



Lake Huron
Primary Water Supply System

FAX

To: CAO/Clerk's Office
From: Regional Water Supply
Phone: (519) 930.3505
Fax: (519) 474.0451
Date: February 21, 2018

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Re: 2017 Annual Report

Please find the attached 2017 Annual Report for the Lake Huron Primary Water Supply System (LHPWSS). As required under Section 11 of O.Reg. 170/03, the LHPWSS is obligated to provide a copy of this report to all systems that are connected to and receive drinking water from this system.

This report has also been posted on the Regional Water Supply website at <https://huronequinwater.ca/> for public viewing. Copies will be made available upon request at the Regional Water Supply Office in London.

If you have any questions please feel free to contact our office.

Erin McLeod
Quality Assurance & Compliance Manager
Lake Huron Primary Water Supply System

[Faint administrative stamps and handwritten notes, including "City Clerk", "Subject", "No. 0513", "FEB 21 2018", "cc", and "2018-EO8"]

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

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| 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, 2017 through December 31, 2017 |

| | |
|--|---|
| <p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>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/</p> <p>Lake Huron Water Treatment Plant 71155 Bluewater Hwy. Grand Bend, ON</p> </div> | <p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input type="text" value="N/A"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Number of Interested Authorities you report to: <input type="text" value="N/A"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes <input type="checkbox"/> No <input type="checkbox"/></p> |
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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 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



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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, sludge thickening and dechlorination is also housed in the main complex where thickened sludge is dewatered by centrifuges and sludge cake 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 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)
 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?

- Install required equipment
 Repair required equipment
 Replace required equipment

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

Capital Projects:

- Electrical upgrade and primary transformers replacement
- Residuals Management Facility (RMF) HVAC upgrade
- Instrumentation replacements
- Travelling screen #2 replacement
- Low lift motors #3 and #4 replacement
- Installed chlorine tonner automatic actuators
- Filters #1 and #4 rebuilds



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- Distribution flow meter replacements
- Powder activated carbon (PAC) dust collector replacement
- SCADA hardware and software upgrade
- Concrete crack injection
- Drain piping replacement
- Distressed Pipe #32-48 replacement and Acoustic Fiber Optic (AFO) monitoring cable retrieval

Maintenance Projects:

- Low lift grit pump drain manifold and valves replacement
- Installed RMF sludge pump traps
- Gore Road pressure reducing valve (PRV) rebuild
- Reservoir hatch replacements (McGillivray and Arva Reservoir)
- Security camera replacement
- Replaced air relief valves at various chambers
- Air valve chamber restoration
- Installed new motors on powder activated carbon (PAC) pumps #1 and #3
- Replaced raw water sample pump
- Installed actuator on south centrifuge auger
- Installed new inlet pressure readouts at Monitoring Station #1 – Strathroy-Caradoc
- Backwash pump #1 rebuild
- Replaced chlorine injector quills at Exeter Hensall Pumping Station
- High pressure caustic soda pump rebuild and motor replacement
- PAC pump variable frequency drive (VFD) replacement
- Service water pump #2 rebuild
- Rebuilding of RMF sludge transfer pumps
- Modifications to generators to meet Technical Standards and Safety Authority (TSSA) requirements

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 |
|---------------|-----------|--------|-----------------|-------------------|------------------------|
| NA | NA | NA | NA | NA | NA |



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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)-(40,000) | (<10)-(>2,000) |
| Treated Water (WTP) | 250 | (0)-(0) | (0)-(0) | (<10)-(730) |
| Distribution (McGillivray PS) | 52 | (0)-(0) | (0)-(0) | (<10)-(20) |
| Distribution (North Exeter) | 52 | (0)-(0) | (0)-(0) | (<10)-(20) |
| Distribution (South Exeter) | 52 | (0)-(0) | (0)-(0) | (<10)-(10) |
| Distribution (Exeter-Hensall Reservoir) | 52 | (0)-(0) | (0)-(0) | (<10)-(110) |
| Distribution (Komoka-Mt. Brydges PS) | 52 | (0)-(0) | (0)-(0) | (<10)-(240) |

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 | (0.57) – (1.79) |
| | 2116 | (0.86) - (1.63) |
| Treated Water Turbidity (NTU) | Continuous Monitoring | (0.019) – (2.00) |
| | 2117 | (0.018) - (0.099) |
| Filter #1 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.007) - (0.306) |
| Filter #2 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.015) - (0.393) |
| Filter #3 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.021) - (0.249) |
| Filter #4 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.019) - (0.192) |
| Filter #5 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.021) - (0.255) |



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| Filter #6 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.019) - (0.186) |
| Filter #7 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.021) - (0.437) |
| Filter #8 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.017) - (0.165) |
| Filter #9 - Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.020) - (0.249) |
| Filter #10- Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.019) - (0.144) |
| Filter #11- Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.012) - (0.608) |
| Filter #12- Filtered Water Turbidity (NTU) | Continuous Monitoring | (0.009) - (0.723) |
| Combined Filtered Water Turbidity (NTU) | 2114 | (0.018) - (0.100) |

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 12, 2017 | 0.00012 | mg/L | NO |
| Arsenic | January 12, 2017 | 0.0002 | mg/L | NO |
| Barium | January 12, 2017 | 0.0148 | mg/L | NO |
| Boron | January 12, 2017 | 0.013 | mg/L | NO |
| Cadmium | January 12, 2017 | 0.000005 | mg/L | NO |
| Chromium | January 12, 2017 | 0.00065 | mg/L | NO |
| Lead (Komoka Mt- Brydges Monitoring Station #2) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | Not Detected 0.00005 Not Detected 0.00002 | mg/L mg/L mg/L mg/L | NO |
| Mercury | January 12, 2017 | Not Detected | mg/L | NO |
| Selenium | January 12, 2017 | 0.00011 | mg/L | NO |


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|-----------------|--|--|------------------------------|----|
| Sodium | January 12, 2017 | 11.4 | mg/L | NO |
| Uranium | January 12, 2017 | 0.000024 | mg/L | NO |
| Fluoride | NA | Not Tested | mg/L | -- |
| Nitrite | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | Not Detected Not Detected Not Detected Not Detected | mg/L mg/L mg/L mg/L | NO |
| Nitrate | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | 0.290 0.700 0.346 0.281 | 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 12, 2017 | Not Detected | mg/L | NO |
| Atrazine + N-dealkylated metabolites | January 12, 2017 | 0.00003 | mg/L | NO |
| Azinphos-methyl | January 12, 2017 | Not Detected | mg/L | NO |
| Benzene | January 12, 2017 | Not Detected | mg/L | NO |
| Benzo(a)pyrene | January 12, 2017 | Not Detected | mg/L | NO |
| Bromoxynil | January 12, 2017 | Not Detected | mg/L | NO |
| Carbaryl | January 12, 2017 | Not Detected | mg/L | NO |
| Carbofuran | January 12, 2017 | Not Detected | mg/L | NO |
| Carbon Tetrachloride | January 12, 2017 | Not Detected | mg/L | NO |
| Chlorpyrifos | January 12, 2017 | Not Detected | mg/L | NO |
| Diazinon | January 12, 2017 | Not Detected | mg/L | NO |
| Dicamba | January 12, 2017 | Not Detected | mg/L | NO |
| 1,2-Dichlorobenzene | January 12, 2017 | Not Detected | mg/L | NO |
| 1,4-Dichlorobenzene | January 12, 2017 | Not Detected | mg/L | NO |
| 1,2-Dichloroethane | January 12, 2017 | Not Detected | mg/L | NO |


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|---|--|--|------------------------------|----|
| 1,1-Dichloroethylene (vinylidene chloride) | January 12, 2017 | Not Detected | mg/L | NO |
| Dichloromethane | January 12, 2017 | Not Detected | mg/L | NO |
| 2-4 Dichlorophenol | January 12, 2017 | Not Detected | mg/L | NO |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | January 12, 2017 | Not Detected | mg/L | NO |
| Diclofop-methyl | January 12, 2017 | Not Detected | mg/L | NO |
| Dimethoate | January 12, 2017 | Not Detected | mg/L | NO |
| Diquat | January 12, 2017 | Not Detected | mg/L | NO |
| Diuron | January 12, 2017 | Not Detected | mg/L | NO |
| Glyphosate | January 12, 2017 | Not Detected | mg/L | NO |
| Haloacetic Acids (HAA's) (Arva Reservoir) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | Not Detected Not Detected 0.0074 0.0070 | mg/L mg/L mg/L mg/L | NO |
| Haloacetic Acids (HAA's) (Arva Reservoir) Annual Running Average | 2017 | 0.0036 | mg/L | NO |
| Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | Not Detected 0.0131 0.0173 0.0237 | mg/L mg/L mg/L mg/L | NO |
| Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3) Annual Running Average | 2017 | 0.0135 | mg/L | NO |
| Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | Not Detected Not Detected 0.0084 0.0158 | mg/L mg/L mg/L mg/L | NO |


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|---|--|----------------------------------|------------------------------|----|
| Total Trihalomethanes (Exeter-Hensall Monitoring Station #3) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | 0.026 0.024 0.046 0.054 | mg/L mg/L mg/L mg/L | NO |
| Total Trihalomethanes (Exeter-Hensall Monitoring Station #3) Running Annual Average | 2017 | 0.0375 | mg/L | NO |
| Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | 0.017 0.017 0.036 0.037 | mg/L mg/L mg/L mg/L | NO |
| Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average | 2017 | 0.0268 | mg/L | NO |
| Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | 0.017 0.017 0.033 0.031 | mg/L mg/L mg/L mg/L | NO |
| Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2) Running Annual Average | 2017 | 0.0245 | mg/L | NO |
| Terbufos | January 12, 2017 | Not Detected | mg/L | NO |
| Tetrachloroethylene | January 12, 2017 | Not Detected | mg/L | NO |
| 2,3,4,6- Tetrachlorophenol | January 12, 2017 | Not Detected | mg/L | NO |
| Triallate | January 12, 2017 | Not Detected | mg/L | NO |
| Trichloroethylene | January 12, 2017 | Not Detected | mg/L | NO |
| 2,4,6-Trichlorophenol | January 12, 2017 | Not Detected | mg/L | NO |
| Trifluralin | January 12, 2017 | Not Detected | mg/L | NO |
| Vinyl Chloride | January 12, 2017 | Not Detected | mg/L | NO |

NOTE: During 2017, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.


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|--|--|--|------------------------------|----|
| Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2) Annual Running Average | 2017 | 0.0061 | mg/L | |
| Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | Not Detected Not Detected 0.0089 0.0096 | mg/L mg/L mg/L mg/L | NO |
| Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2) Annual Running Average | 2017 | 0.0046 | mg/L | NO |
| Malathion | January 12, 2017 | Not Detected | mg/L | NO |
| 2-Methyl-4-chlorophenoxyacetic acid | January 12, 2017 | Not Detected | mg/L | NO |
| Metolachlor | January 12, 2017 | Not Detected | mg/L | NO |
| Metribuzin | January 12, 2017 | Not Detected | mg/L | NO |
| Monochlorobenzene | January 12, 2017 | Not Detected | mg/L | NO |
| Paraquat | January 12, 2017 | Not Detected | mg/L | NO |
| Pentachlorophenol | January 12, 2017 | Not Detected | mg/L | NO |
| Phorate | January 12, 2017 | Not Detected | mg/L | NO |
| Picloram | January 12, 2017 | Not Detected | mg/L | NO |
| Polychlorinated Biphenyls (PCB) | January 12, 2017 | Not Detected | mg/L | NO |
| Prometryne | January 12, 2017 | Not Detected | mg/L | NO |
| Simazine | January 12, 2017 | Not Detected | mg/L | NO |
| Total Trihalomethanes (Arva Reservoir) | January 12, 2017 April 13, 2017 July 17, 2017 October 5, 2017 | 0.014 0.016 0.030 0.027 | mg/L mg/L mg/L mg/L | NO |
| Total Trihalomethanes (THMs) (Arva Reservoir) Running Annual Average | 2017 | 0.0218 | mg/L | NO |