



<b>Drinking-Water System Number:</b>	210000791
<b>Drinking-Water System Name:</b>	<b>Lake Huron Primary Water Supply System</b>
<b>Drinking-Water System Owner:</b>	Lake Huron Primary Water Supply System Joint Board of Management
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 1, 2013 through December 31, 2013

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

**Does your Drinking-Water System serve more than 10,000 people? Yes ☒ No ☐**

**Is your annual report available to the public at no charge on a web site on the Internet? Yes ☒ 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  
<http://www.watersupply.london.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:**

<b>Drinking Water System Name</b>	<b>Drinking Water System Number</b>
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) <small>*Normally supplied by the Lambton Area Water Supply System (LAWSS) but a connection to the LHPWSS exists</small>	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 ☒ No ☐

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

- ☒ Public access/notice via the web  
☒ 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 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.

The distribution 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)  
Acidified alum  
Powder activated carbon  
Dewatering polymer  
Chlorine gas  
Sodium Hydroxide  
Sodium Hypochlorite

**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:**

- Replaced three pieces of distressed pipe on the 48" primary pipeline
- 48" pipeline twinning project (construction of 7.9 km of pipeline)
- Inspection of 7.0 km of twinned 48" pipeline using Pure Technologies electromagnetic PipeDiver inspection tool
- Residue Management Facility (RMF) construction
- High Lift and Booster Pump flow & pressure tests
- HVAC upgrades at the Exeter Hensall Pump Station
- Installed new programmable logic controller (PLC)
- Filter optimization project
- Capacity testing project
- SCADA system data logging upgrades

**Maintenance:**

- Upgraded electrical systems on sludge thickeners
- Repaired clarifier #3 chain and idle sprocket
- Inspections and maintenance on Low Lift wet wells and pump wells
- Replaced packing glands on Exeter/Hensall Booster Pumps
- Back-up generator maintenance
- Crane inspections & maintenance
- Backflow preventer inspections & maintenance
- Elevator maintenance
- Slings and hoists maintenance
- Repairs to SCADA system
- Maintenance & cleaning of clarifiers
- Sensor & flow meter calibrations
- Gas detector calibration & maintenance
- Electrical upgrades to alum feeders #3 & #4
- Replaced regulator on chlorine gas system



- Electrical repairs to Low Lift Pumps #3 & #4
- Conducted underwater inspections of the clearwells, suction conduits, settled water conduits, filtered water conduits and reservoirs
- Camera inspection of the under drains on filter #10
- Repaired the tie breaker starter on Booster pump #2 at McGillivray Booster Pumping Station
- Replaced heaters in Pump Station #4
- Replaced and maintained uninterruptible power supply (UPS) systems
- Replaced control board in filter #10 backwash inlet valve
- Replaced actuators on 42" valves at the Arva Reservoir
- Replaced transmitter on flow meter at Exeter Hensall Pump Station
- Conducted underwater inspections of the raw water intake crib and plant drain
- Replaced PRV on treated water sample line
- Installed new isolation valves on gas chlorinators
- Fire extinguisher maintenance & inspections
- Installed & programmed new multilin on Booster pump #2 at McGillivray Booster Pumping Station
- Updated SCADA programming on service water diesel pump
- Installed new and repaired old unit heaters
- Repaired floc arms
- Replaced all surge tank safety valves

**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
March 18, 2013	Filtered Water Turbidity	>1.0 twice in 15mins	NTU	The event was caused by an analyzer signal fault that lasted 4mins. When the fault cleared the turbidity readings returned to normal.	March 18, 2013
June 21, 2013	Filtered Water Turbidity	>1.0 twice in 15mins	NTU	After the turbidity spikes the filter was taken out of service. A new sensor was installed on the turbidity analyzer, the sensor was calibrated and the filter was backwashed.	June 21, 2013

**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 #)
<b>Raw Water</b>	101	(0)-(130)	(0)-(46000)	(<10)-(>2000)
<b>Treated Water (WTP)</b>	248	(0)-(0)	(0)-(0)	(<10)-(>2000)



Distribution (Arva Reservoir)	10	(0)-(0)	(0)-(0)	(<10)-(<10)
Distribution (McGillivray PS)	62	(0)-(0)	(0)-(0)	(<10)-(1750)
Distribution (North Exeter)	56	(0)-(0)	(0)-(0)	(<10)-(770)
Distribution (South Exeter)	56	(0)-(0)	(0)-(0)	(<10)-(70)
Distribution (Exeter-Hensall Reservoir)	56	(0)-(0)	(0)-(0)	(<10)-(490)
Distribution (Komoka-Mt. Brydges)	53	(0)-(0)	(0)-(0)	(<10)-(100)

## 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	(0.24) – (2.00)
	2147	(0.92) – (2.20)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (2.00)
	2149	(0.013) – (0.213)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019) – (0.29)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (0.39)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (0.62)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.01) – (0.93)
Filter #5 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (0.39)
Filter #6 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.01) – (2.00)
Filter #7 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (0.56)
Filter #8 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.01) – (0.37)
Filter #9 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (0.53)
Filter #10 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.01) – (2.00)
Filter #11 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.02) – (0.98)
Filter #12 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.01) – (0.94)

**NOTE:** There were several instances in 2013 when the filtered water turbidity exceeded 1.00 NTU. These turbidity spikes were of short duration and were typically caused by an analyzer signal fault. Any filtered water or treated water turbidity spikes that were directly attributed to analyzer signal faults, analyzer calibration, maintenance, a power outage, or water treatment plant start-up were not included in the range of results.

Filtered effluent turbidity spikes greater than 1.00 NTU that exceeded fifteen minutes or spiked twice in fifteen minutes were reported to the Spills Action Centre as noted above.

## 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 24, 2013	0.00013	mg/L	NO
Arsenic	January 24, 2013	0.0004	mg/L	NO

<b>Barium</b>	January 24, 2013	0.0144	mg/L	NO
<b>Boron</b>	January 24, 2013	0.014	mg/L	NO
<b>Cadmium</b>	January 24, 2013	0.000004	mg/L	NO
<b>Chromium</b>	January 24, 2013	0.0008	mg/L	NO
<b>Lead</b>	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	0.00003 0.00007 0.00003 0.00003	mg/L mg/L mg/L mg/L	NO
<b>Mercury</b>	January 24, 2013	Not Detected	mg/L	NO
<b>Selenium</b>	January 24, 2013	Not Detected	mg/L	NO
<b>Sodium</b>	January 24, 2013	11.5	mg/L	NO
<b>Uranium</b>	January 24, 2013	0.000028	mg/L	NO
<b>Fluoride</b>	N/A	Not Tested	mg/L	---
<b>Nitrite</b>	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
<b>Nitrate</b>	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	0.286 1.08 0.419 0.325	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)*

<b>Parameter</b>	<b>Sample Date</b>	<b>Result Value</b>	<b>Unit of Measure</b>	<b>Exceedance</b>
<b>Alachlor</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Aldicarb</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Aldrin + Dieldrin</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Atrazine + N-dealkylated metabolites</b>	January 24, 2013	0.03	µg/L	NO
<b>Azinphos-methyl</b>	January 24, 2013	Not Detected	µg/L	NO

<b>Bendiocarb</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Benzene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Benzo(a)pyrene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Bromoxynil</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Carbaryl</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Carbofuran</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Carbon Tetrachloride</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Chlordane (Total)</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Chlorpyrifos</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Cyanazine</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Diazinon</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Dicamba</b>	January 24, 2013	Not Detected	µg/L	NO
<b>1,2-Dichlorobenzene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>1,4-Dichlorobenzene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Dichlorodiphenyltrichloroethane (DDT) + metabolites</b>	January 24, 2013	Not Detected	µg/L	NO
<b>1,2-Dichloroethane</b>	January 24, 2013	Not Detected	µg/L	NO
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Dichloromethane</b>	January 24, 2013	Not Detected	µg/L	NO
<b>2,4-Dichlorophenol</b>	January 24, 2013	Not Detected	µg/L	NO
<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Diclofop-methyl</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Dimethoate</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Dinoseb</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Diquat</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Diuron</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Glyphosate</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Heptachlor + Heptachlor Epoxide</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Lindane (Total)</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Malathion</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Methoxychlor</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Metolachlor</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Metribuzin</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Monochlorobenzene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Paraquat</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Parathion</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Pentachlorophenol</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Phorate</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Picloram</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Polychlorinated Biphenyls (PCB)</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Prometryne</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Simazine</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Total Trihalomethanes (Arva Reservoir)</b>	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	10.0 17.0 25.0 26.0	µg/L µg/L µg/L µg/L	NO



<b>Total Trihalomethanes</b> (Exeter-Hensall Monitoring Station #3)	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	19.0 26.0 40.0 44.0	µg/L µg/L µg/L µg/L	NO
<b>Total Trihalomethanes</b> (Komoka Mt-Brydges Monitoring Station #2)	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	14.0 19.0 29.0 32.0	µg/L µg/L µg/L µg/L	NO
<b>Total Trihalomethanes</b> (Strathroy-Caradoc Monitoring Station #2)	January 24, 2013 April 16, 2013 July 18, 2013 October 10, 2013	14.0 18.0 26.0 25.0	µg/L µg/L µg/L µg/L	NO
<b>Temephos</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Terbufos</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Tetrachloroethylene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>2,3,4,6-Tetrachlorophenol</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Triallate</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Trichloroethylene</b>	January 24, 2013	Not Detected	µg/L	NO
<b>2,4,6-Trichlorophenol</b>	January 24, 2013	Not Detected	µg/L	NO
<b>2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Trifluralin</b>	January 24, 2013	Not Detected	µg/L	NO
<b>Vinyl Chloride</b>	January 24, 2013	Not Detected	µg/L	NO

***NOTE:** During 2013, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.*