



# **2023 Annual/Summary Report for the Temagami North Drinking Water System**

**PREPARED BY**

Ontario Clean Water Agency  
on behalf of the Municipality of Temagami

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# Revision History

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## Background

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was passed 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.

O. Reg. 170/03 requires the owner to produce an Annual Report, under Section 11. This report must include the following:

1. Description of system and 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 28 of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

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 regulatory requirement 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 two 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.

## Section 11 – Annual Report

### 1. Introduction

<b>Drinking-Water System Name</b>	<b>Temagami North Drinking Water System</b>
<b>Drinking-Water System Number</b>	220000433
<b>Drinking-Water System Owner</b>	The Corporation of the Municipality of Temagami
<b>Drinking-Water System Category</b>	Large Municipal, Residential System
<b>Municipal Drinking Water Licence No.</b>	201-102-3 (issued July 10, 2021)
<b>Drinking Water Work Permit No.</b>	201-202-4 (issued July 10, 2021)
<b>Permit to Take Water No.</b>	4505-AS3NUQ (issued October 26, 2017)
<b>Reporting Period</b>	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 at: <https://www.temagami.ca>

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

Temagami Municipal Office  
7 Lakeshore Drive  
Temagami, ON P0H 2H0

#### ***Drinking Water Systems that receive drinking water from the Temagami North Drinking Water System***

The Temagami North Drinking Water System provides all of its drinking water to the community of Temagami North within the Municipality of Temagami.

#### ***The Annual Report was provided to all connected Drinking Water System Owners***

The Ontario Clean Water Agency prepared the 2023 Annual/Summary Report for the Temagami North Drinking Water System and provided a copy to the system owner; the Municipality of Temagami.

#### ***System Users are notified that the Annual Report is available for viewing through:***

- Notice on the Municipality's website and at the Municipal Office.

## 2. Description of the Temagami North Drinking Water System

The Temagami North Drinking Water System is owned by the Corporation of the Municipality of Temagami and consists of a Class 2 water treatment subsystem and a Class 1 water distribution subsystem. The Ontario Clean Water Agency (OCWA) is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

### ***Raw Water Supply***

The water treatment plant is located at 5 Cedar Avenue South and obtains its raw water from Net Lake. The intake pipe for the plant is located approximately 165 m off the west shore of the lake at 10 m below the low water level of the lake. The raw water is directed by gravity via a 222 m long, 250 mm diameter intake pipe to a low lift pumping station consisting of a wet well and two submersible low lift pumps, each rated at 3.8 L/s (328 m<sup>3</sup>/day). These pumps are controlled by the system PLC (programmable logic controller) and discharge to the two BCA Pre-Fabricated package treatment plants.

A magnetic flow meter is located in the water treatment plant to monitor raw water flows. The raw water is also continuously monitored for pH, turbidity and temperature.

### ***Water Treatment***

The BCA plants each consist of 2 flash mixing chambers, 2 flocculation tanks, two clarification chambers, and two deep dual media filters (sand/anthracite). Aluminum sulphate and polymer are added for the coagulation/flocculation process, sodium carbonate for pH adjustment and sodium hypochlorite for disinfection. All chemicals are added using metering pumps. The plant is equipped with an automated monitoring system that records various components of the process including system flows and chemical dosages.

Filter backwashes are initiated by head loss, turbidity levels, and time or manually by the operator. The backwash wastewater and sedimentation sludge is directed to a drainage system that leads to the Municipal sanitary sewer system for disposal. The water leaving the plant is continuously monitored for flow, pH, temperature, turbidity and free chlorine residual to ensure the water is of acceptable quality before entering the distribution system.

### ***Water Storage***

The treated water is directed to three clearwells, which have a combined capacity of 268.9 m<sup>3</sup> at a depth of 2.9 meters. The two high lift pumps direct the treated water into the distribution system, which is equipped with a standpipe that helps to maintain water pressure within the system.

### ***Control System***

Control System Supervisory Control and Data Acquisition (SCADA) is the method of control implemented for the Temagami North Water Treatment System. All analyzing, monitoring and control module equipment information is routed through the SCADA system for operator monitoring and control. Control of equipment can be accomplished locally using the SCADA computer located at the Temagami North water treatment plant or remotely using operator computers or cell phones. Alarm capability and set point adjustment are available through SCADA and trend monitoring via data logger.

### ***Emergency Power***

A 80 kW diesel generator with automatic start and a fuel tank volume of 620 L is located adjacent to the water treatment plant in a nearby sewage pumping station. It is available to provide emergency power for the entire facility in the event of a power interruption.

### ***Distribution System***

The Temagami North Drinking Water System is classified as a Large Municipal Residential Drinking Water System which serves an estimated population of 300 residents. It is a standalone system not connected to another drinking water system.

The system is equipped with a standpipe known as the "North Tower" which has a storage capacity of 732 m<sup>3</sup> and assists with maintaining water pressure in system.

The distribution system consists of 218 service connections, 21 fire hydrants, and 3 dead end locations. The watermains are mostly made of cast iron material and range in size from 6" to 8". A small section on Spruce Drive consists of PVC pipe. There is one bleeder in the trailer park and one bleeder on Spruce Drive. Only the Spruce Drive bleeder runs full time to maintain water quality. The bleeder in the trailer park is for prevention of freezing in the winter months.

## **3. List of Water Treatment Chemicals Used**

- Aluminum Sulphate – coagulation/flocculation
- Polyelectrolyte (Polymer) - coagulant aid
- Soda Carbonate (Soda Ash) – pH and alkalinity adjustment
- Sodium Hypochlorite – disinfection

All treatment chemicals meet AWWA and NSF/ANSI standards.

## **4. Significant Expense Incurred in 2023**

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant expenses incurred in the drinking water system include the following:



- Replaced raw and treated turbidity analyzers,
- Replaced the treated water flow meter,
- Replaced faulty output card for turbidity and pH analyzers,
- Replaced faulty level indicator (LIT) in clearwell 3,
- PLC Upgrade from Allen Bradley Micro Logix to Compact Logix
- Replace raw and treated pH probes,
- Replaced soda ash chemical panel,
- Water treatment chemicals,
- Quality and Environmental Management System (QEMS) external surveillance audit conducted by SAI Global.

## 5. Details of Notices Reported & Submitted to the Spills Action Center

Based on information kept on record by OCWA, no adverse water quality incidents (AWQIs) were reported to the Ministry’s Spills Action Centre in 2023.

## 6. Microbiological Testing

Table 1: Summary of Microbiological Results

Sample Type	# of Samples	Range of <i>E.coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw	52	< 2 to 5/NDOGN/T	< 2 to 250/NDOGN/T	N/A	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to > 2000
Distribution	104	0 to 0	0 to 0	52	< 10 to 230

Maximum Acceptable Concentration (MAC) for treated and distribution samples: *E. coli* = 0 CFUs/100 mL and MAC for Total Coliforms = 0 CFUs/100 mL

NDOGN = No Data, Overgrown with Non-Target bacteria

NDOGT = No Data, Overgrown with Target bacteria

“<” denotes less than the laboratory’s method detection limit

“>” denotes greater than the laboratory’s method detection limit

**Note:** One microbiological sample is collected and tested each week from the raw and treated water supply. A total of two microbiological samples are collected and tested each week from the distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.

Refer to *Appendix A* for a monthly summary of the above microbiological data.

## 7. Operational Testing

Table 2: Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Turbidity (Filer No. 1)	8760	0.00 to 0.96	NTU	≤ 1.0 <sup>Note 2</sup>
Turbidity (Filer No. 2)	8760	0.00 to 0.78	NTU	
Free Chlorine Residual	8760	1.06 to 2.34	mg/L	CT <sup>Note 3</sup>

**Notes:**

1. For continuous monitors 8760 is used as the number of samples.
2. Effective backwash procedures, including filter to waste and automatic filter shut down features are in place to ensure that the effluent turbidity requirements as described in the Filter Performance Criteria are met all times. Turbidity exceedances occur when two (2) readings are above 1 NTU for 15 minutes or more in a 24 hour period. Filters will alarm if turbidity reaches 0.9 NTU and will shut down at 1.0 NTU. The system performed as programmed and no high turbidity water was directed to the next phase of the process.
3. CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Temagami North water plant if the free chlorine residual level drops below 0.85 mg/L to ensure primary disinfection is achieved.

Table 3: Summary of Chlorine Residuals in the Distribution System

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	367	0.10 to 2.17	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 test results.

## 8. Chemical Testing

Table 4: Summary of Nitrate & Nitrite Data from the Water Treatment Plant

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 9	< 0.1	< 0.01	mg/L	No

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
April 11	0.1	< 0.01	mg/L	No
July 10	< 0.1	< 0.01	mg/L	No
October 16	0.2	< 0.01	mg/L	No

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

*Table 5: Summary of Total Trihalomethane Results from the Distribution System*

Date of Sample	THM Result	Unit of Measure	Running Average	Exceedance
January 9	36.5	ug/L	Q1 = 35.6	No
April 11	40.9	ug/L	Q2 = 39.1	No
July 10	66	ug/L	Q3 = 46.7	No
October 16	95.1	ug/L	Q4 = 59.6	No

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

*Table 6: Summary of Total Haloacetic Acid Results from the Distribution System*

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 9	49	ug/L	Q1 = 44.3	No
April 11	46	ug/L	Q2 = 51.8	No
July 10	29	ug/L	Q3 = 44.3	No
October 16	76	ug/L	Q4 = 50.0	No

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

*Table 7: Summary of Lead Results under Schedule 15.1 (from the distribution system)*

Date of Sample	# of Samples	Field pH (min to max)	Field Temperature (°C) (min to max)	Alkalinity (mg/L) (min to max)	Lead (ug/L) (min to max)
March 7	1	7.23	4.8	45	N/A
September 13	1	7.32	13.9	433	N/A

Maximum Allowable Concentration (MAC) for Lead -10 ug/L

The system is required to test for total alkalinity and pH in one distribution samples collected during the period of December 15 to April 15 (winter period) and one distribution sample during the period of 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.

Lead testing was not required this reporting period, but was done in 2021. The results were <0.1 ug/L sampled on March 10<sup>th</sup> and 0.3 ug/L sampled on September 13<sup>th</sup>.

Next lead sampling is scheduled for 2024.

*Table 8: Most Recent Schedule 23 Inorganic Results from the Water Treatment Plant*

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	< 1.0	ug/L	10	No	No
Barium	5	ug/L	1000	No	No
Boron	< 2	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	< 1	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	< 0.2	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

**Note:** Sample required every 12 months (sample date = *October 16, 2023*)

*Table 9: Most Recent Schedule 24 Organic Results from the Water Treatment Plant*

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.29	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.217	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.01	ug/L	0.01	No	No

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Bromoxynil	< 0.0975	ug/L	5	No	No
Carbaryl	< 3	ug/L	90	No	No
Carbofuran	< 4	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.217	ug/L	90	No	No
Diazinon	< 0.217	ug/L	20	No	No
Dicamba	< 0.0853	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.2	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.2	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.365	ug/L	100	No	No
Diclofop-methyl	< 0.122	ug/L	9	No	No
Dimethoate	< 0.217	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 10	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No
Malathion	< 0.217	ug/L	190	No	No
Metolachlor	< 0.145	ug/L	50	No	No
Metribuzin	< 0.145	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	< 0.2	ug/L	10	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Phorate	< 0.145	ug/L	2	No	No
Picloram	< 0.0853	ug/L	190	No	No
Prometryne	< 0.0724	ug/L	1	No	No
Simazine	< 0.217	ug/L	10	No	No
Terbufos	< 0.145	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No	No
Triallate	< 0.145	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	< 6.09	ug/L	100	No	No
Trifluralin	< 0.145	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

**Note:** Sample required every 12 months (sample date = October 16, 2023)

*Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in Schedule 2 of Ontario Drinking Water Quality Standards*

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 (parameters listed in Table 8 and Table 9 of this report) exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg.169/03) during the reporting period.

*Table 10: Most Recent Sodium Data (from the Water Treatment Plant)*

Date of Sample	# of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 17, 2022	1	29.2	mg/L	20	Yes
October 24, 2022 (resample)	1	29.6	mg/L	20	Yes

**Note:** Sample required every 60 months. Next sampling scheduled for October 2027.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. 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 the Ministry’s SAC and the Timiskaming Health Unit on October 21, 2022 as required under Schedule 16 of Ontario Regulation 170/03 (AWQI No. 160396).

*Table 11: Most Recent Fluoride Data Sampled at the Water Treatment Plant*

Date of Sample	# of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 17, 2022	1	< 0.05	mg/L	1.5	No

**Note:** Sample required every 60 months. Next sampling scheduled for October 2027.

## 9. Additional Testing Performed in Accordance with a Legal Instrument

### Harmful Algae Bloom Monitoring

Condition 6.0 (6.1) of Schedule C to MDWL No. 201-102 requires a Harmful Algal Bloom (HAB) monitoring, reporting and sampling plan. The plan must be implemented during the harmful algae bloom season, during but not limited to the warm seasonal period between June 1<sup>st</sup> and October 31<sup>st</sup> of each year, or as otherwise directed by the Medical Officer of Health. A Plan has been developed and is in effect for the Temagami North Drinking Water System during the HAB season. The Plan includes visual inspection of the HAB monitoring area at least once per week. Sampling and testing for microcystins on the raw and treated water is only required if a HAB is suspected or occurring in the HAB monitoring area. Reporting to the local Health Unit and the Ministry’s Spills Actions Center if a suspected bloom is observed or if microcystins are detected in either the raw or treated water samples.

*Table 12: Summary of Microcystin Results*

Sample Type	# of Samples	Range of Microcystin Results (min to max)	Unit of Measure	Exceedance
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No incidents of suspected and/or confirmed harmful blue green algal blooms were observed in the HAB monitoring area during the 2023 season.

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Maximum Allowable Concentration (MAC) for Microcystin-LR = 1.5 ug/L

## Schedule 22 – Summary Reports for Municipalities

### 10. Requirements the System Failed to Meet

The following table lists the requirements of the Safe Drinking Water Act (2002), the drinking water regulations, the system’s approval, drinking water works permit, municipal drinking water works licence, and any other orders applicable to the system that were not met at any time during the reporting period. The duration of the failure and details of the actions that were taken to correct the failure must be described.

*Table 13: Requirements the System Failed to Meet*

Legislation	Requirement(s) not Met	Duration	Corrective Action(s)
Municipal Drinking Water License (MDWL) No. 201-102	<p>Condition 1.0 of Schedule C of the MDWL identifies the rated capacity for the Temagami North Water Treatment Plant (WTP) as 328 m<sup>3</sup>/day of total flow into the distribution system on any given calendar day. The total daily flow on September 3<sup>rd</sup> was 367 m<sup>3</sup> which exceeded this limit.</p> <p>High lift pumps were shut off during equipment maintenance on September 1<sup>st</sup>. The Operator forgot to turn the high lift pumps back on after finishing the work. The pumps stayed off until September 3<sup>rd</sup>, a low tower alarm called the on-call operator. The plant exceeded its allowable limit filling the clearwell and tower.</p>	September 3, 2023	<p>The operating authority informed the inspecting officer that this incident has been discussed with the operator.</p> <p>The operators are now expected to place a sign at the door of the WTP to ensure that the equipment is turned on before leaving the WTP.</p>



Legislation	Requirement(s) not Met	Duration	Corrective Action(s)
<p>Drinking Water Works Permit (DWWP) No. 201-202</p>	<p>All parts of the drinking water system were not disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.</p> <p>On June 2, 2023, the operating authority informed the ministry that a new treated water flow meter was installed at the Temagami North WTP on May 25, 2023. The operating authority indicated that the flow meter was disinfected per AWWA standards, but no sampling was done after the installation.</p>	<p>May 25, 2023</p>	<p>A discussion was held on June 1, 2023, with operations staff to discuss the non-compliance.</p> <p>An existing procedure was updated to ensure that AWWA Standards will be followed when modifying, replacing or repairing equipment that come into contact with treated water.</p> <p>Training on the procedure was done with all operators on June 14<sup>th</sup>.</p> <p>A Disinfection Plan will be developed for such work which will be signed off by all operation staff involved in the project to ensure appropriate disinfection and sampling procedures are followed. This plan will be developed by the PCT in consultation with the Supervisor and/or ORO;</p> <p>A tracking list will be kept of up-coming jobs and will indicate if AWWA Standards/Watermain Disinfection Procedure are required.</p>

## 11. Summary of Quantities and Flow Rates

### 11.1 Flow Monitoring

Municipal Drinking Water Licence (MDWL) No. 201-102 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 water conveyed from the treatment system to the distribution system,

- the flow rate and daily volume of water conveyed into the treatment system.

The systems' Permit to Take Water (PTTW) No.4505-AS3NUQ requires that on each day water is taken from the source, the date, the volume of water taken on that date and the rate at which it was taken be recorded.

The Temagami North drinking water system has one flow meter to monitor the raw water entering the treatment plant and one to monitor the treated water leaving the plant and entering an the distribution system. These flow metering devices are calibrated in accordance to manufacturers' specifications on an annual basis and are operating as required.

## **11.2 Rated Capacity & Flow Rates**

The system's Permit to take Water (PTTW) No. 4505-AS3NUQ allows the plant to withdraw a maximum volume of 460 cubic meters from Net Lake each day. A review of the raw water flow data indicates that the system did not exceed this allowable limit having a maximum volume of 405 m<sup>3</sup>.

The Permit also allows a maximum flow rate of 456 L/minute which was exceeded on four occasions during the reporting period.

- March 21 & 22 - high flow rates occurred when cleaning the raw pipe to the filters (645 and 644 L/min.)
- April 24 - high flow occurred during a run cycle when the flow control valve faulted (464 L/min.)
- June 13 - high flow rate during distribution flushing (479 L/min.)

Condition 1.0 (1.1) to Schedule C of MDWL No. 201-102 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 of 328 m<sup>3</sup> on any calendar day. The Temagami North DWS failed to comply with this limit on September 3<sup>rd</sup> when treated water flow exceeded its allowable limit when filling the clearwell and tower after the high lift pumps were left off after equipment maintenance was performed at the plant.

The following tables (Table 14 and Table 15) indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system's Permit to Take Water and the Municipal Drinking Water Licence.

Figure 1 is a comparison of the rate specified in the system's Municipal Drinking Water Licence to the average and maximum flows entering the treatment system.

Table 17 lists historical maximum raw and treated flows from 2018 to 2023.

**Table 14: 2023 – Monthly Summary of Water Takings from the Source (Net Lake)**

Regulated by Permit to Take Water (PTTW) #4505-AS3NUQ, issued October 26, 2017

<b>Raw Water Usage</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>
Total Volume (m <sup>3</sup> )	5050	5815	6389	4627	4400	5373	4982	4159	5064	4564	4232	4947	59602
Average Volume (m <sup>3</sup> /day)	163	208	206	154	142	179	161	134	169	147	141	160	164
Maximum Volume (m <sup>3</sup> /day)	192	344	261	182	196	301	271	189	405	260	213	216	405
PTTW - Maximum Allowable Volume (m <sup>3</sup> /day)	460	460	460	460	460	460	460	460	460	460	460	460	460
Maximum Flow Rate (L/min)	373	397	900	464	447	479	449	438	440	426	449	416	900
PTTW - Maximum Allowable Flow Rate (L/min)	456	456	456	456	456	456	456	456	456	456	456	456	456

*March 21 & 22 - high raw flow rates when cleaning the raw pipe to the filters*
*April 24 - high raw flow rates during a run cycle when the flow control valve faulted.*
*June 13 - high raw flow rate during distribution flushing*
**Table 15: 2023 – Monthly Summary of Treated Water Supplied to the Distribution System**

Regulated by Municipal Drinking Water Licence (MDWL) #201-102-3, issued July 10, 2023

<b>Treated Water Usage</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>
Total Volume (m <sup>3</sup> )	4418	5040	5369	4304	4050	4943	4608	3824	4630	4216	4176	4902	54480
Average Volume (m <sup>3</sup> /day)	143	180	173	143	131	165	149	123	154	136	139	158	150
Maximum Volume (m <sup>3</sup> /day)	163	281	205	190	172	263	247	161	367	230	196	220	367
MDWL - Rated Capacity (m <sup>3</sup> /day)	328	328	328	328	328	328	328	328	328	328	328	328	328

*September 3 - high treated water flow occurred when filling the clearwell and tower after the high lift pumps were left off after equipment maintenance.*

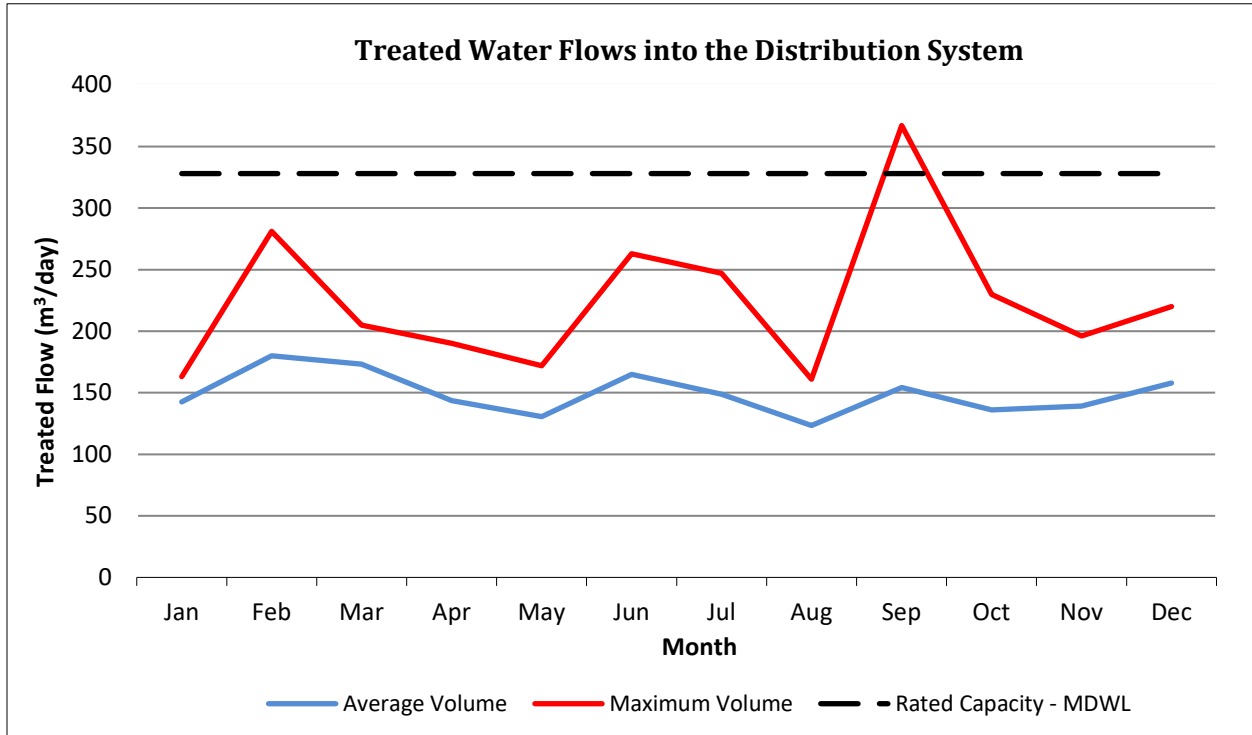


Figure 1: Comparison of Treated Flows to the Maximum Rated Capacity

Table 16: 2023 – Historical Maximum Flows (2018 to 2023)

Year	Maximum Raw Flow (m³/d)	Max. Day % of PTTW Allowable (460 m³/d)	Maximum Treated Flow (m³/d)	Max. Day % of MDWL Capacity (328 m³/d)
2023	405	88%	367	112%
2022	531	115%	303	92%
2021	516	112%	473	144%
2020	498	108%	553	169%
2019	372	81%	332	101%
2018	330	72%	308	94%

**Notes:**

July 2019 – high treated water flows due to distribution flushing.

December 2020 – high raw and treated water flows due to a watermain break.

July 2021 – high raw and treated water flows due to increased demand and maintenance issues with the filters.

October 2022 – high raw water flows due to distribution flushing.

September 2023 – high treated water flows when filling the clearwell and tower after the high lift pumps were left off after equipment maintenance was performed.

## System Performance

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	328 m <sup>3</sup> /day	
Average Daily Flow for 2023	150 m <sup>3</sup> /day	46 % of the rated capacity
Maximum Daily Flow for 2023	367 m <sup>3</sup> /day	112 % of the rated capacity
Total Treated Water Produced in 2023	54,480 m <sup>3</sup>	

## Conclusion

The water quality data collected in 2023 demonstrates that the Temagami North drinking water system provided high quality drinking water to its users.

The system was unable to operate below the allowable flow rate of 456 L/minute identified in the Permit To Take Water on four days during the reporting period. Three of the four days occurred during plant or distribution maintenance and the fourth incident occurred due to a faulty flow control valve.

The system also failed to meet the allowable rated capacity of the Municipal Drinking Water Licence (328 m<sup>3</sup>/day) one day in September when filling the clearwell and tower after the high lift pumps were left off after equipment maintenance was performed at the plant.

No Adverse Water Quality Incidents were reported to the Ministry’s Spills Action Center in 2023. All non-compliances that were identified during the reporting period were addressed as soon as possible.

# **APPENDIX A**

## **Monthly Summary of Microbiological Test Results**

**TEMAGAMI NORTH DRINKING WATER SYSTEM  
2023 Summary of Microbiological Test Results**

	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
<b>Raw Water</b>																
Net Lake / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	< 22	92	36	68	150	50	250	75	< 6/NDOGN	120/NDOGN/T	66/NDOGT	74			250/NDOGN/T	
Mean Lab	< 10.8	37	22	40	63.2	27.5	120.4	37.75	< 4.667	62	50.333	39		< 44.128		
Min Lab	< 2	6	16	18	14	6	10	6	< 2	4	30	24				< 2
Net Lake / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 5	< 4/NDOGN	< 5/NDOGN/T	< 4/NDOGT	< 2			5/NDOGN/T	
Mean Lab	< 2	< 2	< 2	< 2	< 2	< 2	< 3.8	< 3.5	< 2.667	< 3.5	< 2.667	< 2		< 2.468		
Min Lab	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2				< 2
<b>Treated Water</b>																
Treated Water (POE) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	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
Treated Water (POE) / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	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
Treated Water (POE) / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	< 20	< 30	< 30	< 10	< 10	> 2000	> 2000	< 10	< 10	< 30	< 30	< 30			> 2000	
Mean Lab	< 12	< 15	< 15	< 10	< 10	> 507.5	> 408	< 10	< 10	< 16	< 15	< 17.5		89.038		
Min Lab	< 10	< 10	< 10	< 10	< 10	> 10	> 10	< 10	< 10	< 10	< 10	< 10				< 10
<b>Distribution Water</b>																
1st Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	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
1st Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	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
2nd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	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
2nd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	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
2nd Bacti/Residual / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	< 20	< 40	< 10	< 10	< 30	< 10	< 20	< 10	< 30	< 230	< 30	< 30			230	
Mean Lab	< 12	< 20	< 10	< 10	< 14	< 10	< 14	< 10	< 15	< 54	< 17.5	< 15		< 17.308		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10

**NOTES:**  
September 25 - raw water sample had a result of NDOGN = no data, overgrown with non-target,  
October 3 & 16 - raw water samples had results of NDOGT = no data, overgrown with target,  
October 10 - raw water sample had a result of NDOGN,  
November 6 - raw water sample had a result of NDOGT

# **APPENDIX B**

## **Monthly Summary of Operational Test Results**



**TEMAGAMI NORTH DRINKING WATER SYSTEM  
2023 Summary of Operational Test Results**

<b>Filtered Water</b>	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
<b>Filter 1 / Turbidity (Max 1 NTU) - NTU</b>																
Max OL	0.19	0.96	0.14	0.55	0.74	0.27	0.28	0.2	0.13	0.26	0.59	0.27			0.96	
Mean OL	0.029	0.036	0.032	0.034	0.026	0.031	0.03	0.013	0.031	0.035	0.044	0.042		0.032		
Min OL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				0.000
<b>Filter 2 / Turbidity (Max 1 NTU) - NTU</b>																
Max OL	0.21	0.78	0.44	0.67	0.62	0.2	0.49	0.41	0.13	0.24	0.76	0.27			0.78	
Mean OL	0.034	0.038	0.032	0.028	0.03	0.033	0.041	0.02	0.028	0.034	0.043	0.031		0.033		
Min OL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				0.000
<b>Treated Water</b>	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
<b>Treated Water (POE) / Cl Residual: Free (Min 0.85 mg/L) - mg/L</b>																
Max OL	1.89	2.29	2.14	1.7	1.73	1.82	1.87	2.26	2.05	2.06	2.23	2.34			2.34	
Mean OL	1.692	1.7	1.762	1.57	1.512	1.56	1.591	1.033	1.651	1.657	1.753	1.974		1.621		
Min OL	1.42	1.06	1.46	1.44	1.22	1.09	1.22	1.22	1.32	1.21	1.32	1.75				1.06
<b>Distribution Water</b>	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
<b>1st Bacti/Residual / Cl Residual: Free - mg/L</b>																
Count IH	9	8	9	8	9	9	9	8	9	10	9	8	105			
Max IH	1.68	1.5	1.45	1.59	1.19	1.42	1.5	1.61	1.62	1.22	1.86	1.96			1.96	
Mean IH	1.148	1.234	1.174	1.068	0.829	0.778	0.698	0.806	0.992	0.986	1.201	1.57		1.035		
Min IH	0.78	0.97	0.95	0.81	0.55	0.42	0.36	0.49	0.53	0.68	0.89	1.1				0.36
<b>2nd Bacti/Residual / Cl Residual: Free - mg/L</b>																
Count IH	9	8	9	8	9	9	9	8	9	10	9	8	105			
Max IH	1.58	1.85	1.76	0.92	1.13	1.04	1.57	1.04	1.38	1.98	1.19	1.79			1.98	
Mean IH	1.241	1.136	1.227	0.795	0.66	0.657	0.778	0.713	0.817	0.969	0.968	1.175		0.927		
Min IH	0.95	0.55	0.90	0.55	0.28	0.10	0.44	0.44	0.32	0.61	0.72	0.97				0.10
<b>3rd Bacti/Residual / Cl Residual: Free - mg/L</b>																
Count IH	9	8	9	8	9	9	9	8	9	10	9	8	105			
Max IH	1.79	1.52	1.67	1.51	1.55	1.59	1.51	2	1.9	1.73	2.17	2.05			2.17	
Mean IH	1.263	0.921	1.254	1.035	0.896	1.046	0.83	1.59	1.068	1.13	1.427	1.845		1.186		
Min IH	0.68	0.66	0.75	0.81	0.39	0.50	0.37	0.37	0.42	0.78	0.85	1.18				0.37
<b>4th Residual / Cl Residual: Free - mg/L</b>																
Count IH	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max IH	1.74	1.81	1.85	1.48	1.52	1.6	1.67	0.73	1.83	1.93	1.87	1.98			1.98	
Mean IH	1.362	1.468	1.593	1.295	1.282	1.318	1.098	0.495	1.148	1.312	1.338	1.843		1.293		
Min IH	1.08	1.09	1.29	1.00	1.11	0.99	0.28	0.36	0.79	0.52	0.50	1.65				0.28

**NOTES:**

- Filters will alarm and call-out at a turbidity of 0.9 NTU and filters will alarm and shutdown if the turbidity reaches 1.0 NTU.
- CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Temagami North water plant if the free chlorine residual level in the treated water drops below 0.85 mg/L to ensure primary disinfection is achieved.