



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Elk Lake Drinking Water System

2021 ANNUAL/SUMMARY REPORT



Prepared by the Ontario Clean Water Agency
on behalf of the Township of James

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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.

Schedule 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 regulatory requirements 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 2021 Annual/Summary Report.



Elk Lake Drinking Water System

Section 11

2021 ANNUAL REPORT



Section 11 - ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name:	Elk Lake Drinking Water System
Drinking-Water System No.:	220007329
Drinking-Water System Owner:	The Corporation of the Township of James
Drinking-Water System Category:	Large Municipal, Residential System
Period being reported:	January 1, 2021 to December 31, 2021

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 <http://www.elklake.ca/>

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

Elk Lake Municipal Office
33 Third Street
Elk Lake, Ontario P0J 1G0

Drinking Water Systems that receive drinking water from the Elk Lake Drinking Water System

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

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

The Ontario Clean Water Agency prepared the 2021 Annual/Summary Report for the Elk Lake Drinking Water System and provided a copy to the system owner; the Township of James. The Elk Lake Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

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

- Notice via the local newspaper



2.0 ELK LAKE DRINKING WATER SYSTEM (DWS No. 220007329)

The Elk Lake Drinking Water System is owned by the Corporation of the Township of James and consists of a Class 1 water treatment subsystem and a Class 1 water distribution subsystem. The system is a communal ground water well supply that services the Town of Elk Lake. The Ontario Clean Water Agency 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 facility is located on Lot 83 First Street in the Township of James and is supplied by one 65 m deep, double steel casing production well. The well is located in water treatment plant and is equipped with a vertical turbine pump, rated at 63 L/s with a 250 mm diameter magnetic flow meter installed on the discharge line. The well includes pump-to-waste capabilities from the pump discharge line.

A second well located in the vicinity of the east end of the bridge across the Montreal River on Lot 5, Concession 5 in the Township of James acts as a monitoring/observation well. It is drilled to a depth of 79 meters and consists of a steel casing. This well is not equipped with a well pump and is not connected to the water treatment plant.

Water Treatment

The production well feeds the water treatment plant that has a maximum rated capacity of 2790 cubic meters per day (m³/d).

The raw water is directed to an iron and manganese removal system (Filtronics brand) consisting of two reaction vessels fed with sodium hypochlorite, three pressure filters each having a rated capacity of 646 L/min, three flow meters dedicated to each filter and continuous monitoring of chlorine residual and filter operation. The filter backwash recycling system is equipped with a 40 m³ underground holding tank, a submersible pump rated at 3.8 L/s with a discharge line that recirculates the supernatant with raw water at the well pump header and a sludge pump for residual disposal to a tanker truck.

The disinfection system consists of a 450 L sodium hypochlorite solution tank equipped with spill containment and duplicate pace-to-flow chemical feed injection pumps (one duty and one standby). Chemical injection is accomplished at the raw water pipe header, prior to entering the reaction vessels.

Water Storage and Pumping Capabilities

The treated water discharges into twin cell storage clearwells, connected in series and having a total volume of 540 m³. Curtain baffling was installed in Cell #2 of the clearwell to provide sufficient chlorine contact time.



Three vertical turbine pumps (one duty, one standby draw from clearwell #1, and one fire pump installed over clearwell #2) with variable frequency drives each rated at 37.5 L/s. A magnetic finished flow meter, chlorine residual analyzer, and a surge anticipator are installed on the discharge main prior to exiting the pump house and entering the distribution system. The water treatment process is controlled by a dedicated Program Logic Controller (PLC) and monitored through the SCADA computer system.

Control System

Control System Supervisory Control and Data Acquisition (SCADA) is the method of control implemented for the Elk Lake 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 Elk Lake water treatment plant or remotely using operator computers and cell phones. Alarm capability and set point adjustment along with trend monitoring are also available through SCADA system controls.

Emergency Power

A 160 kW emergency stand-by power generator is available at the plant and is capable of supplying power to the entire facility during power failures.

Distribution System

The Elk Lake Drinking Water System is classified as a Large Municipal Residential Drinking Water System and provides water to a population of approximately 440 residents through an estimated 220 service connections. The distribution system was constructed in 1992 and consists of mainly of PVC constructed pipe. Approximately 60 fire hydrants are connected to the system to aid in fire protection. There are no off-site water storage facilities in the distribution system, as storage is incorporated within the treatment plant.

3.0 LIST OF WATER CHEMICALS USED OVER THE REPORTING PERIOD

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

- Sodium hypochlorite – Oxidation and Disinfection

4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM

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:

- Purchased valve bank and water separator
- Purchased membranes and electrolyte for analyzer

5.0 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 Elk Lake Drinking Water System was in full compliance in 2021 with no adverse water quality incidents reported to the Ministry’s Spills Action Centre.

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

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 (Production Well)	52	0 to 2	0 to 2	0	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to 40
Distribution	104	0 to 0	0 to 0	52	< 10 to 30

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

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

Notes:

1. 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 Elk Lake distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.

Refer to [Appendix A](#) for a monthly summary of microbiological test results.

7.0 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)	26	0.25 to 1.89	NTU

Note: Turbidity samples are required once every month.



Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	8760	0.28* to 2.04	mg/L	CT

Notes:

1. For continuous monitors 8760 is used as the number of samples for one year.
2. * 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 Elk Lake water plant if the free chlorine residual level drops below 0.330 mg/L to ensure primary disinfection is achieved. One CT calculation was required on November 25th when the system was experiencing issues with the sodium hypochlorite pump which was immediately resolved.

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 Residual	364	0.32 to 1.97	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 every quarter)

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 13	< 0.05	< 0.05	mg/L	No
April 14	< 0.05	< 0.05	mg/L	No
July 14	< 0.05	< 0.05	mg/L	No
October 6	< 0.05	< 0.05	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 every quarter)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 11	16	ug/L	24.3	No
April 12	21	ug/L		
July 12	22	ug/L		
October 18	38	ug/L		

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



Summary of Total Haloacetic Acid Data (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 11	28	ug/L		
April 12	16	ug/L	22.0	No
July 12	17	ug/L		
October 18	27	ug/L		

Maximum Allowable Concentration (MAC) for Total Haloacetic Acids = 80 ug/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 Elk Lake Drinking Water System was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L for lead. As such, the system was required to test for total alkalinity 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.

Lead samples were last collected in 2020 and results were well below the MAC. Two rounds of alkalinity and pH testing were carried out on March 8th and September 15th of 2021. Results are summarized in the table below.

Summary of Lead Data (sampled in the distribution system)

Date of Sample	# of Samples	Field pH	Field Temperature (°C)	Alkalinity (mg/L)	Lead (ug/L)
March 8	1	7.30	4.9	254	N/A
September 15	1	7.74	13.1	256	N/A

Note: Next lead sampling scheduled for 2023

Most Recent Schedule 23 Inorganic Data Tested at 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	420.0	ug/L	1000	No	No
Boron	15.0	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	< 1.0	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No



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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Selenium	< 0.2	ug/L	50	No	No
Uranium	< 1.0	ug/L	20	No	No

Note: Sample required every 36 months (sample date = October 6, 2020). Next sampling scheduled for October 2023

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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.36	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.27	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.01	ug/L	0.01	No	No
Bromoxynil	< 0.109	ug/L	5	No	No
Carbaryl	< 1.0	ug/L	90	No	No
Carbofuran	< 2.0	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.27	ug/L	90	No	No
Diazinon	< 0.27	ug/L	20	No	No
Dicamba	< 0.342	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.3	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.3	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1.0	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.41	ug/L	100	No	No
Diclofop-methyl	< 0.137	ug/L	9	No	No
Dimethoate	< 0.27	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 7.0	ug/L	150	No	No
Glyphosate	< 20.0	ug/L	280	No	No
Malathion	< 0.27	ug/L	190	No	No
Metolachlor	< 0.18	ug/L	50	No	No
Metribuzin	< 0.18	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	3.0	No	No



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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.18	ug/L	2	No	No
Picloram	< 0.096	ug/L	190	No	No
Prometryne	< 0.09	ug/L	1	No	No
Simazine	< 0.27	ug/L	10	No	No
Terbufos	< 0.18	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.2	ug/L	100	No	No
Triallate	< 0.18	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)	< 6.83	ug/L	100	No	No
Trifluralin	< 0.18	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 36 months (sample date = October 6, 2020). Next sampling scheduled for October 2023

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
October 6, 2020	1	7.18	mg/L	20	No

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

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 6, 2020	1	0.09	mg/L	1.5	No

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



Additional Testing Performed in Accordance with an Approval, Order or Legal Instrument

No additional regulatory sampling and testing was required for the Elk Lake Drinking Water System during the 2021 reporting period.



Elk Lake Drinking Water System

Schedule 22

2021 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name:	Elk Lake Drinking Water System
Municipal Drinking Water Licence (MDWL) No.:	274-101-4 (issued February 16, 2021)
Drinking Water Work Permit (DWWP) No.:	274-201-3 (issued February 16, 2021)
Permit to Take Water (PTTW) No.:	6352-972Q3Y (issued April 24, 2013)
Period being reported:	January 1, 2021 to December 31, 2021

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Elk Lake Drinking Water System has complied with all the requirements set out in the system’s MDWL, its DWWP, the Act and its Regulations.

3.0 SUMMARY OF FLOWS AND COMPARISON TO REGULATORY LIMITS

Flow Monitoring

MDWL No. 274-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

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

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

Water Usage

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2021 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.



Raw Water

2021 - Monthly Summary of Water Takings from the Source (Well No. 1)

Regulated by by Permit to Take Water (PTTW) #6352-972Q37 issued April 24, 2013

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	3149	2983	3566	3411	4247	5745	4917	4930	4464	4079	3711	3434	48636
Average Volume (m ³ /d)	101.58	106.54	115.03	113.7	137	191.55	158.61	159.03	148.8	131.58	123.7	110.77	133
Maximum Volume (m ³ /d)	154	181	178	154	195	660	318	314	503	241	196	183	660
PTTW - Maximum Allowable Volume (m ³ /day)	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162
Maximum Flow Rate (L/min)	3360	3300	3360	3360	3540	3300	3420	3360	3420	3420	3420	3480	3540
PTTW - Maximum Allowable Flow Rate (L/min)	3840	3840	3840	3840	3840	3840	3840	3840	3840	3840	3840	2840	3840

The system's Permit to Take Water #6352-972Q3Y, allows the Township to withdraw water at the following rates:

Well No. 1 (Production Well):	2162 m ³ /day	3,840 L/minute
Well No. 2 (Observation Well):	217 m ³ /day	227 L/minute
<hr/>		
Total Combined Daily Volume:	2489 m ³ /day	

A review of the raw water flow data indicates that the system did not exceed the maximum allowable volume or maximum flow rate during the reporting period.

Well No. 2 is a stand-alone observation well that is not equipped with a well pump. No water was taken from this well in 2021.

Treated Water

2021 - Monthly Summary of Treated Water Supplied to the Distribution System

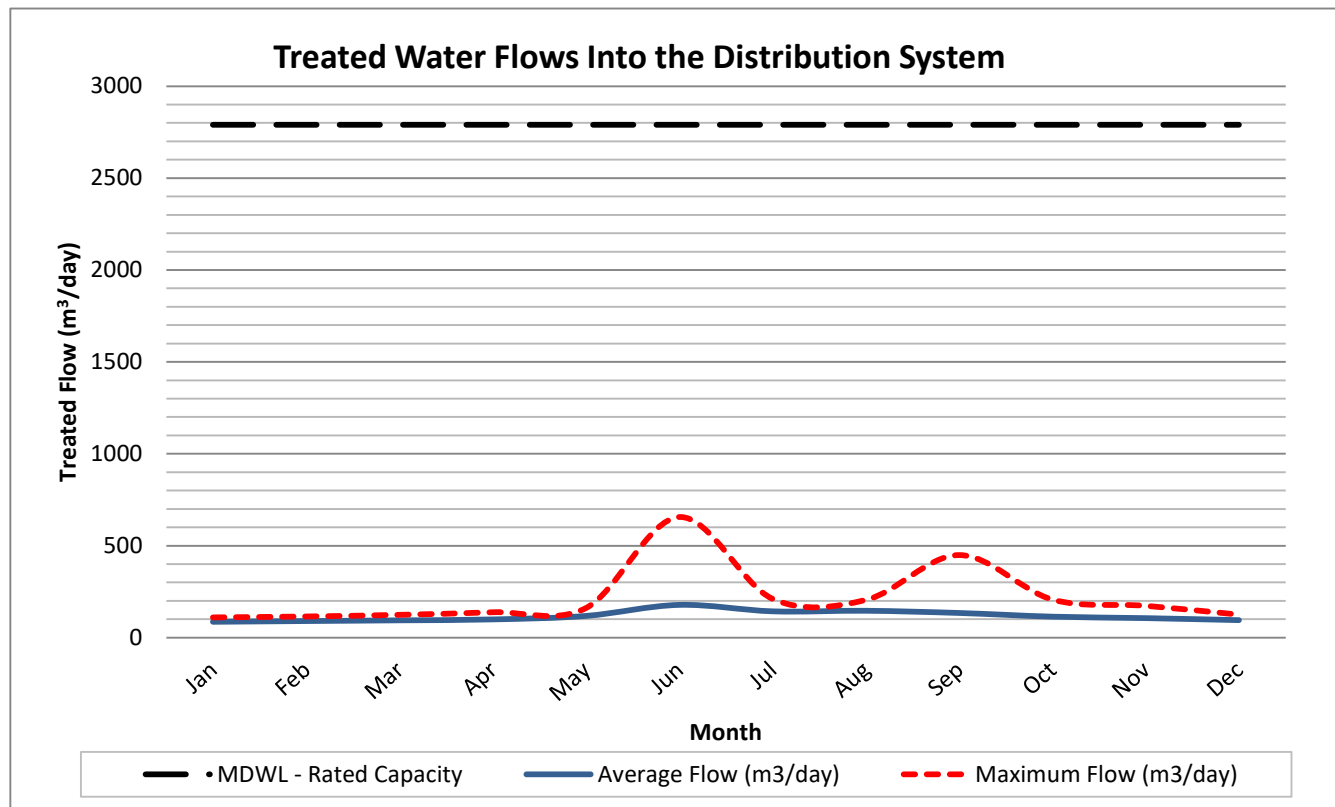
Regulated Municipal Drinking Water Licence (MDWL) #274-101 (issue 4), issued February 16, 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	2653	2520	2921	2962	3653	5328	4436	4530	4021	3536	3175	2937	42672
Average Volume (m ³ /d)	86	90	94	99	118	178	143	146	134	114	106	95	117
Maximum Volume (m ³ /d)	110	115	124	138	161	656	211	205	449	207	173	125	656
MDWL/C of A - Rated Capacity (m ³ /day)	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790

Schedule C, Section 1.0 (1.1) of MDWL No. 274-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 2790 m³/day. The Elk Lake DWS complied with this limit having a recorded maximum volume of 656 m³/day on June 8th during distribution flushing. This represents 23.5% of the rated capacity.

Figure 1: 2021 - Comparison of Treated Water Flows to the Rated Capacity

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m ³ /day)	86	90	94	99	118	178	143	146	134	114	106	95
Maximum Flow (m ³ /day)	110	115	124	138	161	656	211	205	449	207	173	125
MDWL - Rated Capacity	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790
% Rated Capacity	4	4	4	5	6	24	8	7	16	7	6	4





Summary of 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)	2,790 m ³ /day	
Average Daily Flow for 2021	117 m ³ /day	3.6 % of the rated capacity
Maximum Daily Flow for 2021	656 m ³ /day	23.7 % of the rated capacity
Total Treated Water Produced in 2021	42,672 m ³	

Historical Flows

Elk Lake Water Treatment Plant – Historical Flow Comparison

Year	Maximum Treated Flow (m ³ /d)	Average Daily Treated Flow (m ³ /d)	Average Day % of Rated Capacity (2790 m ³ /d)
2021	656	117	3.6%
2020	660	100	3.6%
2019	455	91	3.3%
2018	642	96	3.4%
2017	693	89	3.2%

Figure 2 compares the average treated water flows from 2017 to 2021.



CONCLUSION

The water quality data collected in 2021 demonstrates that the Elk Lake drinking water system provided high quality drinking water to its users which met all the Ontario Drinking Water Standards having no incidents of non-compliance or adverse water quality incidents during the reporting period.

The Elk Lake Drinking Water System was able to operate in accordance with the terms and conditions of the Permit to Take Water and for most of the reporting period and in accordance with the rated capacity of the licence while meeting the community's demand for water use.



APPENDIX A

Monthly Summary of Microbiological
Test Results

**ELK LAKE DRINKING WATER SYSTEM
2021 SUMMARY OF MICROBIOLOGICAL TEST RESULTS**

Facility Works Number: 220007329
 Facility Owner: Municipality: Township of James
 Facility Classification: Class 1 Water Treatment

RAW WATER	01/2021	02/2021	03/2021	04/2021	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Total	Avg	Max	Min
Well 1 (Production) / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	0	0	0	0	0	0	0	0	< 2	0	0	0			2	
Mean Lab	0	0	0	0	0	0	0	0	< 0.5	0	0	0	<	0.038		
Min Lab	0	0	0	0	0	0	0	0	< 0	0	0	0			<	0
Well 1 (Production) / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	0	0	0	0	0	0	0	0	< 2	0	0	0			2	
Mean Lab	0	0	0	0	0	0	0	0	< 0.5	0	0	0	<	0.038		
Min Lab	0	0	0	0	0	0	0	0	< 0	0	0	0			<	0
TREATED WATER																
Treated Water (POE) / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	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	4	4	5	4	5	4	4	5	4	4	5	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	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	< 30	< 20	< 20	< 40	< 10	< 10	< 10	< 10	< 30	< 10	< 10	< 10			40	
Mean Lab	< 15	< 15	< 12	< 17.5	< 10	< 10	< 10	< 10	< 17.5	< 10	< 10	< 10	<	12.115		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			<	10
DISTRIBUTION WATER																
EL-3 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	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
EL-3 (Bacti) / E. Coli - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	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
EL-3 (Bacti) / HPC - cfu/mL																
Count Lab	2	2	2	2	3	2	3	2	2	1	3	2	26			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			10	
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<	10		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			<	10
EL-4 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	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
EL-4 (Bacti) / E. Coli - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	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
EL-4 (Bacti) / HPC - cfu/mL																
Count Lab	2	2	3	2	2	2	1	3	2	3	2	2	26			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 30	< 10	< 10			30	
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 15	< 16.667	< 10	< 10	<	11.154		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			<	10



APPENDIX B

Monthly Summary of Operational Data

**ELK LAKE DRINKING WATER SYSTEM
2020 SUMMARY OF OPERATIONAL TEST RESULTS**

Facility Works Number: 220007329
 Facility Owner: Municipality: Township of James
 Facility Classification: Class 1 Water Treatment

RAW WATER	01/2021	02/2021	03/2021	04/2021	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Total	Avg	Max	Min
Well 1 (Production) / Turbidity - NTU																
Count IH	2	2	3	2	2	2	3	2	2	2	2	2	26			
Max IH	0.97	0.58	0.79	1.08	0.45	0.38	0.71	0.69	0.69	1.89	1.05	0.83			1.89	
Mean IH	0.905	0.465	0.51	1.05	0.395	0.315	0.57	0.665	0.585	1.289	0.75	0.78		0.676		
Min IH	0.84	0.35	0.25	1.02	0.34	0.25	0.42	0.64	0.48	0.689	0.45	0.73				0.25
TREATED WATER	01/2021	02/2021	03/2021	04/2021	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Total	Avg	Max	Min
Treated Water (POE) / Cl Residual: Free (0.33 mg/L) - mg/L																
Max OL	1.24	1.42	1.48	1.01	2.04	1.93	1.48	1.3	1.36	1.5	1.81	2.04			2.04	
Mean OL	1.118	1.237	1.12	0.904	1.071	1.298	1.126	0.869	0.964	1.2	1.145	0.87		1.077		
Min OL	1.02	0.67	0.89	0.81	0.55	0.75	0.5	0.5	0.59	0.95	0.28	0.34				0.28
DISTRIBUTION WATER	01/2021	02/2021	03/2021	04/2021	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Total	Avg	Max	Min
Residual No. 1 / Cl Residual: Free - mg/L																
Count IH	8	8	10	8	9	9	8	9	9	8	9	9	104			
Max IH	1.04	1.21	1.25	0.84	1.14	1.46	1.23	1.08	1.07	1.22	1.18	1.3			1.46	
Mean IH	0.889	0.984	1.038	0.818	0.776	1.18	0.971	0.79	0.747	1.102	0.999	0.728		0.918		
Min IH	0.74	0.87	0.87	0.78	0.55	0.79	0.81	0.55	0.45	0.94	0.77	0.44				0.44
Residual No. 2 / Cl Residual: Free - mg/L																
Count IH	8	8	10	8	9	9	8	9	9	8	9	9	104			
Max IH	1.09	1.26	1.2	0.82	1.85	1.35	1.3	0.99	1.2	1.09	1.26	1.4			1.85	
Mean IH	0.95	1.177	1.049	0.773	0.934	1.183	1.045	0.753	0.812	1.04	0.93	0.781		0.951		
Min IH	0.67	1.04	0.85	0.72	0.51	0.8	0.72	0.59	0.51	1	0.69	0.48				0.48
Residual No. 3 / Cl Residual: Free - mg/L																
Count IH	8	8	10	8	9	9	8	9	9	8	9	9	104			
Max IH	1.22	1.26	1.37	0.88	1.97	1.59	1.42	1.11	1.23	1.27	1.26	1.4			1.97	
Mean IH	1.091	1.148	1.048	0.809	0.96	1.283	0.981	0.688	0.854	1.178	0.976	0.802		0.983		
Min IH	0.98	0.91	0.83	0.7	0.56	0.79	0.77	0.51	0.52	1.05	0.32	0.5				0.32
Residual No. 4 / Cl Residual: Free - mg/L																
Count IH	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max IH	1.14	1.16	1.21	0.87	1.89	1.44	1.32	0.75	1.09	1.19	1.12	0.69			1.89	
Mean IH	1.007	1.11	1.054	0.795	0.922	1.25	1.04	0.646	0.768	1.023	0.972	0.615		0.931		
Min IH	0.94	1.05	0.9	0.72	0.36	1.05	0.9	0.49	0.4	0.75	0.89	0.51				0.36

NOTE:
 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 Elk Lake water plant if the free chlorine residual level drops below 0.330 mg/L. One CT calculation was required on November 25th to ensure primary disinfection is achieved.