

January 31, 2024



The Mayor and Members of Council  
City of Elliot Lake  
Municipal Office  
45 Hillside Drive North  
Elliot Lake, Ontario P5A 1X5

ATTENTION: Mayor and Members of Council

**RE: Elliot Lake Water Treatment Plant Summary Report For Municipalities:  
Municipal Large Residential**

Your Worship Mayor Wannan and Members of Council:

Please find attached, the 2023 Summary Report for the Elliot Lake Water Treatment Plant. This report has been prepared in accordance to the guidelines set out in Schedule 22 of the Safe Drinking Water Act, 2002 (Ontario Regulation 170/03).

The report covers the period from January 1, 2023 to December 31, 2023.

Please direct any questions or concerns to the undersigned.

Yours truly,

A handwritten signature in black ink that reads "Bart Doyle". The signature is written in a cursive, flowing style.

**Bart Doyle**  
*Assistant Director of Public Works*

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# Elliot Lake Water Treatment Plant 2023 Summary Report

## **1.0 Purpose**

The purpose of the Water Treatment Plant Summary Report is to provide information to Council and Residents of the City of Elliot Lake, as well as satisfying the regulatory requirements of the Safe Drinking Water Act (SDWA) including the Drinking Water Quality Management System (DWQMS)

This report is prepared in accordance with Schedule 22 of Regulation 170/03 of Ontario's Safe Drinking Water Act and ensures that no later than March 31<sup>st</sup> a summary report is prepared and presented to Municipal Council and covers the reporting period from January 1, 2023 to December 31, 2023.

## **2.0 System Description**

The City of Elliot Lake Water Treatment Plant is classified as a Class 2 direct filtration plant. Water is drawn from Elliot Lake through an intake structure, located in approximately 12.2 m (40 ft.) of water and is gravity fed through a 295 m long marine pipeline to the low lift pumping station wet well. The water is then pumped to the main facility at 200 Spine Road. The raw water then passes through a flow meter and into reactor/mixing tanks. At this point Polyaluminum Chloride (PAC) is added to the process to aid in the production of floc. The water then continues into the hydraulic spiral flow flocculation tanks and afterwards passes through three rectangular filters with dual media (anthracite/sand). The filtered water is collected in an underdrain system and enters a 2,300 m<sup>3</sup> Clearwell (storage reservoir) on site. Chlorine is added to the treated water as it leaves the filters to achieve required disinfection. Fluoride is also added at this point. Fluoride does not play a role in the treatment process, but rather acts as an agent in the prevention of tooth decay in young children. High Lift pumps pump the now treated water from the Clearwell through a flow meter and into the distribution system. This treated water makes its way to consumers' homes, either directly or from the standpipe storage facilities. Lime is added to the water as it leaves the plant to aid in the prevention of corrosion in the distribution system. The lime is also used for pH and alkalinity adjustment.

The City of Elliot Lake has highly trained staff that specializes in operating and maintaining a water treatment plant, distribution system, a booster station and two elevated water storage tanks (standpipes) with a total storage volume of approximately 9400 m<sup>3</sup>. Water is supplied to customers by approximately 130km of water main ranging from 150mm to 600mm pipe mainly through ductile iron and cast iron and areas with PVC piping. There are approximately 428 fire hydrants located within the system. As well there are 192 metered accounts and approximately 6500 service connections.

## **3.0 Compliance Reporting**

The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, and all applicable regulations made in accordance with that act, as well as any other licenses or permits.

### **3.1 Elliot Lake Drinking Water System**

Section 18 of the Safe Drinking Water Act requires the system operator to report adverse test results or conditions immediately after the result is obtained or situation identified. A test result is considered adverse when the sample being tested fails to meet the prescribed drinking water standards. Limits for all parameters being tested under the Acts and Regulations are identified under the various Regulations associated with the Safe Drinking Water Act, 2002.

The Elliot Lake Drinking Water System had a Ministry of Environment, Conservation and Parks (M.E.C.P.) inspection during the 2023 reporting period. The inspection took place on January 5<sup>th</sup> 2023.

All chemicals and materials used in the operation of the drinking water system that came into contact with water met all applicable standards set by American Water Works Association (AWWA) and the American National Standard Institute (ANSI) safety criteria standards NSF/60, NSF/61 and NSF/372.

Flow measurement equipment required to record the volume of water taken from the intake and effluent discharged to the distribution system are verified on a monthly basis and calibrated on an annual basis by a third party.

On-Stream analyzers such as chlorine, pH and turbidity are verified and cleaned on a monthly basis and calibrated by a third party on an annual basis.

### **3.2 Elliot Lake Distribution System**

The Elliot Lake Distribution System was maintained to ensure quality drinking water to consumers. The following operations were done in 2023:

- Distribution flushing was performed during the summer months. During the process chlorine residuals were recorded as well as flows and water clarity. Hydrant exercising and inspections were performed during this operation and were recorded in distribution logbooks.
- There were 11 instances of adverse water quality incidents in 2023 where reports were made to the Public Health Unit and Spills Action Centre in accordance with Section 18 of the Safe Drinking Water Act. **(See Table 4 adverse water reports)**
  - a) 8 for water main repairs,
  - b) 2 for service line repairs,
  - c) 1 ongoing adverse incident for a fluoride analyzer failure
- There were 7 documented water quality complaints ranging from taste and odour to discoloration and pressure issues.

### **3.3 Permit to Take Water Summary**

The Elliot Lake Water Treatment Plant was issued the current Permit to Take Water November 24, 2015 and expires on December 1<sup>st</sup> 2025. This permit allows the maximum of 19,722 liters per minute and 18,184,000 liters per day. There were no exceedances to report for the 2023 summary report. **(See table 2 for flow rates)**

### **3.4 Municipal Drinking Water License Summary**

The City of Elliot Lake Municipal Drinking Water License was issued on March 25<sup>th</sup> 2022 and expires on March 24<sup>th</sup> 2027. This license allows a maximum daily volume of treated water that flows from the treatment plant to the subsystem to not exceed 28,400m<sup>3</sup>/day. This maximum rated capacity was not exceeded during the 2022 reporting period.

### **3.5 Lead Sampling**

Lead sampling was conducted as required by O. Reg 170/03 Schedule 15.1 on March 22<sup>nd</sup>, September 13<sup>th</sup> and September 14<sup>th</sup> 2023 at 8 locations in the distribution system. The results were not in exceedance.

### **4.0 Regulatory Inspection**

The Elliot Lake Drinking Water System had a Ministry of Environment, Conservation and Parks (M.E.C.P.) inspection during the 2023 reporting period. The inspection took place on January 5<sup>th</sup> 2023. During the inspection there was zero non-compliance. See attached inspection report.

### **5.0 Identified Terms and Conditions**

The Elliot Lake Water Treatment Plant meets the requirement of the Ontario “Drinking Water Standards.” Disinfection of treated water is achieved as per Ministry Procedure B13-3. Required CT was continuously monitored and met at all times ensuring that appropriate levels of disinfection were attained.

Backwash water discharge suspended solids sampling was conducted monthly. The annual average was **7.1 mg/L**, which is below the required **25 mg/L** annual average.

Backwash water discharge Total Chlorine Residual sampling was also conducted monthly. The annual average was **0.01 mg/L**, which is within the required standard of **0.02 mg/L**.

### **6.0 Drinking Water Quality Management System (DWQMS)**

The Quality Management System (QMS) consists of an Operational Plan that defines and documents the various policies and procedures with respect to water quality management which were established to meet the Province of Ontario standards as identified within the Safe Drinking Water Act. The Internal Audit and Managerial Review were all completed in 2023 as per the requirements outlined in the City of Elliot Lakes Operational Plan.

A third party surveillance audit was performed by SAI Global on April 10<sup>th</sup> 2023. All elements conformed to the DWQMS 2.0 standards.

## **6.1 Operations and Maintenance**

Review and Provision of Infrastructure:

Element 14 of the DWQMS 2.0 requires that an annual review of the Drinking Water System's infrastructure is completed. This pertains to the maintenance necessary in order to operate and maintain the City of Elliot Lake Drinking Water system. This review involves information from a ten year Capital Plan that was revised in 2016, that prioritized road projects by the condition of the infrastructure below them such as water mains. Element 14 requires that the Operating Authority carry out the review and provide a report to the owner. This ensures that the owner is regularly informed of infrastructure needs and can plan accordingly.

Element 15 of the DWQMS maintains a program of the maintenance, rehabilitation and renewal for the infrastructure. The effectiveness of the maintenance system is relayed to the owner in a summary report under Section 22 of Ont. Reg 170/03. Monitoring the effectiveness of the maintenance program is achieved by periodically reviewing the maintenance program and ensuring its effectiveness.

## **7.0 Documentation**

Contingency plans, Standard Operating Procedures, the Operational Plan and the Drinking Water Quality Management Standard documents which provide guidance in the event of emergencies, upset conditions and breakdowns are located in the office at the Elliot Lake Water Treatment Plant. Detailed drawings of the facility are centrally located in the control room.

## **8.0 Conclusion**

The Elliot Lake Water plant has sufficient capacity to treat and distribute projected flows for the foreseeable future. Ongoing plant improvement will likely be necessary during the 2024 planning period due to structure and equipment age. There were no instances of treated water flows exceeding the rated capacity in the Municipal Drinking Water License.

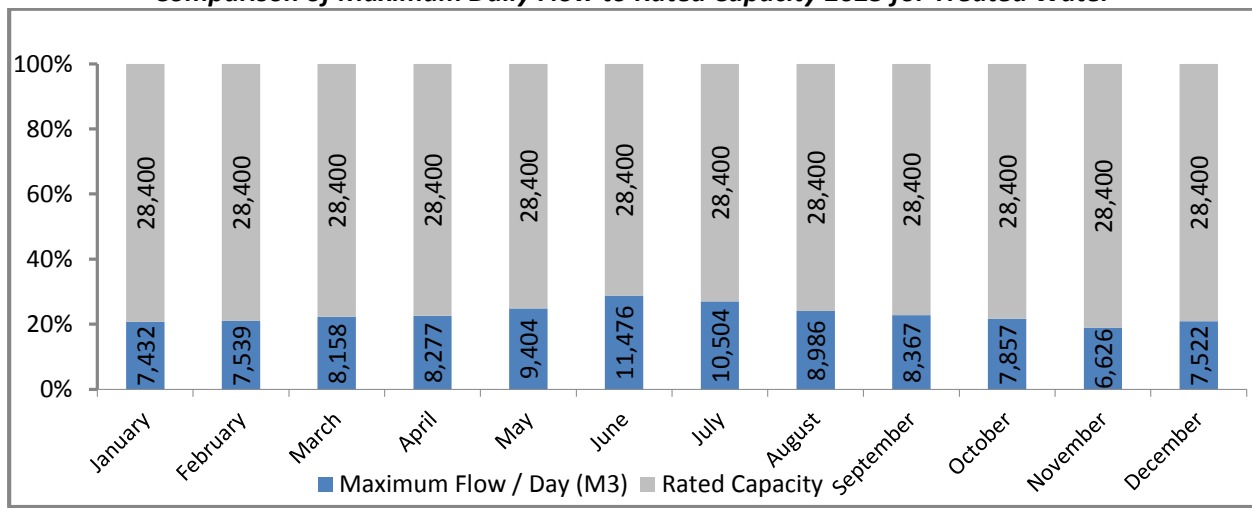
The Elliot Lake Water Treatment Plant was operated in compliance within the conditions of the Municipal Drinking Water License (MDWL), Permit to Take Water (PTTW), Drinking Water Works Permit (DWWP) as well as other regulations.

**Table 1: Treated Water Annual Quantities and Flow Rates**  
**Maximum 28,400 (m<sup>3</sup>) per day**

MONTH	Minimum Flow / Day (M <sup>3</sup> )	Maximum Flow / Day (M <sup>3</sup> )	Average Flow / Day (M <sup>3</sup> )	Instantaneous Peak Flow (L/s)	Total Flow (M <sup>3</sup> )
January	5,544.9	7,432	6,493.3	162.99	201,293.1
February	5,532.4	7,539.3	6,788.2	173.07	190,069.1
March	6,212.7	8,157.8	6,743.2	173.12	209,038.7
April	5,794.6	8,276.8	6,878.6	172.93	206,357.7
May	5,987.9	9,404.1	7,288.3	195.04	225,938.5
June	5,259.7	11,475.9	8,516.6	169.87	255,497.9
July	5,961.3	10,503.9	8,049.6	182.90	249,538.1
August	5,763	8,985.9	7,241.2	192.59	224,475.8
September	5,230.1	8,367.4	6,708.8	185.70	201,263.7
October	4,684.8	7,856.6	6,065.5	169.12	188,028.9
November	5,252	6,625.5	5,937.4	171.37	178,122.2
December	4,861.9	7,521.5	6,131.7	150.75	203,693.6

<b>Minimum</b>	4,684.8	6,625.5	5,937.4	150.75	178,122.2
<b>Maximum</b>	6,212.7	11,475.9	8,516.6	195.04	255,497.9
<b>Average</b>	5,507.1	8,512.2	6,903.5	174.95	211,109.8
<b>Total Flow M<sup>3</sup> 2023</b>					<b>2,533,317.3</b>

**Comparison of Maximum Daily Flow to Rated Capacity 2023 for Treated Water**

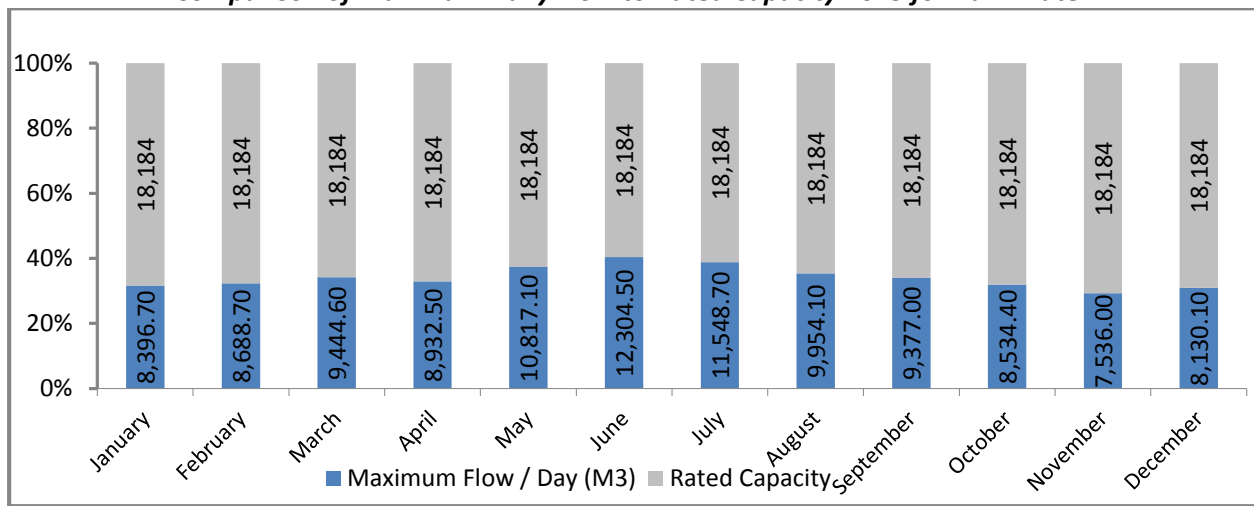


**Table 2: Raw Water Annual Quantities and Flow Rates  
Maximum 18,184 (m<sup>3</sup>) per day**

MONTH	Minimum Flow / Day (M <sup>3</sup> )	Maximum Flow / Day (M <sup>3</sup> )	Average Flow / Day (M <sup>3</sup> )	Instantaneous Peak flow (L/s)	Total Flow (M <sup>3</sup> )
January	6,329.5	8,396.7	7,360	228.41	228,160.8
February	6,486.6	8,688.7	7,704.6	254.78	215,728.1
March	7,130.6	9,444.6	7,677.3	228.06	237,996
April	6,764.4	8,932.5	7,718	257.48	231,539.4
May	6,311	10,817.1	8,192.4	240.17	253,964.6
June	6,023.3	12,304.5	9,472.2	262.44	284,166.7
July	6,907.9	11,548.7	8,878.2	245.87	275,223.3
August	6,274.7	9,954.1	8,104.6	262.01	251,242.9
September	6,252.2	9,377	7,536.1	226.03	226,084
October	5,279.7	8,534.4	6,811.6	226.43	211,160.7
November	6,150.1	7,536	6,708.7	245.59	201,260.9
December	5,164.3	8,130.1	6,805.5	236.72	210,969.6

<b>Minimum</b>	5,164.3	7,536	6,708.7	226.03	201,260.9
<b>Maximum</b>	7,130.6	12,304.5	9,472.2	262.44	284,166.7
<b>Average</b>	6,256.2	9,472	7,747.4	242.83	235,624.8
<b>Total Flow M<sup>3</sup> 2023</b>					<b>2,827,497</b>

**Comparison of Maximum Daily Flow to Rated Capacity 2023 for Raw Water**





**Table 3: Filter Efficiencies**  
**Minimum of 95 %**

<b>MONTH</b>	<b>Filter #1 Efficiency (%)</b>	<b>Filter #2 Efficiency (%)</b>	<b>Filter #3 Efficiency (%)</b>
<b>January</b>	99.69	100.00	100.00
<b>February</b>	99.79	100.00	100.00
<b>March</b>	99.92	100.00	100.00
<b>April</b>	99.83	100.00	100.00
<b>May</b>	99.79	100.00	99.98
<b>June</b>	99.70	100.00	99.97
<b>July</b>	99.76	99.90	100.00
<b>August</b>	99.85	99.98	100.00
<b>September</b>	99.88	100.00	100.00
<b>October</b>	99.66	99.78	100.00
<b>November</b>	99.62	100.00	100.00
<b>December</b>	99.66	100.00	100.00
<b>Minimum</b>	99.62	99.78	99.97
<b>Maximum</b>	99.92	100.00	100.00
<b>Average</b>	99.76	99.97	100.00

**Table 4: Adverse Water Quality Incidents**

<b>Incident Date</b>	<b>Parameter</b>	<b>Results</b>	<b>Unit of Measure</b>	<b>Corrective Action</b>	<b>Corrective Action Date</b>
<b>October 21<sup>st</sup> 2019</b>	Fluoride Analyzer Reading	Analyzer Reading 1.74	Mg/L	Handheld read 0.64 – Fluoride Shut Off	<b>Ongoing</b>
<b>February 9<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>February 16<sup>th</sup> 2023</b>
<b>March 24<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>March 30<sup>th</sup> 2023</b>
<b>March 27<sup>th</sup> 2023</b>	Service Line Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>March 31<sup>st</sup> 2023</b>
<b>April 20<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>April 27<sup>th</sup> 2023</b>
<b>July 12<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>July 20<sup>th</sup> 2023</b>
<b>July 18<sup>th</sup> 2023</b>	Service Line Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>July 27<sup>th</sup> 2023</b>
<b>August 3<sup>rd</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>August 11<sup>th</sup> 2023</b>
<b>September 15<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>September 22<sup>nd</sup> 2023</b>
<b>October 10<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>October 17<sup>th</sup> 2023</b>
<b>December 24<sup>th</sup> 2023</b>	Watermain Repair	Pressure Loss	PSI	Boil Water Advisory – Flush and Two Sets of Samples	<b>January 3<sup>rd</sup> 2023</b>