8

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.

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

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

8.0 Operational Testing Performed During the Reporting Period

Summary of Raw Water Turbidity Data

Parameter	# of Samples	Range of Results *(min to max)*	Unit of Measure
Turbidity (Well No. 1)	12	0.24 to 0.31	NTU
Turbidity (Well No. 2)	12	0.26 to 0.37	

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	364	0.21 to 1.21	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 24	1.66	< 0.05	mg/L	No
April 12	1.59	< 0.05	mg/L	No
July 26	1.79	< 0.003	mg/L	No
October 10	1.76	< 0.003	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L
MAC for Nitrite = 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 24	< 0.006	mg/L	Q1 = 0.004	No
April 28	< 0.006		Q2 = 0.005	
July 26	0.0044		Q3 = 0.005	
October 10	0.0047		Q4 = 0.005	

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 0.100 mg/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 24	< 0.002	mg/L	Q1 = 0.018	No
April 12	< 0.002		Q2 = <0.002	
July 26	< 0.0053		Q3 = 0.003	
October 10	< 0.0053		Q4 = 0.004	

Maximum Allowable Concentration (MAC) for Total Haloacetic Acids = 0.080 mg/L (Four Quarter Running Average)

Summary of Most Recent Lead Data under Schedule 15.1

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

The Mattawa DWS 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 or 0.01 mg/L for lead. As such, the system was required to test for total alkalinity and pH in one 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. The Town of Mattawa has been sampling lead every term. Two rounds of lead, alkalinity and pH testing were carried out on April 12th and October 10th of 2023. Results are summarized in the table below.

Summary of Lead, pH & Alkalinity Data *(sampled in the distribution system)*

Date of Sample	# of Samples	Sample Location	Lead (ug/L)	Field pH	Alkalinity (mg/L)
April 12	1	Hydrant at Mattawan & Gorman	0.71	7.50	45.3
April 12	1	Hydrant at 1st and Bissett St.	0.02	7.70	47.5
October 10	1	Mattawa Waterfront Hydrant	0.11	7.45	42
October 10	1	Mattawan & Gorman Hydrant	0.02	7.48	41

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

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<0.0005	mg/L	0.006	No
Arsenic	<0.001	mg/L	0.01	No
Barium	0.03	mg/L	1	No
Boron	0.02	mg/L	5	No
Cadmium	<0.0001	mg/L	0.005	No
Chromium	<0.001	mg/L	0.05	No
Mercury	<0.0001	mg/L	0.001	No
Selenium	<0.001	mg/L	0.01	No
Uranium	<0.001	mg/L	0.02	No

Note: Sample required every 36 months (sample date = *September 8, 2021).* Next sampling scheduled for September 2024.

Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2021/09/08	< 0.5	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) -	2021/09/08	< 1.0	5.0	No	No
Azinphos-methyl (ug/L) - TW	2021/09/08	< 2.0	20.0	No	No
Benzene (ug/L) - TW	2021/09/08	< 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2021/09/08	< 0.01	0.01	No	Yes
Bromoxynil (ug/L) - TW	2021/09/08	< 0.5	5.0	No	No
Carbaryl (ug/L) - TW	2021/09/08	< 5.0	90.0	No	No
Carbofuran (ug/L) - TW	2021/09/08	< 5.0	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2021/09/08	< 0.2	2.0	No	No
Chlorpyrifos (ug/L) - TW	2021/09/08	< 1.0	90.0	No	No
Diazinon (ug/L) - TW	2021/09/08	< 1.0	20.0	No	No
Dicamba (ug/L) - TW	2021/09/08	< 1.0	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2021/09/08	< 0.4	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2021/09/08	< 0.4	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2021/09/08	< 0.2	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2021/09/08	< 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L	2021/09/08	< 4.0	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2021/09/08	< 1.0	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2021/09/08	< 1.0	100.0	No	No
Diclofop-methyl (ug/L) - TW	2021/09/08	< 0.9	9.0	No	No
Dimethoate (ug/L) - TW	2021/09/08	< 2.5	20.0	No	No
Diquat (ug/L) - TW	2021/09/08	< 5.0	70.0	No	No
Diuron (ug/L) - TW	2021/09/08	< 10.0	150.0	No	No
Glyphosate (ug/L) - TW	2021/09/08	< 10.0	280.0	No	No
Malathion (ug/L) - TW	2021/09/08	< 0.5	190.0	No	No
Metolachlor (ug/L) - TW	2021/09/08	< 1.0	50.0	No	No
Metribuzin (ug/L) - TW	2021/09/08	< 5.0	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) -	2021/09/08	< 0.5	80.0	No	No
Paraquat (ug/L) - TW	2021/09/08	< 1.0	10.0	No	No
PCB (ug/L) - TW	2021/09/08	< 0.1	3.0	No	No
Pentachlorophenol (ug/L) - TW	2021/09/08	< 1.0	60.0	No	No
Phorate (ug/L) - TW	2021/09/08	< 0.5	2.0	No	No
Picloram (ug/L) - TW	2021/09/08	< 5.0	190.0	No	No
Prometryne (ug/L) - TW	2021/09/08	< 0.25	1.0	No	No
Simazine (ug/L) - TW	2021/09/08	< 1.0	10.0	No	No
Terbufos (ug/L) - TW	2021/09/08	< 0.4	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2021/09/08	< 0.3	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/09/08	< 1.0	100.0	No	No
Triallate (ug/L) - TW	2021/09/08	< 1.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2021/09/08	< 0.3	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/09/08	< 0.7	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (	2021/09/08	< 10.0	100.0	No	No
Trifluralin (ug/L) - TW	2021/09/08	< 1.0	45.0	No	No
Vinyl Chloride (ug/L) - TW	2021/09/08	< 0.2	1.0	No	No

Note: Sample required every 36 months (sample date = *September 8, 2021).* Next sampling scheduled for September 2024.

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	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
January 24, 2023	1	14.4	mg/L	20	No
January 16, 2018	1	13			No

Note: Sample required every 60 months. Next sampling scheduled for January 2028.

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
February 15, 2023	1	<0.10	mg/L	1.5	No
January 16, 2018	1	<0.15			No

Note: Sample required every 60 months. Next sampling scheduled for January 2028. Please note: sample collected on January 24, 2023; however, lab lost sample in transit to sub lab. Resample collected February 15, 2023.

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

1. Schedule C, Section 1.6 of Municipal Drinking Water Licence #195-101 requires the UV disinfection system to maintain a continuous pass-through UV dose of at least 40 millijoules per square centimeter (mJ/cm^2) throughout the life span of the UV lamps.

A primary disinfection system consisting of two (2) parallel UV reactors (duty and standby), each rated to provide dosage of 40 mJ/cm^2 at a peak flow of 76 L/s, equipped with automatic switchover controls. Ultra-Violet Light Transmittance (UVT) is continuously monitored. If the duty reactor fails the following would occur:

- the low lift pump 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
- the standby UV reactor would switchover and begin producing water

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(Calculated UV Dose) 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. Such an event will be recorded by the UV control system.

Flow Rate The maximum flow rate through each of the units is 76 L/s (see Schedule A of DWWP 195-201) which is continuously measured by the raw/treated water flow meters. One flow meter measures flow from both wells, while the other flow meter only measures Well 2 flows. 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 UVT is continuously monitored.

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. Such an event will be recorded by the UV control system.

Mattawa Drinking Water System

Schedule 22

2023 SUMMARY REPORT

FOR MUNICIPALITIES

Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 Introduction

Drinking-Water System Name:	**MATTAWA DRINKING WATER SYSTEM**
Municipal Drinking Water Licence (MDWL) No.:	195-101-4 (issued December 3, 2021)
Drinking Water Work Permit (DWWP) No.:	195-201-3 (issued December 3, 2021)
Permit to Take Water (PTTW) No.:	1546-9GHPLM (issued February 27, 2014)
Period being reported:	January 1, 2023 to December 31, 2023

2.0 Requirements the System Failed to Meet

The last MECP inspection report dated November 29, 2022 had one non-compliance issue, identified in last year's annual report. Final inspection rating was 99.13%.

According to information kept on record by OCWA; there were zero non-compliance issues that occurred during 2023. No MECP inspections took place in 2023.

3.0 Summary of Quantities and Flow Rates

Flow Monitoring

MDWL No. 195-101 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. The flow meter is 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 2023 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Raw Water

2023 - Monthly Summary of Water Takings from the Source (Well #1)
Regulated by Permit to Take Water (PTTW) #1546-9GHPLM, issued February 27, 2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	29573	31771	35667	29798	31537	41064	41795	39544	32873	37082	29075	42649	422429
Average Volume (m^3/d)	954	1135	1151	993	1017	1369	1348	1276	1096	1196	969	1376	1157
Maximum Volume (m^3/d)	1203	1245	1322	1305	1529	1667	1594	1628	1293	1435	1264	1721	1721
PTTW - Maximum Allowable Volume (m^3/day)	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582
Maximum Flow Rate (L/min)	3904	3595	4156	5080	4026	4033	4040	4713	4055	4203	4309	4364	5080
PTTW - Maximum Allowable Flow Rate (L/min)	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183

Well #1 experiences false instantaneous peaks.

2023 - Monthly Summary of Water Takings from the Source (Well #2)
Regulated by Permit to Take Water (PTTW) #1546-9GHPLM, issued February 27, 2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	4199	2044	2741	3109	3640	2729	3343	1754	4190	1365	8377	5839	43329
Average Volume (m^3/d)	135	73	88	104	117	91	108	57	140	44	279	188	119
Maximum Volume (m^3/d)	449	406	408	422	423	412	410	406	406	390	1081	794	1081
PTTW - Maximum Allowable Volume (m^3/day)	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964
Maximum Flow Rate (L/min)	1295	1322	1241	1334	1352	1290	1308	1284	1243	1289	1300	1342	1352
PTTW - Maximum Allowable Flow Rate (L/min)	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364

2023 - Monthly Summary of Combined Water Takings from the Source (Well #1 and Well #2)
Regulated by Permit to Take Water (PTTW) #1546-9GHPLM, issued February 27, 2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	33772	33815	38409	32908	35177	43793	45138	41298	37063	38447	37451	48488	465758
Average Volume (m^3/d)	1089	1208	1239	1097	1135	1460	1456	1332	1235	1240	1248	1564	1275
Maximum Volume (m^3/d)	1361	1377	1466	1471	1570	1786	1936	1658	1638	1472	1688	1779	1936
PTTW - Maximum Allowable Volume (m^3/day)	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546

The system's Permit to Take Water #1546-9GHPLM, allows the Municipality to withdraw water at the following rates:

Well No. 1:	4582.08 m^3/day / 3183 L/minute
Well No. 2:	1964.16 m^3/day / 1364 L/minute
Total Combined Daily Volume:	6546.24 m^3/day

The system's Permit to Take Water #1546-9GHPLM allows the municipality to withdraw a maximum volume of 4582.08 m^3 from Well No. 1 and 1964.16 m^3 from Well No. 2 each day with a maximum of 6456.24 m^3/d combined. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 1936 m^3 in July 2023. The Permit also allows a maximum flow rate of 3183 L/minute for Well No. 1 and 1364

L/minute for Well No. 2. Well 1 experiences false peaks on start-up, having a maximum recorded flow of 5080 L/minute in April 2023 for Well 1 and 1352 L/minute in May 2023 for Well 2.

Treated Water

2023 - Monthly Summary of Treated Water Supplied to the Distribution System
Regulated by Municipal Drinking Water Licence (MDWL) #195-101 - Issue 4, issued December 3, 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	33772	33815	38409	32908	35177	43793	45138	41298	37063	38447	37451	48488	465758
Average Volume (m^3/d)	1089	1208	1239	1097	1135	1460	1456	1332	1235	1240	1248	1564	1275
Maximum Volume (m^3/d)	1361	1377	1466	1471	1570	1786	1936	1658	1638	1472	1688	1779	1936
MDWL - Rated Capacity (m^3/day)	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540

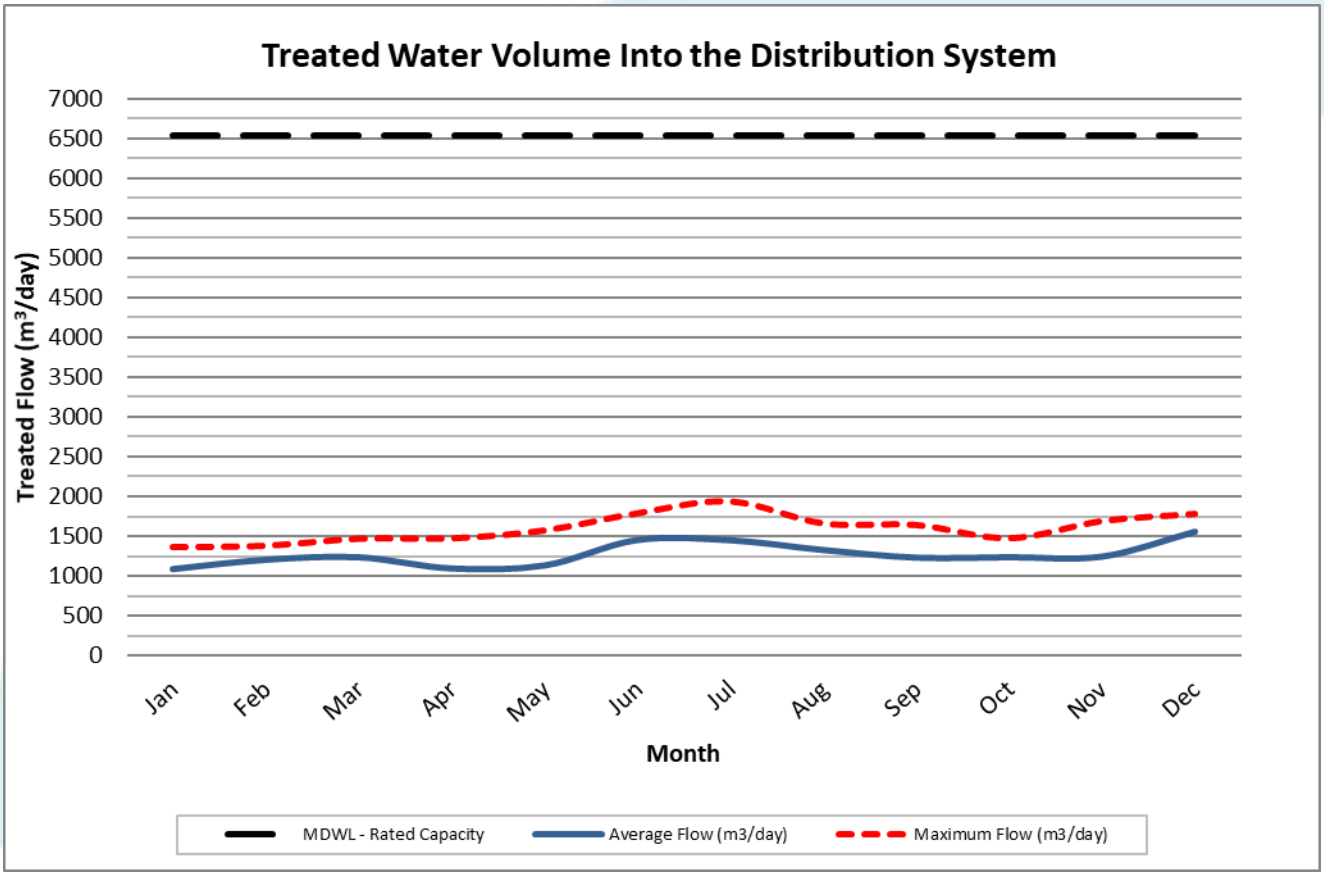
Schedule C, Section 1.1 of MDWL No. 195-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 6540 m^3/day. The Mattawa DWS complied with this limit having a recorded maximum volume of 1936 m^3 in July 2023, which is 29.6% 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 the Systems Licence & Permit

Rated Capacity of the Plant (MDWL)	6540 m^3/day	
Average Daily Flow for 2023	1275 m^3/day	19.5% of the rated capacity
Maximum Daily Flow for 2023	1936 m^3/day	29.6% of the rated capacity
Total Treated Water Produced in 2023	465,758 m^3	

The Mattawa Water Treatment Plant is rated to produce 6540 cubic meters of water per day as specified in the system's Municipal Drinking Water Licence. The average daily flow was 1275 m^3 per day, which is 19.5% 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 2023, according to information kept on record by OCWA, the Mattawa DWS provided safe and reliable drinking water to the community of Mattawa. The system complied with the regulatory requirements of the Safe Drinking Water Act and its Regulations and met the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence. According to information kept on record by OCWA; there were zero non-compliance issues that occurred during 2023. Furthermore, the Mattawa DWS had zero adverse water quality incidents reported to the MOE's Spills Action Centre.

APPENDIX A

Monthly Summary of Microbiological Test Results

Mattawa Drinking Water System
Monthly Summary of Microbiological Test Results

From: 01/01/2023 to 31/12/2023

Report extracted 01/10/2024 12:35

Facility Org Number: 1517
Facility Works Number: 210001905
Facility Name: MATTAWA DRINKING WATER SYSTEM
Service Population: 2150.0
Total Design Capacity: 6540.0 m3/day

	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
DW / E. Coli - cfu/100mL																
Count Lab	12	15	12	12	15	12	12	15	12	15	12	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
DW / HPC - cfu/mL																
Count Lab	3	6	3	3	3	3	3	3	3	6	3	3	42			
Max Lab	8	2	0	0	1	0	1	0	0	0	1	0			8	
Mean Lab	2.667	0.667	0	0	0.333	0	0.333	0	0	0	0.333	0		0.357		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
DW / Total Coliform: TC - cfu/100mL																
Count Lab	12	15	12	12	15	12	12	15	12	15	12	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
TW / E. Coli: EC - cfu/100mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
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
TW / HPC - cfu/mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	5	0	3	2	0	14	5	1	3	0	0			14	
Mean Lab	0	1	0	0.75	0.4	0	3.5	1	0.25	0.6	0	0		0.635		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
TW / Total Coliform: TC - cfu/100mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
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
Well #1 / E. Coli: EC - cfu/100mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
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
Well #1 / Total Coliform: TC - cfu/100mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	2	0	0			2	
Mean Lab	0	0	0	0	0	0	0	0	0	0.4	0	0		0.038		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well #2 / E. Coli: EC - cfu/100mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
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
Well #2 / Total Coliform: TC - cfu/100mL																
Count Lab	4	5	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	1	0	0	0	0	4	0	0			4	
Mean Lab	0	0	0	0	0.2	0	0	0	0	1.2	0	0		0.135		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0

APPENDIX B

Monthly Summary of Operational Data

Mattawa Drinking Water System
Monthly Operational Data

Report extracted 02/14/2024 12:30

From: 01/01/2023 to 31/12/2023

Facility Org Number: **1517**

Facility Works Number: **210001905**

Facility Name: **MATTAWA DRINKING WATER SYSTEM**

Total Design Capacity: **6540.0 m3/day**

	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
DW / Cl Residual: Free DW1 - mg/L																
Count IH	8	9	9	8	9	9	8	9	9	9	8	9	104			
Total IH	4.29	4.8	4.89	4.57	5.3	5.95	3.98	4.69	4.6	5.32	4.38	4.72	57.49			
Max IH	0.75	0.66	0.74	0.71	0.71	1.1	0.65	0.71	0.71	0.94	0.77	0.81			1.1	
Mean IH	0.536	0.533	0.543	0.571	0.589	0.661	0.498	0.521	0.511	0.591	0.548	0.524		0.553		
Min IH	0.39	0.41	0.4	0.48	0.4	0.3	0.25	0.33	0.31	0.31	0.31	0.33				0.25
DW / Cl Residual: Free DW2 - mg/L																
Count IH	8	9	9	8	9	9	8	9	9	9	8	9	104			
Total IH	4.32	5.74	5.07	4.87	4.84	5.26	3.67	3.78	4.21	5.19	4.65	6.51	58.11			
Max IH	0.67	0.7	0.61	0.89	0.69	0.98	0.57	0.63	0.66	1.16	0.71	1.02			1.16	
Mean IH	0.54	0.638	0.563	0.609	0.538	0.584	0.459	0.42	0.468	0.577	0.581	0.723		0.559		
Min IH	0.42	0.58	0.48	0.48	0.38	0.29	0.28	0.21	0.23	0.33	0.37	0.41				0.21
DW / Cl Residual: Free DW3 - mg/L																
Count IH	8	9	9	8	9	9	8	9	9	9	8	9	104			
Total IH	4.56	5.49	5.48	4.71	4.84	5.83	3.86	4.39	4.34	5.2	4.07	4.57	57.34			
Max IH	0.71	0.71	0.91	0.66	0.66	0.86	0.89	0.71	0.72	1.21	0.7	0.72			1.21	
Mean IH	0.57	0.61	0.609	0.589	0.538	0.648	0.483	0.488	0.482	0.578	0.509	0.508		0.551		
Min IH	0.47	0.48	0.38	0.49	0.44	0.48	0.35	0.3	0.25	0.29	0.25	0.36				0.25
DW / Cl Residual: Free DW4 - mg/L																
Count IH	4	5	4	4	5	4	4	5	4	5	4	4	52			
Total IH	2.34	2.81	2.38	2.27	2.5	2.47	1.77	2.49	2.19	3.33	2.28	2.35	29.18			
Max IH	0.65	0.7	0.7	0.61	0.51	0.75	0.52	0.54	0.68	1	0.81	0.75			1	
Mean IH	0.585	0.562	0.595	0.568	0.5	0.618	0.443	0.498	0.548	0.666	0.57	0.588		0.561		
Min IH	0.51	0.48	0.44	0.51	0.48	0.5	0.33	0.48	0.44	0.51	0.44	0.4				0.33
Well #1 / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	1	12			
Max IH	0.27	0.31	0.28	0.25	0.28	0.27	0.25	0.27	0.26	0.27	0.24	0.26			0.31	
Mean IH	0.27	0.31	0.28	0.25	0.28	0.27	0.25	0.27	0.26	0.27	0.24	0.26		0.2675		
Min IH	0.27	0.31	0.28	0.25	0.28	0.27	0.25	0.27	0.26	0.27	0.24	0.26				0.24
Well #2 / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	1	12			
Max IH	0.3	0.29	0.26	0.37	0.29	0.36	0.28	0.26	0.28	0.29	0.29	0.27			0.37	
Mean IH	0.3	0.29	0.26	0.37	0.29	0.36	0.28	0.26	0.28	0.29	0.29	0.27		0.295		
Min IH	0.3	0.29	0.26	0.37	0.29	0.36	0.28	0.26	0.28	0.29	0.29	0.27				0.26