Lake Huron
Primary Water Supply System

2021 Compliance Report

Contact Info:

Owner:
Lake Huron Primary Water Supply System Board of Management
c/o City of London, Regional Water Supply Division
235 North Centre Road, Suite 200, London, ON N5X 4E7
519-930-3505

Operating Authority:
Ontario Clean Water Agency
71155 Bluewater Highway
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Profile

Who We Are

The Lake Huron Primary Water Supply System (LHPWSS) is owned by a Board of Management who governs the drinking water system. The Board of Management is made up of members appointed from each of the eight (8) member municipalities that are currently supplied with water from the LHPWSS. One of these member municipalities, the City of London, acts as the Administering Municipality. Accordingly, the City of London provides all associated administrative and management services on behalf of the Board. The Board of Management currently utilizes the services of an independent contracted Operating Authority.

The water system is operated and maintained by Ontario Clean Water Agency (OCWA) under contract to the Board of Management.

Operating Authority:

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

LHPWSS Board Member Municipalities:

- City of London (Administering Municipality)
- Municipality of Bluewater
- Municipality of Lambton Shores
- Township of Lucan Biddulph
- Municipality of Middlesex Centre
- Municipality of North Middlesex
- Municipality of South Huron
- Municipality of Strathroy-Caradoc

What Is Important

Values of the Water System

The values of the LHPWSS are the inherent beliefs or moral standards that generally reflect what the LHPWSS Board of Management stands for and believes in:

- **Sustainable** - be financially, environmentally, socially, and physically sustainable;
- **Inclusive** - provide access to bulk drinking water for current and prospective members, in accordance with Board policy;
- **Fair and equitable** - balance the interests of individual members with the best interests of all members, as well as the needs of existing members with the needs of new members;
- **Vigilant** - ensure an adequate supply of safe and reasonably priced drinking water is available to members;
- **Innovative** - be receptive to and supportive of new ideas and opportunities for improvement;
- **Cooperative** – be supportive to the needs of the Lake Huron Primary Water Supply System;
- **Open and transparent –** conduct business in a manner that enables member municipalities and the public to review and provide input into major decisions as appropriate;
- **Public Ownership –** retain ownership of the water system in public hands.

What We Do

Water Treatment & Supply

The LHPWSS is responsible for the treatment and transmission of drinking water to eight (8) municipalities in southwestern Ontario. The population served by this system is approximately 390,000. Water is provided bulk wholesale to the municipalities who then distribute it to their customers.

The Lake Huron Water Treatment Plant (WTP) has been in operation since 1967. The WTP employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, post-chlorination, and sodium hydroxide addition to treat raw water obtained from Lake Huron. After the water is treated it is pumped from the WTP to various communities or to storage reservoirs. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system**.**

The Lake Huron Primary Water Supply System is operated under the Municipal Drinking Water Licence (MDWL) #001-101 and Drinking Water Works Permit (DWWP) #001-201.

LHPWSS Assets:

- 1 water treatment plant
- 1 residuals management facility
- 3 water pumping stations
- 3 in-ground storage reservoirs
- 8 monitoring stations
- 151 km of water main

Figure 1: McGillivray Booster Pumping Station

Figure 2: High Lift Pumps at the Lake Huron WTP

LHPWSS: At A Glance

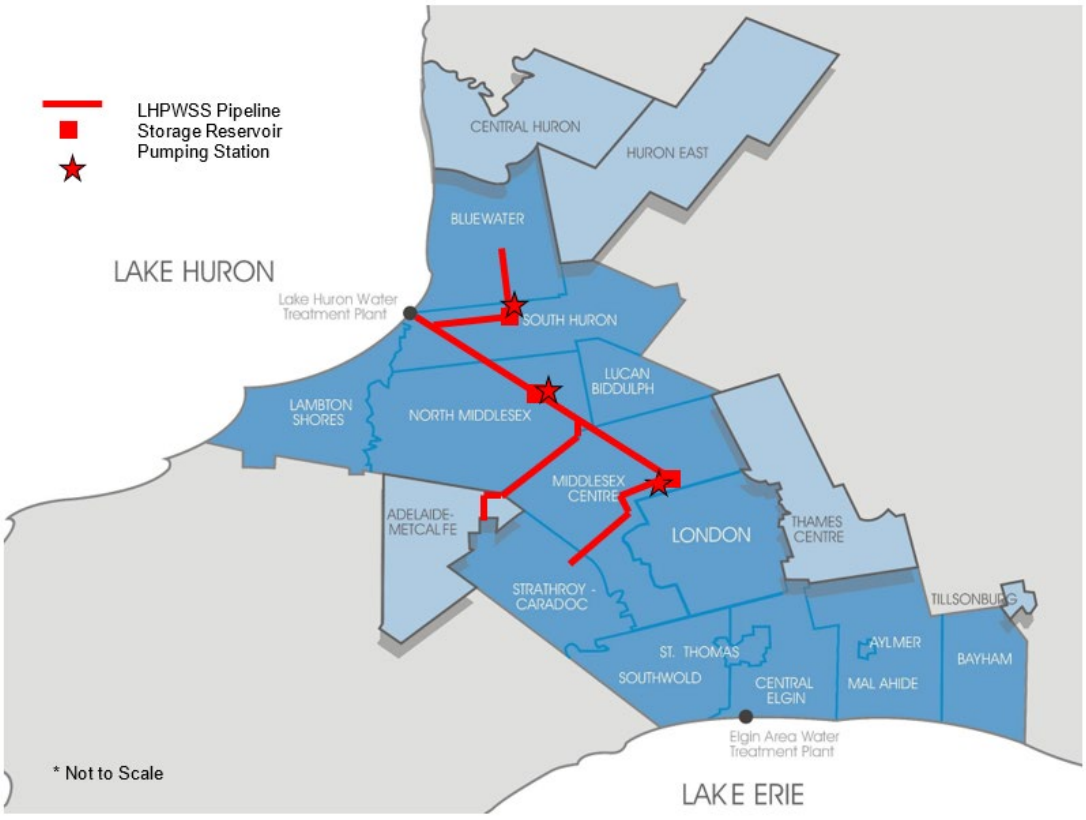

Figure 3: LHPWSS Major Infrastructure Locations

The Water Treatment Process

The following figure provides a general overview of the conventional water treatment process. The processes outlined below are very similar to the treatment at the Lake Huron WTP, although they are not an exact representation. Some details may vary.

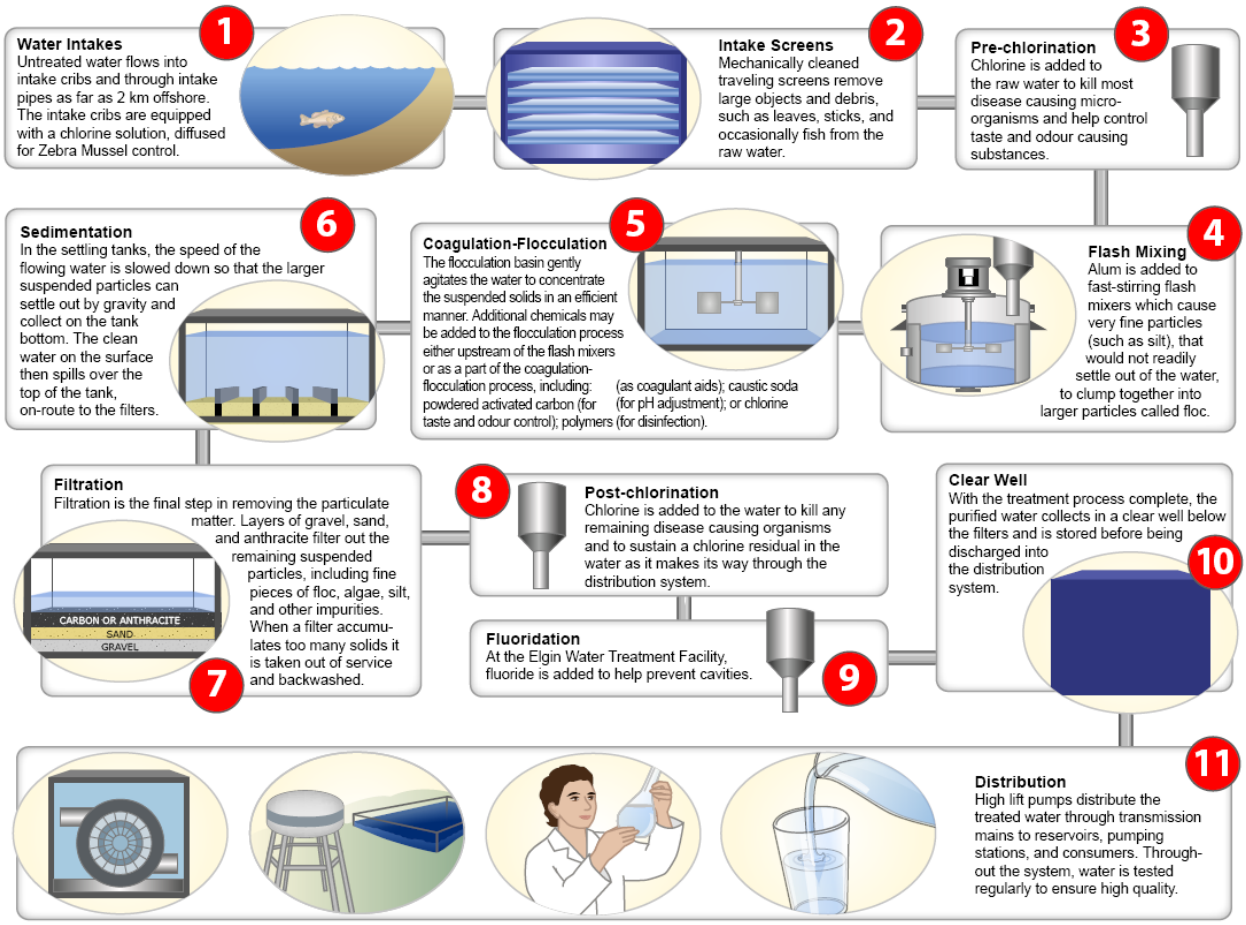

Figure 4: Overview of the Water Treatment Process

At the Lake Huron WTP, Step 9 (Fluoridation) does not take place.

At the Lake Huron WTP, one additional treatment step takes place:

Sodium Hydroxide is added as the treated water leaves the WTP and enters the transmission system (Step 11) to raise the treated water pH, resulting in reduced corrosion potential.

2021 Highlights - General

Lake Huron WTP Site Security

A comprehensive security audit was completed for the LHPWSS in 2017, which outlined vulnerabilities and security related risks throughout the water supply system. The security audit included a significant number of recommended physical improvements for the LHPWSS facilities in order to address the safety and security of operational staff, the public, and the security of the water supply to benefiting municipalities. In 2018 staff began addressing the identified deficiencies and vulnerabilities.

The security audit report included specific recommendations related to implementing on-site security services, necessary for the safety and security of the water system. In 2020 a security trailer was constructed at the Lake Huron WTP. A three (3) year security services contract was awarded to Paladin Security Group Ltd. and the service began in late 2020. The addition of on-site security services has addressed some security and safety-related shortfalls, including improved visitor and contractor management.

Figure 5: The security trailer at the Lake Huron WTP

2021 Capital Project Highlights

High Lift Pump Upgrade

The previously completed Energy Audit and Pump Optimization Study identified the replacement of the high lift pumps at the Lake Huron WTP as a significant opportunity for energy savings and optimizing pump operations. The existing high lift pump system is largely original to the initial WTP construction in the late 1960's and the pumps are nearing the end of their useful life. The most cost effective short- to mid-term solution is to remove three (3) pumps at the WTP, and replace them with two (2) lower volume high-head pumps and two (2) more efficient high volume pumps. The pumps will be sized to meet current and future water demands.

Detailed engineering for the high lift pump replacement began in November 2018, and the pump pre-selection process was completed in October 2019. The tender for construction and pump installation was issued in late 2020. The tender for construction was awarded to Kenaidan Contracting Ltd. in March 2021.

In July 2021 Kenaidan mobilized to site. The new pumps were delivered to the WTP in the fall of 2021 along with the Motor Control Centers (MCCs), isolation and control valves. Construction and commissioning activities are anticipated to be completed in fall of 2022. In order to receive financial incentives for energy savings associated with this project, it is required that the four (4) new pumps must be in-service by December 31, 2022. The project is currently on schedule to meet this deadline. The estimated total financial incentive for this project is $1.32M.

Figure 6: A new high lift pump (HLP) and motor delivered to the site (August 2021)

Figure 7: New HLP #6 pad and pump base plate (August 2021)


Figure 8: New HLP #5 (October 2021)

Figure 9: The spool piece for HLP #5 is installed in the pipe gallery below (October 2021)

South Filter Conduit Emergency Repairs

In 2020, during maintenance and inspection of filter #6, operating authority staff found that water was draining from the filter even though all valves were confirmed to be closed. A subsequent inspection from within the south clearwell confirmed that water was leaking from the south filtered water collection flumes above into the clearwell. Further inspection noted that water was also leaking from filters #8 and #10.

GM BluePlan (GMBP) was the engineering consultant hired to conduct a detailed structural inspection and recommend a repair strategy for the suspected concrete cracks. Several items requiring remedial action were identified and it was recommended they be completed as soon as possible to allow for the continuing functionality of the filters. Upon receipt of the inspection report and work plan for the repairs to the south filtered water flumes, the repairs were undertaken on an emergency basis. Tarpon Contracting was the contractor hired to complete the work.

The emergency repairs to the south side filter flumes began in December 2020 and were completed in April 2021. As part of the warranty inspections required on the south side for the completed work, the north side was also inspected by GMBP. Leakage and deterioration similar to that previously seen on the south side was also seen on the north side. Emergency repairs on the north side were initiated in January 2022 and this project was completed in February 2022. Tarpon also completed the repairs on the north side.

Figure 10: GMBP inspection photo showing leakage (before repair); Location is Filter #8 - east face north of baffle wall

Figure 11: GMBP inspection photo showing leakage (before repair); Location is Filter #10 conduit - west face north of baffle wall

Beach Chamber Erosion Control

The increase in the water level of Lake Huron, coupled with severe winter storms and lack of ice cover, caused significant erosion along the Lake Huron shoreline in front of the WTP. Although the raw water pipeline from the intake structure to the WTP is buried below the lakebed, the erosion at the shoreline exposed a normally buried chamber that is used to access the intake pipe for maintenance purposes. This location also serves as the access point for the chlorine line into the pipe interior and ultimately the intake crib zebra and quagga mussel control system.

GM BluePlan and Baird Engineering were the consultants engaged to undertake the assessment of the erosion control requirements for the long-term protection of the critical infrastructure and the shoreline in front of the WTP. In October 2020, the tender was awarded to J-AAR Excavating Limited for the construction of the necessary works. The project was completed in spring 2021.

Figure 12: Pre-construction photo from November 2019.

Figure 13: Pre-construction photo from May 2020 showing further erosion impacts and exposure of the beach chamber.

Figure 14: Construction photo from March 2021, with restoration in progress.

Figure 15: Post-construction photo from December 2021. The beach chamber is fully protected by armour stone.

Clarifier Drive Replacements

As part of the pre-treatment process, solid particles are collected in the bottom of the clarifier tanks. In order to collect the solids, the collector arms are moved by large gear drive systems powered by an electric motor. There are four (4) gear drive systems in total. These drives are approximately 30 years old and are at the end of lifecycle. The gear systems are being replaced along with a new motor that is equipped with a variable frequency drive (VFD) to allow precise control through the plant SCADA system. One (1) gear drive system is being replaced per year. In 2021 Clarifier #3 gear drive system was replaced.

Figure 16: Clarifier #3 Drive

2021 Flow Summary

As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Lake Huron WTP cannot exceed 454.98 million litres/day or 5266 litres/second.

The 2021 water taking was permitted under PTTW #P-300-2068363222.

As per the water system's current Municipal Drinking Water Licence, the rated capacity of the WTP is 340.0 million litres/day, which converts to 3935 litres/second. The maximum daily volume of treated water that flows from the treatment plant into the transmission system shall not exceed this value.

The following table contains a flow summary, with comparison to the system's rated capacity and permit limits in order to assess the capability of the system to meet existing and planned uses.

	Total Daily Flow (ML/day)	**Total Daily Flow (% of Capacity)**	**Daily Instantaneous Peak Flow (L/s)**
PTTW – permitted raw water taking amount	454.98	100%	5266
Raw Water Flow – Average Day	129.2	28.4%	2461
Raw Water Flow – Max. Day	184.8	40.6%	4476
WTP Rated Capacity	340.0	100%	3935
Treated Water Flow – Average Day	124.7	36.7%	1963
Treated Water Flow – Max. Day	195.4	57.5%	3031

A complete flow summary for the LHPWSS can be found in Appendix A.

Treated Water Volumes

The average daily flow from the Lake Huron Primary Water Supply System was 124.7 ML/day, which is a 0.1% increase from the previous year. The maximum daily flow for 2021 was 195.4 ML/day, which is a 2.2% decrease from the previous year.

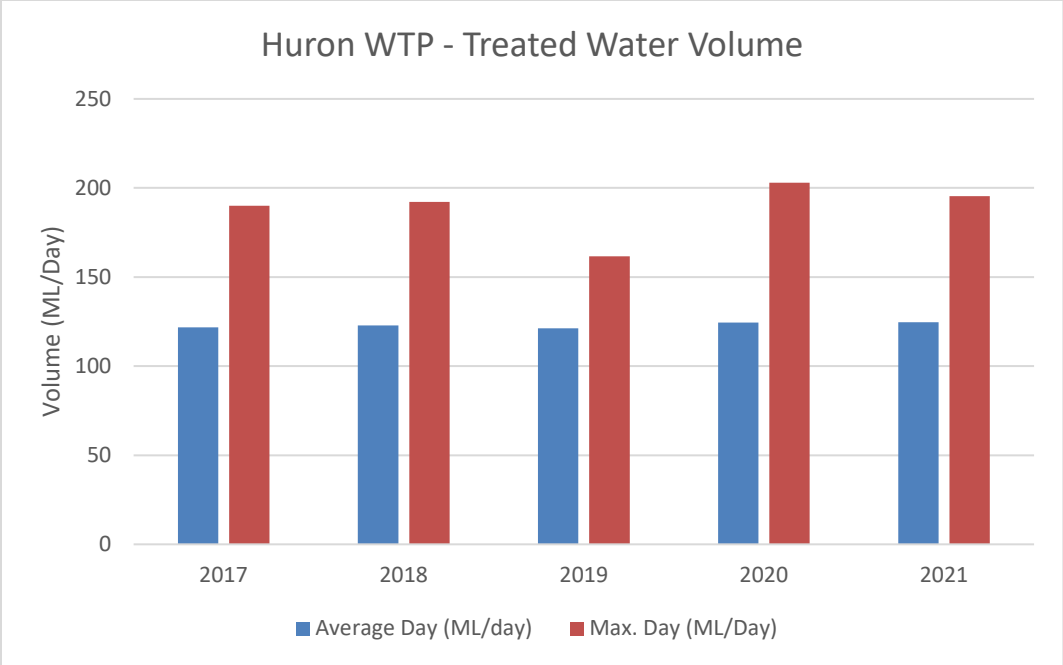

Figure 17: 5 Year Treated Water Volumes

The majority of the volume of treated drinking water from the LHPWSS is used by the City of London. As shown in Figure 18, London takes 82.74% of the volume, with the other seven municipalities using the remaining 17.26%.

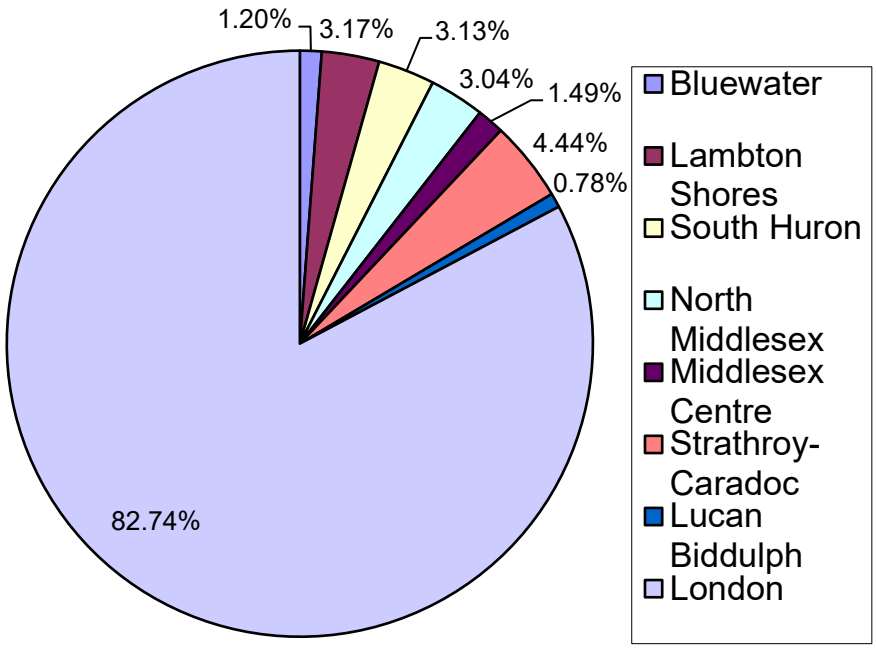

Figure 18: 2021 Treated Water Volumes per Municipality

2021 Chemical Consumption

A variety of water treatment chemicals are used at the Lake Huron WTP to ensure safe, clean drinking water. The following table outlines the chemicals most frequently used for the LHPWSS. As part of the system's registered ISO14001 Environmental Management System, objectives and targets are currently in place to optimize chemical usage.

Chemical	Used for	Total Amount Used in 2021
Aluminum Sulphate	Coagulation	812,444 kg
Powdered Activated Carbon	Taste and odour control (seasonally)	7,634 kg
Chlorine Gas	Mussel control	35,547 kg
Chlorine Gas	Primary disinfection	60,150 kg
Sodium Hydroxide	pH adjustment for corrosion control	570,582 kg
Polymer	Filter aid (used on an as-required basis)	<5 kg
Polymer	Residuals Management Facility – dewatering aid	7,395 kg
Sodium Bisulphite	Residuals Management Facility – dechlorination	70,209 kg

2021 Water Quality Sampling and Monitoring

The LHPWSS consistently provides treated drinking water with water quality above the standards required by provincial regulation. Where desirable, the LHPWSS standards are more stringent than what is required by regulation. For example, the target at the Lake Huron WTP for treated water turbidity (a measure of the cloudiness of water) is 10 times more stringent than the provincial standard. The LHPWSS is practicing continual improvement to ensure that high drinking water standards are maintained and enhanced where possible.

All water quality sampling at the LHPWSS is performed in accordance with the Safe Drinking Water Act and its associated regulations. All samples are collected by licensed operating authority personnel and are submitted to Canadian Association for Laboratory Accreditation (CALA)/Standards Council of Canada (SCC) accredited laboratories for both bacterial and chemical analysis.

In 2021, a total of 686 microbiological samples were collected from raw, treated and distribution system water, and were tested for E Coli, total coliforms and heterotrophic plate count (HPC). There was one incident of an adverse microbiological test result in 2021. For more information, please see the Annual Report, which is included as Appendix B.

Annual samples are collected and tested for inorganics (metals) and organics which include herbicides, pesticides and volatile organic parameters. Quarterly sampling is also conducted for trihalomethanes and haloacetic acids (disinfection by-products), nitrates and nitrites.

Seasonal samples are collected and tested for total microcystin from June through to the end of October as part of the Harmful Algal Bloom (HAB) Monitoring and Sampling Program. The program is to keep drinking water safe from potential impacts of overgrowth of aquatic algal bacteria (i.e. cyanobacteria), that produce or have the potential to produce toxins (i.e. cyanotoxins) in the surrounding water, when the algal cells are damaged or die. These toxins, which include microcystins, can be harmful to people. A total of 23 raw water samples were tested for total microcystin. There were no detectable results in the raw water.

In addition, the WTP operator samples the raw, in-process and treated water six times per day and carries out an array of physical and chemical tests for operational control.

As required by regulation, the LHPWSS also prepares an Annual Report which includes a summary of water quality test results and a maintenance report. The 2021 Annual Report can be found in Appendix B.

Research and Partnerships

The LHPWSS acknowledges the importance of scientific research on water quality and the effects on human health. The LHPWSS has partnered with the Natural Sciences and Engineering Research Council (NSERC) Chair in Drinking Water Research at the University of Waterloo and University of Toronto to pursue research opportunities, as well as Western University, and is a member of the Water Research Foundation (WRF). In addition, the LHPWSS continues to evaluate and conduct specific research on the efficacy of the existing treatment processes, optimizing and improving treatment systems, and evaluating the potential and need of more advanced treatment alternatives.

Ministry Inspection

Annual Inspection

The Ontario Ministry of the Environment, Conservation and Parks (MECP) conducts an inspection of the LHPWSS annually. A MECP inspection took place on November 10, 2021. The final inspection report was issued on January 21, 2022. There were no non-compliances identified in the inspection report. The final inspection rating received for the 2021-2022 reporting year was 100.00%.

Lake Huron
Primary Water Supply System

Regional Water Supply Division
235 North Centre Road
Suite 200
London, ON N5X 4E7
519-930-3505

www.huronelginwater.ca

Appendix A – 2021 Flow Summary

1. Raw Water Intake – Flow (ML/Day)

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
1	114.7	133.1	112.6	118.2	126.8	106.0	141.2	141.6	132.8	125.5	122.9	168.3
2	115.9	104.6	115.9	120.1	117.1	177.5	148.6	122.2	145.9	134.0	115.0	110.6
3	112.2	135.6	113.2	113.7	116.0	138.7	132.0	138.1	160.3	136.0	130.1	115.6
4	107.9	116.9	130.3	110.4	114.8	143.2	148.3	141.4	159.8	116.8	117.3	114.0
5	115.1	114.2	124.7	115.5	113.0	144.9	179.0	150.6	139.1	115.5	115.6	128.8
6	116.2	124.4	121.2	118.9	127.0	162.6	159.1	157.4	130.6	137.8	114.1	118.3
7	116.7	115.1	112.3	124.6	119.0	183.8	150.2	144.1	146.1	121.9	134.6	125.1
8	115.0	114.2	127.4	122.7	133.8	146.4	129.2	142.8	144.6	139.7	125.5	57.9
9	116.0	96.6	128.6	116.1	126.2	141.9	138.1	127.3	137.8	121.4	68.7	161.3
10	112.6	135.6	114.7	124.0	109.2	152.2	130.3	141.4	140.8	121.2	165.9	132.9
11	112.8	115.7	125.0	120.7	126.2	168.6	131.7	110.7	134.9	109.3	129.5	118.0
12	116.5	116.9	113.3	115.5	110.3	174.9	128.6	164.6	138.6	127.5	120.3	112.4
13	116.5	112.1	125.0	122.7	132.2	160.4	119.2	145.2	137.1	129.1	125.0	114.1
14	115.2	112.4	109.5	120.6	132.3	142.9	125.5	138.4	153.8	118.2	124.8	115.8
15	111.0	115.6	112.0	119.4	136.8	136.7	140.2	146.0	153.8	126.4	131.5	131.9
16	106.3	116.6	120.6	108.6	131.1	156.8	148.4	137.9	120.6	97.6	67.5	114.3
17	104.2	110.9	120.3	114.0	138.1	163.1	134.1	143.9	179.1	142.8	165.1	115.0
18	114.1	114.5	115.4	114.9	149.0	164.0	133.9	145.0	148.1	126.0	110.3	114.0
19	110.5	114.3	126.1	116.6	180.5	139.4	161.3	132.6	160.9	128.3	113.3	113.4
20	114.6	120.7	122.8	122.9	171.3	150.2	140.5	161.7	139.3	135.9	127.5	114.7
21	91.7	113.6	125.0	121.3	171.3	135.7	149.6	166.7	145.4	124.8	120.6	108.9
22	137.1	125.1	119.4	112.6	171.8	145.6	138.3	157.2	142.4	132.6	145.9	100.3
23	137.1	120.4	123.0	116.3	145.1	147.7	148.9	155.1	128.9	127.9	96.6	121.3
24	131.6	126.5	119.8	136.6	153.0	148.7	152.9	151.0	124.3	109.6	174.3	114.7
25	116.1	113.7	122.7	118.4	181.6	153.4	141.7	161.4	120.8	126.2	120.9	106.4
26	112.2	120.3	126.0	128.2	130.1	146.0	144.1	132.4	125.5	108.8	113.7	97.4
27	106.9	114.2	119.7	126.3	159.9	134.6	134.1	184.8	110.0	139.7	113.6	94.3
28	105.9	114.2	119.2	111.5	132.6	137.0	143.8	160.9	146.4	124.8	127.1	112.7
29	121.7		112.9	116.0	114.6	130.6	143.6	163.4	153.7	119.7	144.6	116.0
30	117.1		117.2	116.7	126.1	151.2	127.4	132.5	136.6	118.0	64.2	114.8
31	115.8		117.2		161.8		145.1	145.5		123.7		111.5
Monthly Total	3556.9	3287.8	3713.0	3563.9	4258.7	4484.5	4388.9	4543.7	4237.6	3866.8	3645.7	3594.8

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
Monthly Minimum	91.7	96.6	109.5	108.6	109.2	106.0	119.2	110.7	110.0	97.6	64.2	57.9
Monthly Maximum	137.1	135.6	130.3	136.6	181.6	183.8	179.0	184.8	179.1	142.8	174.3	168.3
Monthly Average	114.7	117.4	119.8	118.8	137.4	149.5	141.6	146.6	141.3	124.7	121.5	116.0

Annual Total (ML)	47,142.2
Annual Minimum (ML)	57.9
Annual Maximum (ML)	184.8
Annual Average (ML)	129.2

Note: (i) As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Lake Huron Water Treatment Plant cannot exceed 454.98 million litres/day.

2. Raw Water Instantaneous Peak Flow (L/s)

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
1	1935.2	2517.2	1939.1	1810.8	1948.4	2967.4	2942.2	2864.9	2922.7	2566.1	1891.9	2831.7
2	2003.0	1928.7	1906.7	1802.7	1905.6	3094.7	3097.6	2884.7	2959.3	2914.5	1946.3	2088.8
3	2092.8	1930.3	2113.3	1764.6	1920.9	2958.4	2958.4	2893.2	2904.4	2895.6	1899.0	1928.6
4	2184.0	1999.4	2003.7	1871.5	2371.9	2962.0	2870.1	2894.3	2864.0	1936.9	1921.1	1933.8
5	1976.2	1929.3	1913.1	1781.1	2064.2	2936.3	2971.6	2889.1	2845.5	2401.4	2847.0	2947.7
6	2047.6	1930.9	1890.9	1866.9	1932.3	2959.8	2937.0	2889.1	2840.2	2113.0	2128.9	2107.1
7	2011.7	1939.8	1878.6	1938.7	1984.5	2963.1	2938.0	2935.4	2927.4	2098.5	2861.3	3002.9
8	1989.1	1949.5	1919.2	1940.9	1937.7	2904.4	2472.1	2963.2	2931.7	2872.2	2827.4	2195.6
9	2040.5	2929.3	1937.0	1941.3	1916.3	2911.9	3049.0	2314.1	2922.0	2843.6	2935.4	3928.2
10	2038.2	2461.5	1935.4	1789.1	3673.6	2936.3	2928.0	2974.0	2927.4	2851.6	3045.3	2805.4
11	1961.1	2050.5	2090.2	1944.6	3805.7	3245.8	2901.7	2869.3	2850.2	1907.6	2841.6	1917.4
12	1920.9	2032.5	1937.4	1909.3	3718.5	3010.4	2159.7	2864.7	2910.4	2954.4	2239.6	1910.3
13	1968.3	1998.7	1913.9	1920.9	1983.9	3047.6	2671.8	2878.4	2906.1	2958.7	2839.0	1913.4
14	1978.8	1920.0	1926.5	2088.4	4426.4	3096.5	2914.8	2972.6	2924.1	2979.1	2159.5	1932.2
15	2059.5	1910.6	1917.1	1892.5	2009.5	3045.0	2941.6	2894.3	2931.5	2526.3	2193.1	2720.3
16	2096.8	1934.0	1927.5	1978.7	3653.9	3049.4	2947.9	2929.5	3072.3	1908.8	2941.4	2084.1
17	2139.4	1854.1	2083.0	1896.4	4476.3	3033.6	2934.1	2929.5	2928.1	2959.8	2382.8	2083.3
18	2080.8	1924.8	2170.3	1940.3	2051.2	3092.7	2932.4	2869.4	2930.9	2113.0	1934.4	2129.2
19	2083.1	1997.1	1970.8	1935.9	2956.3	2840.0	2932.9	2924.9	2874.1	2822.1	1936.9	1925.0
20	2071.4	1893.2	1912.7	1927.9	2863.7	2867.5	2942.2	2967.1	2841.9	2939.2	1922.5	1940.6
21	3059.4	1901.2	1909.6	1936.6	2885.9	2869.3	2936.1	2960.0	2897.1	2911.2	1926.4	1836.6
22	2137.7	2849.5	2068.9	1913.8	2712.4	2896.1	2907.4	2972.2	2917.6	2916.7	2961.0	1849.9
23	2031.7	1933.6	1865.5	1904.9	2955.9	2899.3	2963.8	2948.7	2822.5	2920.5	2934.6	2135.8
24	3012.5	1916.1	1869.9	2869.4	2860.4	2893.9	2942.6	2960.3	2808.3	2913.1	2189.1	1891.1
25	2030.8	1914.2	1822.6	2832.9	2816.3	2894.3	2922.7	2974.0	1943.1	1860.9	2322.1	1889.4
26	2018.5	1897.3	1892.6	2832.9	2915.4	2842.2	2886.9	2867.9	2906.0	1851.4	1938.7	2036.1
27	2116.6	1878.6	1914.9	2246.9	2927.0	2873.7	2899.3	2925.6	1939.1	1858.3	1922.2	2055.3
28	2013.0	1898.3	1937.7	3669.4	2203.6	2878.8	2900.7	2914.1	2814.5	2966.0	2265.2	1891.2
29	2083.0		1946.6	1917.5	2857.9	2969.3	2888.8	2905.0	2840.4	1898.7	2397.1	1891.1
30	2016.2		1935.5	1932.5	2957.6	2958.0	2122.6	2882.4	2864.9	1916.3	2103.6	1899.3
31	1985.6		1862.2		2945.1		2885.5	2940.4		2781.6		1889.6

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
Monthly Minimum	1,920.9	1,854.1	1,822.6	1,764.6	1,905.6	2,840.0	2,122.6	2,314.1	1,939.1	1,851.4	1,891.9	1,836.6
Monthly Maximum	3,059.4	2,929.3	2,170.3	3,669.4	4,476.3	3,245.8	3,097.6	2,974.0	3,072.3	2,979.1	3,045.3	3,928.2
Monthly Average	2,102.7	2,043.6	1,945.6	2,066.6	2,730.3	2,963.3	2,861.3	2,898.5	2,832.3	2,527.6	2,355.1	2,180.4

Annual Minimum (L/s)	1,764.6
Annual Maximum (L/s)	4,476.3
Annual Average (L/s)	2,461.3

Note: (i) As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Lake Huron Water Treatment Plant cannot exceed 454.98 million litres/day. This converts to 5266 litres/second.

3. Treated Water Flow (ML/Day)

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
1	111.8	128.5	109.1	113.6	121.8	101.2	136.2	137.0	127.4	120.1	117.4	164.8
2	112.0	98.6	111.1	115.9	112.5	173.4	144.1	117.2	141.8	129.6	109.1	105.0
3	107.9	125.9	110.8	109.4	112.0	134.6	128.8	133.2	151.2	131.2	118.5	111.2
4	103.2	115.0	129.1	106.6	109.8	139.1	144.2	137.0	155.9	111.0	114.3	108.9
5	111.9	111.0	120.8	112.2	106.4	140.5	174.4	146.7	134.9	110.5	110.0	127.4
6	112.0	122.6	117.7	112.0	119.2	158.8	157.0	153.7	126.7	129.6	107.9	111.6
7	111.9	114.2	110.0	118.4	101.2	179.8	145.2	140.0	142.0	114.4	131.5	120.0
8	111.9	111.2	124.1	120.0	127.2	141.9	124.0	138.6	137.8	134.1	122.1	57.2
9	112.0	92.7	124.9	110.7	122.0	137.7	134.9	122.9	133.4	117.3	66.0	159.9
10	108.2	129.8	112.0	120.0	104.0	148.3	126.7	136.5	135.8	115.5	161.8	126.5
11	109.3	113.2	121.7	117.8	123.1	164.6	124.7	105.3	130.3	103.8	125.6	113.8
12	112.0	112.0	111.0	107.4	106.6	170.6	124.4	160.0	133.6	122.6	117.1	112.4
13	112.0	108.7	121.9	116.2	129.2	156.7	113.7	140.2	131.2	122.9	120.5	111.3
14	112.0	109.4	106.2	114.8	128.0	138.7	120.8	133.8	148.8	112.8	121.3	111.4
15	106.3	112.1	110.1	115.3	133.5	132.5	136.2	140.5	146.4	122.0	128.8	129.1
16	101.6	110.4	116.3	105.2	128.5	152.6	146.5	133.3	113.3	92.9	65.3	111.4
17	100.9	107.7	118.0	108.5	133.6	159.0	130.3	137.1	174.2	132.7	157.3	111.0
18	109.6	111.6	112.9	111.5	145.0	160.6	130.2	140.5	139.9	121.5	105.9	111.0
19	104.2	111.3	124.2	111.0	169.4	135.3	156.9	125.9	155.9	124.6	110.7	109.8
20	110.9	117.5	118.2	120.0	167.6	146.3	137.2	157.9	134.9	128.0	123.9	111.9
21	85.2	110.5	122.8	118.1	195.4	130.0	144.6	159.7	141.1	117.1	116.6	106.7
22	133.3	121.2	116.7	109.1	169.5	133.1	134.7	152.4	136.9	127.3	139.1	98.0
23	112.0	116.7	119.7	112.2	141.2	143.0	144.1	150.3	123.7	125.2	93.0	111.3
24	127.6	128.1	116.8	133.9	149.1	144.3	148.5	145.2	118.9	106.3	169.3	111.7
25	111.8	112.1	118.8	114.8	176.4	150.2	137.4	156.8	115.7	120.3	115.8	103.4
26	109.0	116.7	115.5	123.1	125.8	141.1	139.6	127.9	120.5	105.3	107.8	92.8
27	102.2	110.8	113.4	121.3	155.9	130.4	129.2	169.2	105.6	131.9	111.4	91.0
28	100.9	110.7	114.3	105.6	128.7	132.7	139.5	155.9	137.1	118.7	125.2	109.3
29	120.1		109.3	111.2	109.9	125.8	139.4	159.4	148.4	116.0	137.6	111.3
30	112.2		114.0	111.5	122.0	147.5	123.2	127.7	130.4	112.2	62.9	111.3
31	112.1		110.9		158.9		141.0	140.7		119.9		108.2
Monthly Total	3407.8	3190.1	3602.4	3427.2	4133.3	4350.1	4257.5	4382.3	4073.8	3697.3	3513.6	3480.6

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
Monthly Minimum	85.2	92.7	106.2	105.2	101.2	101.2	113.7	105.3	105.6	92.9	62.9	57.2
Monthly Maximum	133.3	129.8	129.1	133.9	195.4	179.8	174.4	169.2	174.2	134.1	169.3	164.8
Monthly Average	109.9	113.9	116.2	114.2	133.3	145.0	137.3	141.4	135.8	119.3	117.1	112.3

Annual Total (ML)	45515.8
Annual Minimum (ML)	57.2
Annual Maximum (ML)	195.4
Annual Average (ML)	124.7

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 340.0 million litres/day. The maximum daily volume of treated water that flows from the treatment plant into the distribution system shall not exceed this value.

4. Treated Water Instantaneous Peak Flow (L/s)

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
1	1336.2	2134.8	1326.2	1686.3	1851.3	2543.8	2152.9	2161.9	2121.3	2167.5	1759.8	2220.6
2	1337.3	1868.3	1912.3	1676.3	1355.4	2573.1	2355.0	2289.5	2199.2	2167.7	1851.2	1325.0
3	1328.2	1811.9	1994.7	1635.5	1332.9	2664.6	2159.6	2193.6	2279.4	2164.1	1997.0	1329.4
4	1334.0	1779.1	2000.3	1625.3	1815.0	2586.7	2494.0	2260.2	2291.7	1325.0	1933.8	1338.4
5	1438.0	1706.7	1922.5	1601.7	1924.7	2189.1	2711.9	2312.0	2266.9	1431.3	2014.0	2141.6
6	1335.2	1719.1	1722.5	1642.2	1782.5	2622.7	2716.4	2737.8	2287.3	2129.2	2157.3	1329.5
7	1332.9	1742.8	1533.9	1943.9	1662.7	2220.6	2236.3	2289.5	2543.8	2116.7	2280.4	2150.6
8	1332.9	1633.3	1883.0	1984.7	1870.6	2208.4	2119.0	2272.5	2515.5	2209.3	2257.9	2190.0
9	1338.4	2192.4	1887.5	1913.4	1897.7	2195.8	2170.9	2290.5	2140.5	2138.1	2180.0	2211.6
10	1336.2	2181.0	1332.9	1584.7	1997.0	2597.8	2236.3	2277.1	2155.2	2156.1	2230.8	2148.3
11	1338.4	2026.3	1887.4	1582.6	1837.7	2612.5	2211.6	2519.9	2250.0	1244.7	2213.8	1765.4
12	1335.2	1355.4	1337.3	1601.7	1798.3	2652.0	3030.9	2687.0	2180.0	2164.1	2185.5	1337.3
13	1323.8	1335.2	1906.6	1684.1	1892.0	2727.7	2106.6	2690.4	2251.0	2123.5	2118.9	1329.4
14	1330.6	1326.2	1329.4	2963.9	1853.5	2220.6	2337.0	2056.9	2289.5	2182.2	2123.5	1326.2
15	1330.6	1341.9	1713.4	1653.7	1840.2	2257.9	2177.7	2166.6	2653.2	2147.1	2136.9	2210.4
16	1318.1	1329.4	1831.0	1653.7	1855.9	2294.0	2538.0	2285.0	2646.5	1243.6	2109.8	1343.1
17	1336.2	1348.6	1887.4	1677.3	1869.4	2274.8	2157.4	2263.4	2664.6	2120.1	2193.5	1331.0
18	1336.2	1326.2	1945.0	1339.6	1864.8	2286.1	2233.2	2250.0	2216.1	2003.9	1334.0	1331.0
19	2091.9	1347.5	1777.8	1335.2	2722.1	2295.1	2223.0	2733.3	2432.9	2039.9	1323.8	1338.4
20	2098.7	1861.3	1800.6	1921.4	2748.0	2296.3	2191.3	2689.2	2327.8	2224.0	1965.3	1349.8
21	2172.0	1338.4	1847.9	1923.6	2746.9	2236.3	2213.8	2257.9	2300.7	2156.1	1961.9	1327.3
22	2138.2	2004.9	1917.8	1336.2	2192.4	2677.0	2217.1	2262.4	2187.8	2134.7	2182.2	1946.2
23	1334.0	1929.2	1689.7	1344.2	2389.0	2662.4	2726.6	2279.4	2253.4	2189.0	2169.8	1348.6
24	2117.9	1945.0	1703.2	2161.9	2394.6	2201.5	2731.0	2215.2	2270.3	2170.9	2219.4	1334.0
25	1335.2	1336.2	1659.3	2047.8	2208.2	2209.3	2192.4	2619.4	1964.2	1948.4	2072.6	1338.4
26	1344.2	1878.4	1852.4	2183.3	2184.4	2202.5	2182.2	2637.5	2205.0	2040.9	1332.9	1310.2
27	1328.2	1322.7	1649.1	1737.4	2216.1	2233.0	2259.0	2583.3	1346.4	1928.0	1361.1	1316.0
28	1335.2	1323.8	1852.3	1343.1	2137.0	2252.2	2226.2	2597.9	2231.8	2201.4	2135.9	1328.2
29	1953.0		1321.5	1345.3	2093.1	2194.8	2737.8	2256.7	2253.4	1860.3	2141.6	1331.7
30	1326.2		1758.6	1754.3	1886.3	2138.2	2166.4	2173.1	2237.5	1815.0	2030.9	1335.2
31	1336.2		1766.6		2484.8		2236.3	2169.9		2165.2		1336.2

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
Monthly Minimum	1,318.1	1,322.7	1,321.5	1,335.2	1,332.9	2,138.2	2,106.6	2,056.9	1,346.4	1,243.6	1,323.8	1,310.2
Monthly Maximum	2,172.0	2,192.4	2,000.3	2,963.9	2,748.0	2,727.7	3,030.9	2,737.8	2,664.6	2,224.0	2,280.4	2,220.6
Monthly Average	1,484.2	1,658.8	1,740.3	1,729.5	2,022.7	2,377.6	2,337.0	2,370.3	2,265.4	2,003.5	1,999.2	1,558.0

Annual Minimum (L/s)	1,243.6
Annual Maximum (L/s)	3,030.9
Annual Average (L/s)	1,963.3

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 340.0 million litres/day. This converts to 3935 litres/second. The maximum daily volume of treated water that flows from the treatment plant into the distribution system shall not exceed this value.

Appendix B – 2021 Annual Report

Ontario

Drinking-Water Systems Regulation O. Reg. 170/03

Drinking-Water System Number:	210000791
Drinking-Water System Name:	**Lake Huron Primary Water Supply System**
Drinking-Water System Owner:	Lake Huron Primary Water Supply System Joint Board of Management
Drinking-Water System Operating Authority:	Ontario Clean Water Agency (OCWA)
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2021 through December 31, 2021

Complete if your Category is Large Municipal Residential or Small Municipal Residential	**Complete for all other Categories.**
Does your Drinking-Water System serve more than 10,000 people? **Yes [X] No [ ]** **Is your annual report available to the public at no charge on a web site on the Internet?** **Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** Lake Huron and Elgin Area Water Supply Systems c/o Regional Water Supply Division 235 North Centre Road, Suite 200 London, ON N5X 4E7 https://huronelginwater.ca/ Lake Huron Water Treatment Plant 71155 Bluewater Hwy. Grand Bend, ON	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** **Yes [ ] No [ ]**

Ontario

Drinking-Water Systems Regulation O. Reg. 170/03

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Systems that receive their drinking water from the LHPWSS:

Drinking Water System Name	Drinking Water System Number
City of London	260004917
Municipality of Bluewater	260006542
Municipality of Lambton Shores (East Lambton Shores Water Distribution System)	260006568
Township of Lucan Biddulph	260003071
Municipality of Middlesex Centre (Middlesex Centre Distribution System)	260004202
Municipality of North Middlesex	260006529
Municipality of Strathroy-Caradoc (Strathroy-Caradoc Distribution System)	260080106
Municipality of South Huron (South Huron Water Distribution System)	220001520

Systems that may receive their drinking water from the LHPWSS:

Drinking Water System Name	Drinking Water System Number
Municipality of Lambton Shores (West Lambton Shores Distribution System) *Normally supplied by the Lambton Area Water Supply System (LAWSS) but a connection to the LHPWSS exists	260006581

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [X] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

- **[X] Public access/notice via the web**
- **[X] Public access/notice via Government Office**
- **[ ] Public access/notice via a newspaper**
- **[ ] Public access/notice via Public Request**
- **[ ] Public access/notice via a Public Library**
- **[ ] Public access/notice via other method _____**

Describe your Drinking-Water System

The Lake Huron Water Treatment Plant (WTP) employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, post-chlorination, and pH adjustment using sodium hydroxide to treat raw water obtained from Lake Huron. The WTP intake crib and raw water intake pipe have an estimated gross capacity of 454.6 Megalitres/day (MLD). The WTP rated capacity is 340.0 MLD.
A Residuals Management Facility (RMF) providing equalization, clarification, sediment thickening and dechlorination is also housed in the main complex. Thickened sediment is dewatered by centrifuges and the sediment is sent to the landfill for final disposal. Clarified and dechlorinated liquid streams are sent back to Lake Huron through the plant drain via the diversion chamber.
The transmission system is comprised of the McGillivray Booster Pumping Station and Reservoir, the Exeter-Hensall Booster Pumping Station and Reservoir, Arva Terminal Reservoir, Komoka-Mt. Brydges Booster Pumping Station (PS#4) and associated interconnecting transmission water mains, which includes the primary, Strathroy, Exeter-Hensall, and Komoka-Mt. Brydges transmission water mains.
The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system.

List all water treatment chemicals used over this reporting period

Filter Aid Polymer (on an as-required basis)
Aluminum Sulphate
Powder Activated Carbon
Chlorine Gas
Sodium Hydroxide
Sodium Hypochlorite (Exeter Hensall Pumping Station)
Dewatering Polymer (Residuals Management Facility)
Sodium Bisulphite (Residuals Management Facility)

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Capital Projects:

- High lift pump upgrades
- Coagulation system upgrades
- Low lift pump #1 motor replacement
- Easement clearing and boundary surveys

- Installed LED lighting in pipe gallery
- Filter surface sweep piping replacements
- Komoka-Mt. Brydges Pumping Station exterior sealants
- Safety railing replacements
- Backwash pump #2 and #3 check valve replacements
- Pipeline chamber rehabilitation – venting above grade
- Site drainage modifications and improvements
- Alum fill line replacement
- Overhead door replacement
- Raw water dissolved oxygen (DO) analyzer installation
- Ilderton flow meter replacement
- Clarifier #3 gear drive replacement
- Settled water and clearwell level meter installations
- RMF total suspended solids (TSS) analyzer installations
- Backwash turbidity analyzer installations
- Safety shower replacements
- Building Automation System (BAS) server replacement
- Obsolete equipment removals
- Grounding and bonding at Exeter-Hensall Monitoring Station #2 (EH2)
- North flocculation gear drive rebuild
- Low lift sluice gate rehabilitation
- Filter conduit interconnect sluice gate rehabilitation
- Clearwell sluice gate rehabilitation

Maintenance Projects:

- South clearwell and filter conduit concrete repairs
- Service water pump rehabilitation
- Pump bases (backwash and service water) rehabilitation
- Caustic soda metering pump replacement

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
July 13, 2021 Adverse Water Quality Incident (AWQI) #154634	Filter effluent turbidity	Two samples on filter #6 taken 15 minutes apart were each >1.0 NTU	NTU	Collected microbiological samples from filter #6 effluent, south clearwell and treated water on July 13th and 14th. All sample results were good.	July 13th and July 14th

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

Location	Number of Samples	Range of E. coli Results (CFU/100mL) (min #)-(max #)	Range of Total Coliform Results (CFU/100mL) (min #)-(max #)	Range of HPC Results (CFU/1mL) (min #)-(max #)
Raw Water	104	(0)-(200)	(0)-(3800)	(<10)-(>2000)
Treated Water (WTP)	294	(0)-(0)	(0)-(0)	(<10)-(110)
Distribution (McGillivray PS)	58	(0)-(0)	(0)-(0)	(<10)-(10)
Distribution (North Exeter)	60	(0)-(0)	(0)-(0)	(<10)-(20)
Distribution (South Exeter)	54	(0)-(0)	(0)-(0)	(<10)-(20)
Distribution (Exeter-Hensall Reservoir)	56	(0)-(0)	(0)-(0)	(<10)-(10)
Distribution (Komoka-Mt. Brydges PS)	60	(0)-(0)	(0)-(0)	(<10)-(70)

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

Parameter	Number of Grab Samples	Range of Results (min #)-(max #)
Treated Water Free Chlorine (mg/L)	Continuous Monitoring	(0.78)-(2.00)
Treated Water Free Chlorine (mg/L)	2139	(0.98)-(1.71)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.026)-(2.00)
Treated Water Turbidity (NTU)	2139	(0.023)-(0.184)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.030)-(0.767)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.023)-(0.201)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.025)-(0.715)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.018)-(0.409)
Filter #5 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.021)-(0.218)
Filter #6 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.022)-(2.00)*
Filter #7 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.025)-(0.625)
Filter #8 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.022)-(0.149)
Filter #9 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.014)-(0.620)
Filter #10- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.029)-(1.88)*
Filter #11- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.011)-(0.924)
Filter #12- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.015)-(0.202)
Combined Filtered Water Turbidity (NTU)	2138	(0.010)-(0.176)

Please note:
*Filter #6 >1.0 NTU AWQI on July 13th.
*Filter #10 >1.0 NTU on February 12th at 06:05. There was no AWQI as the filter interlocked and was disabled.

Summary of Inorganic parameters tested during this reporting period
*(*All tests were conducted on treated water leaving the WTP unless otherwise noted)*

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	January 13, 2021	Not Detected	mg/L	NO
Arsenic	January 13, 2021	Not Detected	mg/L	NO
Barium	January 13, 2021	0.0146	mg/L	NO
Boron	January 13, 2021	0.014	mg/L	NO
Cadmium	January 13, 2021	0.000005	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Chromium	January 13, 2021	0.00022		NO
Lead (Komoka Mt-Brydges Monitoring Station #2)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.00001 0.00005 0.00010 0.00001	mg/L mg/L mg/L mg/L	NO
Mercury	January 13, 2021	Not Detected	mg/L	NO
Selenium	January 13, 2021	0.00012	mg/L	NO
Sodium	January 13, 2021	9.9	mg/L	NO
Uranium	January 13, 2021	0.000068	mg/L	NO
Fluoride	January 13, 2021	0.06	mg/L	NO
Nitrite	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.378 0.754 0.320 0.354	mg/L mg/L mg/L mg/L	NO

Summary of Organic parameters sampled during this reporting period or the most recent sample results

*(*All tests were conducted on treated water leaving the WTP unless otherwise noted)*

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	January 13, 2021	Not Detected	mg/L	NO
Atrazine + N-dealkylated metabolites	January 13, 2021	0.00003	mg/L	NO
Azinphos-methyl	January 13, 2021	Not Detected	mg/L	NO
Benzene	January 13, 2021	Not Detected	mg/L	NO
Benzo(a)pyrene	January 13, 2021	Not Detected	mg/L	NO
Bromoxynil	January 13, 2021	Not Detected	mg/L	NO
Carbaryl	January 13, 2021	Not Detected	mg/L	NO
Carbofuran	January 13, 2021	Not Detected	mg/L	NO
Carbon Tetrachloride	January 13, 2021	Not Detected	mg/L	NO
Chlorpyrifos	January 13, 2021	Not Detected	mg/L	NO
Diazinon	January 13, 2021	Not Detected	mg/L	NO
Dicamba	January 13, 2021	Not Detected	mg/L	NO
1,2-Dichlorobenzene	January 13, 2021	Not Detected	mg/L	NO
1,4-Dichlorobenzene	January 13, 2021	Not Detected	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
1,2-Dichloroethane	January 13, 2021	Not Detected	mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 13, 2021	Not Detected	mg/L	NO
Dichloromethane	January 13, 2021	Not Detected	mg/L	NO
2-4 Dichlorophenol	January 13, 2021	Not Detected	mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 13, 2021	Not Detected	mg/L	NO
Diclofop-methyl	January 13, 2021	Not Detected	mg/L	NO
Dimethoate	January 13, 2021	Not Detected	mg/L	NO
Diquat	January 13, 2021	Not Detected	mg/L	NO
Diuron	January 13, 2021	Not Detected	mg/L	NO
Glyphosate	January 13, 2021	Not Detected	mg/L	NO
Haloacetic Acids (HAA's) (Arva Reservoir)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	Not Detected 0.0057 0.0072 0.0158	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Arva Reservoir) Running Annual Average	2021	0.0071	mg/L	NO
Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	Not Detected 0.0186 0.0163 0.0100	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3) Running Annual Average	2021	0.0112	mg/L	NO
Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.0118 0.0122 0.0148 0.0076	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average	2021	0.0116	mg/L	NO
Haloacetic Acids (HAA's)	January 12, 2021 April 15, 2021	0.0139 0.0060	mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
(Strathroy-Caradoc Monitoring Station #2)	July 13, 2021 October 19, 2021	0.0077 0.0163	mg/L mg/L	
Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2) Running Annual Average	2021	0.0110	mg/L	NO
Malathion	January 13, 2021	Not Detected	mg/L	NO
2-Methyl-4-chlorophenoxyacetic acid	January 13, 2021	Not Detected	mg/L	NO
Metolachlor	January 13, 2021	Not Detected	mg/L	NO
Metribuzin	January 13, 2021	Not Detected	mg/L	NO
Monochlorobenzene	January 13, 2021	Not Detected	mg/L	NO
Paraquat	January 13, 2021	Not Detected	mg/L	NO
Pentachlorophenol	January 13, 2021	Not Detected	mg/L	NO
Phorate	January 13, 2021	Not Detected	mg/L	NO
Picloram	January 13, 2021	Not Detected	mg/L	NO
Polychlorinated Biphenyls (PCB)	January 13, 2021	Not Detected	mg/L	NO
Prometryne	January 13, 2021	Not Detected	mg/L	NO
Simazine	January 13, 2021	Not Detected	mg/L	NO
Total Trihalomethanes (Arva Reservoir)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.016 0.023 0.025 0.031	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (THMs) (Arva Reservoir) Running Annual Average	2021	0.024	mg/L	NO
Total Trihalomethanes (Exeter-Hensall Monitoring Station #3)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.034 0.034 0.037 0.047	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Exeter-Hensall Monitoring Station #3) Running Annual Average	2021	0.038	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.024 0.028 0.030 0.033	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average	2021	0.029	mg/L	NO
Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2)	January 12, 2021 April 15, 2021 July 13, 2021 October 19, 2021	0.019 0.025 0.027 0.036	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2) Running Annual Average	2021	0.027	mg/L	NO
Terbufos	January 13, 2021	Not Detected	mg/L	NO
Tetrachloroethylene	January 13, 2021	Not Detected	mg/L	NO
2,3,4,6-Tetrachlorophenol	January 13, 2021	Not Detected	mg/L	NO
Triallate	January 13, 2021	Not Detected	mg/L	NO
Trichloroethylene	January 13, 2021	Not Detected	mg/L	NO
2,4,6-Trichlorophenol	January 13, 2021	Not Detected	mg/L	NO
Trifluralin	January 13, 2021	Not Detected	mg/L	NO
Vinyl Chloride	January 13, 2021	Not Detected	mg/L	NO

NOTE: During 2021, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.