Town of Latchford

LATCHFORD ANNUAL WATER TREATMENT REPORT 2022

Annual Compliance & Summary Report

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INTRODUCTION

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act*, 2002. 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.

Section 22 of 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 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 two reports have been combined and presented to council as the 2022 Annual/Summary Report.

Section 11
ANNUAL REPORT

Drinking-Water System Number	210000960
Drinking-Water System Owner	The Corporation of the Town of Latchford
Drinking-Water System Category	Large Municipal, Residential System
Reporting Period	January 1, 2022 to December 31, 2022

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? No

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:
Town of Latchford
10 Main Street
Latchford, ON P0J 1N0

Drinking-Water Systems that receive drinking water from the Latchford Drinking Water System

The Latchford Drinking Water System provides all of its drinking water to the community of Latchford within the Town of Latchford.

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

The WTP ORO prepared the 2022 Annual Report for the Latchford Drinking Water System and provided a copy to the system owner; the Town of Latchford. The Latchford 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:

Public access/notice via a community bulletin

DESCRIPTION OF THE DRINKING WATER SYSTEM

The community of Latchford is currently supplied with water from Bay Lake, which is part of the Montreal River system. The source water is very soft with low alkalinity. The raw water is high in color and fairly low in turbidity.

The intake structure is located approximately 140m off shore and is made of a timber crib and sits approximately 1.15m off the bottom of Bay Lake in approximately 5.5 meters of water (depending on DAM height).

Raw water enters the intake well VIA a 210m of 250mm diameter pipe. An intake screen and a 100mm flush line from the high lift pumps. The low lift station contains a wet well and has 3 vertical turbine pumps two duty and one standby, each rated at 3.9L/s.

There are two treatment trains; each train is capable of treating water at a rate of 6.3L/second. The trains provide full conventional treatment consisting of coagulation flocculation, sedimentation and filtration.

The distribution system services an approximate population of 300 residents and 190 homes which makes this system a Large Residential drinking water system.

There is a looped line back to the water treatment plant as a return line of 100mm diameter from the distribution system that enters the clear well inside the water plant with a totalizing flow meter, this was installed as a way to prevent freezing due to historical problems.

LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

The following chemicals were used in the Latchford Drinking Water System treatment process:

Aluminum Sulphate (Alum) – Coagulation/Flocculation
Sodium Hypochlorite - Disinfection
Polyelectrolyte (Polymer) - Coagulant Aid
Soda Ash – pH and Alkalinity Adjustment

All treatment chemicals are NSF/ANSI approved.

SIGNIFICANT EXPENSES INCURRED TO THE DRINKING WATER SYSTEM

- UPS Failure in SCADA PLC Rack – Replaced with new
- Low Lift Pump#3 Failed – Was Rebuilt and repaired.
- Filter #1 Turbidity Analyzer Failed – Replaced with spare unit
- Low Lift Pump#1 Failed – Was Rebuilt and repaired
- SCADA Computer Glitches – Very Slow – Was repaired by Stroma Engineering
- WTP Laser photocopier failed – Replaced with new
- Filter#1 Manual Flow Control valve on backwash failed – replaced with new
- Both Filters 1&2 Clarifier drain valves seized up – Replaced with new
- SCADA PLC analog card failure – Replaced with new spare card, ordered new spare card

DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

- **There were no adverse conditions during this report period**

- The critical control limit for treated flow was deviated on 8 occasions due to regular maintenance, Hydrant Flushing activities, and Filling of tanker trucks. In all cases a CT Chlorine calculation was conducted and the required contact time was met. Operators ensure that the chlorine residual and clear well level are well above their critical control points before flushing hydrants in the distribution.

MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Sample Type	Number of Samples	*E.coli* (min to max)	Total Coliform (min to max)	# of HPC Samples	HPC (min to max)
Raw	52	0 to 25	0 to 235	-	-
Treated	52	0 to 0	0 to 0	52	<10 to 60
Distribution	104	0 to 0	0 to 0	52	<10 to 40

Maximum Acceptable Concentration (MAC) for *E. coli* = 0 Counts/100 mL
MAC for Total Coliforms = 0 Counts/100 mL
NDOGT = No Data Overgrown with Target

OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Continuous Flow Analyzers in Treatment Process

Parameter	Number of Samples	Range of Results (min to max)	Unit of Measure
Turbidity (Filter 1)	8760	0.001 to 0.367	NTU
Turbidity (Filter 2)	8760	0.001 to 0.342	NTU
Free Chorine	8760	0.82 to 2.00	mg/L

Notes: For continuous monitors use 8760 as the number of samples for one year.

Chlorine Residual in the Distribution System

Number of Samples	Chlorine (min to max)	Unit of Measure	Standard
364	0.27 to 1.36	mg/L	≥ 0.05

Nitrate & Nitrite at the Water Treatment Plant

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 4, 2022	0.09	< 0.05	mg/L	No
April 4, 2022	0.20	< 0.01		
July 4, 2022	<0.1	< 0.01		
October 3, 2022	0.10	< 0.01		

MAC for Nitrate = 10 mg/L
MAC for Nitrite = 1.0 mg/L

Total Trihalomethanes in the Distribution System

Date of Sample	THM Result	Running Average	Unit of Measure	Exceedance
January 4, 2022	40.0	59.43	ug/L	No
April 4, 2022	51.9	58.48	ug/L	
July 4, 2022	74.1	55.5	ug/L	
October 3, 2022	96.3	65.58	ug/L	

MAC for Trihalomethanes = 100 ug/L (Four Quarter Running Ave)

Total Haleoacetic Acids in the Distribution System

Date of Sample	HAA Result	Running Average	Unit of Measure	Exceedance
January 4, 2022	44	57.75	ug/L	No
April 4, 2022	35	52.0	ug/L	
July 4, 2022	86	53.5	ug/L	
October 3, 2022	86	62.75	ug/L	

MAC for HAAs = 80 ug/L (Four Quarter Running Average) effective January 2020

Lead Data

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

The Latchford Drinking Water System qualified for the 'Exemption from Plumbing Sampling' as described in section 15.1-5 (9-10) 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 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 and June 15 to October 15. This testing is required in every 12-month period with lead testing in every third 12-month period.

pH & Alkalinity in the Distribution System

Sample Periods	#of Samples	Lead Results	pH Results	Alkalinity Results
April 4 2022	1	<0.1	7.15	49
Oct 3 2022	1	<0.1	7.06	56

Schedule 23 Inorganic at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	Exceedance
Antimony	<0.5	ug/L	6	No
Arsenic	< 1.0	ug/L	25	No
Barium	18.0	ug/L	1000	No
Boron	<2	ug/L	5000	No
Cadmium	< 0.1	ug/L	5	No
Chromium	< 1.0	ug/L	50	No
Mercury	< 0.1	ug/L	1	No
Selenium	0.20	ug/L	10	No
Uranium	< 1.0	ug/L	20	No

Sample Date: April 11, 2022
Note: Sample required every 12 months.

Schedule 24 Organic at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	Exceedance
Alachlor	< 0.388	ug/L	5	No
Atrazine + N-dealkylated metobolites	< 0.388	ug/L	5	No
Azinphos-methyl	< 0.253	ug/L	20	No
Benzene	< 0.1	ug/L	5	No
Benzo(a)pyrene	< 0.009	ug/L	0.01	No
Bromoxynil	< 0.0909	ug/L	5	No
Carbaryl	< 2.0	ug/L	90	No
Carbofuran	< 3.0	ug/L	90	No
Carbon Tetrachloride	< 0.2	ug/L	5	No
Chlorpyrifos	< 0.253	ug/L	90	No
Diazinon	< 0.253	ug/L	20	No
Dicamba	< 0.0795	ug/L	120	No
1,2-Dichlorobenzene	< 0.3	ug/L	200	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No
1,2-Dichloroethane	< 0.3	ug/L	5	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No
Dichloromethane	< 1.0	ug/L	50	No

2-4 Dichlorophenol	< 0.3	ug/L	900	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.341	ug/L	100	No
Diclofop-methyl	< 0.114	ug/L	9	No
Dimethoate	< 0.253	ug/L	20	No
Diquat	< 0.2	ug/L	70	No
Diuron	< 10.0	ug/L	150	No
Glyphosate	< 20.0	ug/L	280	No
MCPA	< 5.68	ug/L	N/A	No
Malathion	< 0.253	ug/L	190	No
Metolachlor	< 0.169	ug/L	50	No
Metribuzin	< 0.169	ug/L	80	No
Monochlorobenzene	< 0.5	ug/L	80	No
Paraquat	< 0.2	ug/L	10	No
Pentachlorophenol	< 0.3	ug/L	60	No
Phorate	< 0.169	ug/L	2	No
Picloram	< 0.0795	ug/L	190	No
Polychlorinated Biphenyls (PCB)	< 0.06	ug/L	3	No
Prometryne	< 0.0845	ug/L	1	No
Simazine	< 0.253	ug/L	10	No
Terbufos	< 0.169	ug/L	1	No
Tetrachloroethylene	< 0.3	ug/L	30	No
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No
Triallate	< 0.169	ug/L	230	No
Trichloroethylene	< 0.2	ug/L	50	No
2,4,6-Trichlorophenol	< 0.3	ug/L	5	No
Trifluralin	< 0.169	ug/L	45	No
Vinyl Chloride	< 0.1	ug/L	2	No
Desethyl atrazine	<0.422	ug/L	2	No
Atrazine + N dealkylated metabolites	<0.5	ug/L		

Sample Date: April 11, 2022
Note: Sample required every 12 months.

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 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 at the Water Treatment Plant

Date of Sample	Number of Samples	Result Value	Unit of Measure	MAC	Exceedance
May 11 2015	1	35.8	mg/L	20	Yes
April 6, 2020	1	16.4	mg/L	20	No

Note: Sample required every 60 months.

Most Recent Fluoride at the Water Treatment Plant

Date of Sample	Number of Samples	Result Value	Unit of Measure	MAC	Exceedance
April 27, 2015	1	<0.05	mg/L	1.5	No
April 6, 2020	1	<0.05	mg/L	1.5	No

Note: Sample required every 60 months.

Harmful Algae Bloom Microcystins

Date of Sample	Number of Samples	Result Value	Unit of Measure	MDL	Exceedance
July 4, 2022	1	<0.15	mg/L	0.15	No
Aug 9, 2022	1	<0.15	mg/L	0.15	No

Summary of Additional Testing Performed in Accordance with a Legal Instrument

No additional sampling required

Schedule 22

SUMMARY REPORT for MUNICIPALITIES

Municipal Drinking Water Licence (MDWL)	277-101 (issued March 3, 2021)
Drinking Water Works Permit (DWWP)	277-201 (issued March 3, 2021)
Permit to Take Water (PTTW)	1047-BHEGZD (issued Nov 14, 2019)
Reporting Period	January 1, 2022 to December 31, 2022

REQUIREMENTS THE SYSTEM FAILED TO MEET

There was a MOE Inspection conducted on Oct 18, 2022. (We received a 100% Compliance rating)
The system met all requirements during the 2022 operational period with no adverse conditions.

RATED CAPACITY & FLOW RATES APPROVED IN THE SYSTEMS LICENCE AND PERMIT

The following tables and graphs indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and the 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 License.

Raw Water Usage for 2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Volume (m^3/d)	170	174	166	161	173	192	196	162	175	157	144	169
Maximum Volume (m^3/d)	224	204	207	195	231	246	282	198	304	200	181	202
Total Volume (m^3)	5263	4885	5143	4840	5348	5741	5870	4870	5241	4867	4315	5226
Peak Flow Rate (L/min)	412.8	618.6	618.6	618.6	618.6	618.6	618.6	618.6	618.6	498	618.6	618.6

Latchford DWS' Permit to Take Water (PTTW) #1047-BHEGZD (issued Nov 14, 2019) allows the Town of Latchford to withdraw water at a maximum total daily volume of 545.76 m^3/day and at a maximum flow rate of 379 L/minute from Bay Lake. The maximum volume taken was 304 m^3/day which is within the compliance limits. The high peak flow rates shown in the raw water table occur during the startup of the plant and last less than 2 minutes and are not an accurate representation of the peak flow rates. The total raw water produced or taken from the source was 61,609 m3 in 2022.

Daily Volume of Water in to the Distribution System in 2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Volume (m^3/d)	143	143	131	161	133	191	148	113	127	125	110	131
Maximum Volume (m^3/d)	192	163	145	195	189	246	234	137	224	150	133	147
% Rated Capacity	38.4	32.6	29.0	39.0	37.8	49.2	46.8	27.4	44.8	30.0	26.6	29.4
Total Volume (m^3)	4448	3994	4075	4840	4138	5741	4580	3513	3812	3859	3289	4048
Rated Capacity (MDWL)	500	500	500	500	500	500	500	500	500	500	500	500

Schedule C, Section 1.1 of the MDWL requires that the maximum daily volume of treated water that flows to the distribution system shall not exceed 500 m^3/day. This rate was not exceeded during the reporting period. The maximum recorded volume was 246 m^3/day which represents approximately 49.2 % of the rated capacity.

The Total Volume pumped to distribution was 50,337 m3 in 2022

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)	500 m^3/day	
Average Daily Flow for 2022	138 m^3/day	27.6 % of the rated capacity
Maximum Daily Flow for 2022	246 m^3/day	49.2 % of the rated capacity
Total Treated Water Produced in 2022	50,337 m^3	

PLANT EFFICIENCY – RAW VOLUME TAKEN VRS TREATED VOLUME

Treated Flow 50,337m3 / Raw Flow 61,609m3 = **81.7%** Efficiency

4.0 CONCLUSION

The Latchford Drinking Water System met the regulatory requirements of the Safe Drinking Water Act and its Regulations.

The system was able to operate in accordance with the terms and conditions of the Permit to Take Water, with the exception of the flow rate exceedances on pump start up, the drinking water works permit and municipal drinking water license during the reporting period. It also operated in accordance with the rated capacity of the approval and license while meeting the community's demand for water use.