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, 2019 through December 31, 2019

Complete if your Category is Large Municipal Residential or Small Municipal Residential

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

Complete for all other Categories.

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 [ ]

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
[X] Public access/notice via other method ____News Release

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 where 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, the Arva Terminal Reservoir, the Komoka-Mt. Brydges Booster Pumping Station (PS#4) and the 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:

- Pipeline section replacement
- Instrumentation replacements
- Filter flow meter replacements
- North and South raw water flow meter replacements
- Filters #5 and #12 rebuilds
- Filters #5 and #12 backwash valve rebuilds

- Security upgrades
- Chemical fill panel installation
- Operations & Maintenance Manual updates
- Concrete crack injection
- Replacement of Uninterruptible Power Supply (UPS) and related breaker panels
- B-Line Monitoring Station relocation
- High lift pump #5 control valve installation
- Travelling screen wash water pipe replacement
- High lift pump #3 and #6 suction valves installation
- Sodium hydroxide (NaOH) pump system replacement
- Transient pressure monitoring system installation
- Chamber rehabilitation and improvements
- Sluice gate repairs – Clearwell 2 outlet
- Erosion control at the beach chamber
- Replaced Grand Bend flow meter

Maintenance Projects:

- Installed air release valve at Exeter-Hensall Pumping Station
- Installed grit pump variable frequency drive (VFD)
- Replaced filter effluent analyzers piping
- Installed Residuals Management Facility (RMF) transfer pump wear plates and lobes
- Various building envelope replacements and maintenance
- Drain and service water piping replacement
- Power cables replaced at Exeter-Hensall Pumping Station
- Chlorine line repair

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
August 7, 2019 AWQI #147116	E.coli and Total Coliforms	1 E.coli & 1 Total Coliforms	CFU/ 100 mL	Resampled and tested. All resample results were clear.	August 8, 2019 and August 9, 2019

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

	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	101	(0)-(100)	(0)-(12,500)	(<10)-(>2,000)
Treated Water (WTP)	224	(0)-(1)	(0)-(1)	(0)-(>2,000)
Distribution (McGillivray PS)	55	(0)-(0)	(0)-(0)	(<10)-(80)
Distribution (North Exeter)	55	(0)-(0)	(0)-(0)	(<10)-(340)
Distribution (South Exeter)	54	(0)-(0)	(0)-(0)	(<10)-(70)
Distribution (Exeter-Hensall Reservoir)	54	(0)-(0)	(0)-(0)	(<10)-(20)
Distribution (Komoka-Mt. Brydges PS)	53	(0)-(0)	(0)-(0)	(<10)-(40)

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	(0.61) – (1.97)
	2135	(0.77) - (1.58)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.010) – (2.00)
	2135	(0.021) - (0.171)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.014) - (0.842)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.012) -*(1.383)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019) - (0.575)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.020) - (0.167)

Filter #5 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017) - (0.870)
Filter #6 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019) - (0.396)
Filter #7 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017) - (0.817)
Filter #8 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.021) - (0.719)
Filter #9 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.014) - (0.704)
Filter #10- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.024) - (0.380)
Filter #11- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.014) - (0.792)
Filter #12- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019) - (0.452)
Combined Filtered Water Turbidity (NTU)	2135	(0.021) - (0.123)

*** On March 22nd, Filter #2 went above 1.0 NTU on two occasions due to filter related upgrades. Both events were above 1.0 NTU for less than 5 minutes, therefore both events were not reportable (not an adverse result).**

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 29, 2019	0.00012	mg/L	NO
Arsenic	January 29, 2019	Not Detected	mg/L	NO
Barium	January 29, 2019	0.0157	mg/L	NO
Boron	January 29, 2019	0.016	mg/L	NO
Cadmium	January 29, 2019	0.000003	mg/L	NO
Chromium	January 29, 2019	0.00012	mg/L	NO
Lead *(Komoka Mt-Brydges Monitoring Station #2)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	Not Detected Not Detected 0.00004 0.00002	mg/L mg/L mg/L mg/L	NO
Mercury	January 29, 2019	Not Detected	mg/L	NO
Selenium				

	January 29, 2019	0.00013	mg/L	NO
Sodium	January 29, 2019	10.2	mg/L	NO
Uranium	January 29, 2019	0.000072	mg/L	NO
Fluoride	January 29, 2019	0.07	mg/L	NO
Nitrite	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	1.11 1.29 0.341 0.278	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 29, 2019	Not Detected	mg/L	NO
Atrazine + N-dealkylated metabolites	January 29, 2019	0.00001	mg/L	NO
Azinphos-methyl	January 29, 2019	Not Detected	mg/L	NO
Benzene	January 29, 2019	Not Detected	mg/L	NO
Benzo(a)pyrene	January 29, 2019	Not Detected	mg/L	NO
Bromoxynil	January 29, 2019	Not Detected	mg/L	NO
Carbaryl	January 29, 2019	Not Detected	mg/L	NO
Carbofuran	January 29, 2019	Not Detected	mg/L	NO
Carbon Tetrachloride	January 29, 2019	Not Detected	mg/L	NO
Chlorpyrifos	January 29, 2019	Not Detected	mg/L	NO

Diazinon	January 29, 2019	Not Detected	mg/L	NO
Dicamba	January 29, 2019	Not Detected	mg/L	NO
1,2-Dichlorobenzene	January 29, 2019	Not Detected	mg/L	NO
1,4-Dichlorobenzene	January 29, 2019	Not Detected	mg/L	NO
1,2-Dichloroethane	January 29, 2019	Not Detected	mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 29, 2019	Not Detected	mg/L	NO
Dichloromethane	January 29, 2019	Not Detected	mg/L	NO
2-4 Dichlorophenol	January 29, 2019	Not Detected	mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 29, 2019	Not Detected	mg/L	NO
Diclofop-methyl	January 29, 2019	Not Detected	mg/L	NO
Dimethoate	January 29, 2019	Not Detected	mg/L	NO
Diquat	January 29, 2019	Not Detected	mg/L	NO
Diuron	January 29, 2019	Not Detected	mg/L	NO
Glyphosate	January 29, 2019	Not Detected	mg/L	NO
Haloacetic Acids (HAA's) *(Arva Reservoir)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	Not Detected 0.0164 0.0134 Not Detected	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) *(Arva Reservoir)* **Running Annual Average**	2019	0.0075	mg/L	NO
Haloacetic Acids (HAA's) *(Exeter-Hensall Monitoring Station #3)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.0197 0.0191 0.0206 0.0075	mg/L mg/L mg/L mg/L	NO

Haloacetic Acids (HAA's) *(Exeter-Hensall Monitoring Station #3)* **Running Annual Average**	2019	0.0167	mg/L	NO
Haloacetic Acids (HAA's) *(Komoka Mt-Brydges Monitoring Station #2)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.0121 0.0202 0.0177 0.0063	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) *(Komoka Mt-Brydges Monitoring Station #2)* **Running Annual Average**	2019	0.0141	mg/L	NO
Haloacetic Acids (HAA's) *(Strathroy-Caradoc Monitoring Station #2)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.0105 0.0168 0.0156 Not Detected	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) *(Strathroy-Caradoc Monitoring Station #2)* **Running Annual Average**	2019	0.0107	mg/L	NO
Malathion	January 29, 2019	Not Detected	mg/L	NO
2-Methyl-4-chlorophenoxyacetic acid	January 29, 2019	Not Detected	mg/L	NO
Metolachlor	January 29, 2019	Not Detected	mg/L	NO
Metribuzin	January 29, 2019	Not Detected	mg/L	NO
Monochlorobenzene	January 29, 2019	Not Detected	mg/L	NO
Paraquat	January 29, 2019	Not Detected	mg/L	NO
Pentachlorophenol	January 29, 2019	Not Detected	mg/L	NO
Phorate	January 29, 2019	Not Detected	mg/L	NO
Picloram	January 29, 2019	Not Detected	mg/L	NO
Polychlorinated Biphenyls (PCB)	January 29, 2019	Not Detected	mg/L	NO

Prometryne	January 29, 2019	Not Detected	mg/L	NO
Simazine	January 29, 2019	Not Detected	mg/L	NO
Total Trihalomethanes *(Arva Reservoir)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.015 0.024 0.028 0.020	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (THMs) *(Arva Reservoir)* **Running Annual Average**	2019	0.022	mg/L	NO
Total Trihalomethanes *(Exeter-Hensall Monitoring Station #3)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.031 0.033 0.045 0.035	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes *(Exeter-Hensall Monitoring Station #3)* **Running Annual Average**	2019	0.036	mg/L	NO
Total Trihalomethanes *(Komoka Mt-Brydges Monitoring Station #2)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.021 0.028 0.039 0.026	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes *(Komoka Mt-Brydges Monitoring Station #2)* **Running Annual Average**	2019	0.029	mg/L	NO
Total Trihalomethanes *(Strathroy-Caradoc Monitoring Station #2)*	January 30, 2019 April 29, 2019 July 25, 2019 October 24, 2019	0.018 0.026 0.029 0.023	mg/L mg/L mg/L mg/L	NO

Total Trihalomethanes *(Strathroy-Caradoc Monitoring Station #2)* **Running Annual Average**	2019	0.024	mg/L	NO
Terbufos	January 29, 2019	Not Detected	mg/L	NO
Tetrachloroethylene	January 29, 2019	Not Detected	mg/L	NO
2,3,4,6-Tetrachlorophenol	January 29, 2019	Not Detected	mg/L	NO
Triallate	January 29, 2019	Not Detected	mg/L	NO
Trichloroethylene	January 29, 2019	Not Detected	mg/L	NO
2,4,6-Trichlorophenol	January 29, 2019	Not Detected	mg/L	NO
Trifluralin	January 29, 2019	Not Detected	mg/L	NO
Vinyl Chloride	January 29, 2019	Not Detected	mg/L	NO

NOTE: *During 2019, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.*