



<b>Drinking-Water System Number:</b>	<b>210000906</b>
<b>Drinking-Water System Name:</b>	Lambton Area Water Supply System
<b>Drinking-Water System Owner:</b>	Lambton Area Water Supply System Joint Board of Management
<b>Drinking-Water System Category:</b>	Large Municipal Residential System
<b>Period being reported:</b>	January 1, 2016 to December 31, 2016



<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ X ] No [ ]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ X ] No [ ]</p> <p>The report is available at: <a href="http://www.lawss.org">www.lawss.org</a></p>	<p><b><u>Complete for all other Categories.</u></b></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 [ ] No [ X ]</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 [ ] No [ X ]</p>
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**Locations where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.**

**Lambton Area Water Supply System**

1215 Fort St. Sarnia, ON  
N7V 1M1  
519-344-7429

**Sarnia City Hall**

255 N Christina St. Sarnia, ON  
N7T 7N2  
519-332-0330

**Village of Point Edward Municipal Office**

135 Kendall St. Pt. Edward, ON  
N7M 4G6  
519-337-3021

**St. Clair Civic Centre**

1155 Emily St. Mooretown, ON  
N0N 1M0  
519-867-2021

**Town Of Plympton-Wyoming Municipal Office**

546 Niagara St. Wyoming, ON  
N0N 1T0  
519-845-3939

**Township of Warwick Municipal Office**

6332 Nauvoo Rd. Watford, ON  
N0M 2S0  
519-849-3926

**Lambton Shores Municipal Office**

7883 Amtelecom Parkway Forest, ON  
N0N 1J0  
519-786-2335

**Township of Brooke-Alvinston Municipal Office**

3234 River St. P.O. Box 28 Alvinston, ON  
N0N 1A0  
519-898-2173



**This list shows all the Drinking-Water Systems, which receive all of their drinking water from the Lambton Area Water Supply System:**

<b>Drinking Water System Name</b>	<b>Drinking Water System Number</b>
Sarnia Distribution System	260003136
Village of Point Edward Distribution System	210000924
St. Clair Distribution System	260006464
Plympton-Wyoming Distribution System	260006594
Township of Warwick Distribution System	260001799
Alvinston Distribution System	260040170
Corporation of the Municipality of Lambton Shores Distribution System (receives only some of their water from LAWSS)	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**
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### Description of the Lambton Area Water Supply System

The Lambton Area Water Supply System (LAWSS) is a direct filtration facility with a maximum rated capacity of 181,844 m<sup>3</sup>/day. The Water Treatment Plant (WTP) uses chemically assisted filtration with disinfection. The facility consists of an intake system, a low lift pumping system, a treatment system and distribution pumping system that supplies water to seven different drinking water systems. Water is drawn into the plant (a zebra mussel chemical control system is available when needed) via a 1675 mm intake pipe, located approximately 100 m into the St. Clair River at a depth of 15 m. The water passes through travelling screens prior to entering the surge wells and pre-disinfection is utilized. Water flows to the low lift pump wet wells where a total of 4 vertical turbine pumps are located and used as needed. The water is then pumped to a common discharge header where a coagulant is added and then flash mixed. Powdered activated carbon (PAC) is also applied at this location when needed to control taste and odor problems. The water is then flocculated with polymer being added to the flocculation trains when needed. Water from the flocculators is then sent to be filtered by dual media filters (10 filters in total). The filter effluents combine into two clearwells via gravity where sodium hypochlorite is added. To increase the chlorine contact time, the treated water is diverted to two baffled reservoirs (in series with total capacity of 67460 m<sup>3</sup>). The water is fluoridated upon exiting the reservoirs. Six vertical turbine pumps are available for supplying water to the distribution system. The water treatment process and distribution components are controlled by a dedicated supervisory control and data acquisition (SCADA) computer system and are monitored by a certified operator 24 hours a day. Emergency generators powered by diesel are available at the WTP to keep the plant in operation should a power failure occur. The utility serves a large part of Lambton County and has about 250 km of water main of various size and materials. The LAWSS distribution system has three standpipes and one elevated tower. The East Lambton Booster Station has a water storage capacity of 9,000 m<sup>3</sup> and the West Lambton Pumping Station has 90,000 m<sup>3</sup> of water storage capacity. The booster stations are controlled and monitored from the WTP via the SCADA system. Backwash from the dual media filters is treated using a high rate clarification process (ACTIFLO). The clarified water is dechlorinated and then discharged to the St. Clair River and the settled material is sent to the Sarnia Water Pollution Control Plant for final treatment and disposal. This system is referred to as the Residual Management System.

**Emergency Water Line connections exist between the LAWSS system and the following drinking water systems to provide water to either system in case of emergencies:**

Chatham-Kent: A connection exists at Whitebread Line and Highway #40

Petrolia: A connection exists at Confederation Line and Ploughing Match Rd.

Lambton Shores: A connection exists at Lakeshore Rd. and the Northwest corner of Ravenswood Rd.



**The following is a list of all water treatment chemicals used over this reporting period**

**Sodium Hypochlorite:** Pre and post disinfection  
**Hydrofluosilicic Acid:** Fluoridation  
**Clar+Ion A7:** Coagulation  
**Powdered Activated Carbon:** Taste and Odor (when required)  
**Polymer 8103+:** Filter/Coagulant aid (when required)  
**Polymer Zetag 4120:** Residual Management System coagulant  
**Sodium Bisulfite:** Residual Management System dechlorination system

**Note: All water treatment chemicals are NSF/ANSI approved and certified.**

**There were significant expenses incurred to the following.**

- Install required equipment
- Repair required equipment
- Replace required equipment

**The following is a brief description and a breakdown of monetary expenses incurred.**

Backflow preventer installation at the water treatment plant	\$24,344
Turbidity effluent analyzer for the Residual Management System	\$5,404
New grit pump	\$19,120
Rebuild of actuators for Pipe Gallery (Part 2)	\$19,443
Rebuild of surge valve on pump header in high lift room (Valve 33)	\$8,798
Low Lift wet well clean out	\$18,774
Valve and actuator replacement for surface wash	\$33,912
Cathodic protection replacement for Reservoir 1 at WLPS	\$42,367
Replace PRV at Sombra Chamber	\$8,383
Airco Energy Saver at ELPS and WTP	\$1,797
Replacement of sewage pumps at WLPS	\$13,241
Purchase of PRV to place on hydrants	\$5,103
Tree removal at Indian Rd Tower	\$10,176
Chamber Repair and Hydrant Replacement (Zion Line)	\$18,717
New VFD on High Lift Pump #6	\$526,804
Savoy Street watermain replacement	\$601,848
Security upgrades (armour stone, fence, signs)	\$23,757
SCADA/PLC upgrades	\$37,992
Polymer system upgrades	\$438,720
Admin HVAC system	\$110,886
Watermain replacement-Zion Line	\$33,196
Chamber replacement-London Line	\$106,222

The following are 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
Nov 14, 2016	Treated Water- Total Coliform	1	cfu/100mL	Resampled	Nov 21, 2016

The below table shows 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 Or Fecal Results (min #) - (max #) Units: cfu /100 mL	Range of Total Coliform Results (min #)- (max #) Units: cfu /100 mL	Range of Background Results (min #)- (max #) Units: cfu /100 mL	Range of HPC Results (min #)- (max #) Units: cfu /100 mL
<b>Raw</b>	52	0-20	0-820	0-3200	N/A
<b>Treated</b>	53	0-0	0-1	0-2	<10-140

The table below shows operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
<b>Turbidity</b>	8760	0.00-5.0	NTU
<b>Chlorine</b>	8760	0.38-2.06	mg/L
<b>Fluoride</b>	8760	0.01-2.0	mg/L

Notes: Turbidity is measured on each filter effluent line at a frequency greater than is required under O. Reg 170/03 Schedule 6-5. Fluoride residual of 2.0 mg/L was caused by a probe replacement. Actual residual taken by hand was 0.57 mg/L.

The table below is a summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument. The three parameters on this list are a requirement for the Residual Management System.

Date of legal instrument issued	Parameter	Result Range	Unit of Measure
October 14, 2015	Total Suspended Solids	2-17	mg/L
October 14, 2015	Aluminum	0.023-0.318	mg/L
October 14, 2015	Total Chlorine Residual	0-0.04	mg/L

The table below is a summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
<b>Antimony</b>	May 11, 2016	<0.02	ppb	No
<b>Arsenic</b>	May 11, 2016	<0.2	ppb	No
<b>Barium</b>	May 11, 2016	13.9	ppb	No
<b>Boron</b>	May 11, 2016	12	ppb	No
<b>Cadmium</b>	May 11, 2016	0.004	ppb	No
<b>Chromium</b>	May 11, 2016	0.46	ppb	No
<b>Mercury</b>	May 11, 2016	<0.01	ppb	No
<b>Selenium</b>	May 11, 2016	0.23	ppb	No
<b>Sodium</b>	April 27, 2015	5.9	mg/L	No
<b>Uranium</b>	May 11, 2016	0.106	ppb	No
<b>Nitrite</b>	Nov 8, 2016	<0.003	mg/L	No
<b>Nitrate</b>	Nov 8, 2016	0.267	mg/L	No



The table below is a summary of lead testing under Schedule 15.1 during this reporting period

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

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
<b>Plumbing</b>	-	-	-	-
<b>Distribution</b>	40	<0.01-5.90	ppb	0

Note: The above results are for the total system that OCWA/LAWSS provide water to with the exception of Lambton Shores (samples done by CH2M Hill). Local results can be obtained by contacting the local municipal office.

The below table is a summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
<b>Alachlor</b>	May 11, 2016	<0.02	ppb	No
<b>Atrazine + N-dealkylated metabolites</b>	May 11, 2016	0.03	ppb	No
<b>Azinphos-methyl</b>	May 11, 2016	<0.05	ppb	No
<b>Benzene</b>	May 11, 2016	<0.32	ppb	No
<b>Benzo(a)pyrene</b>	May 11, 2016	<0.004	ppb	No
<b>Bromoxynil</b>	May 11, 2016	<0.33	ppb	No
<b>Carbaryl</b>	May 11, 2016	<0.05	ppb	No
<b>Carbofuran</b>	May 11, 2016	<0.01	ppb	No
<b>Carbon Tetrachloride</b>	May 11, 2016	<0.16	ppb	No
<b>Chlorpyrifos</b>	May 11, 2016	<0.02	ppb	No
<b>Cyanazine</b>	May 11, 2016	<0.03	ppb	No
<b>Atrazine</b>	May 11, 2016	.02	ppb	No
<b>Desethyl atrazine</b>	May 11, 2016	0.02	ppb	No
<b>Diazinon</b>	May 11, 2016	<0.02	ppb	No
<b>Dicamba</b>	May 11, 2016	<0.2	ppb	No
<b>1,2-Dichlorobenzene</b>	May 11, 2016	<0.41	ppb	No
<b>1,4-Dichlorobenzene</b>	May 11, 2016	<0.36	ppb	No
<b>1,2-Dichloroethane</b>	May 11, 2016	<0.35	ppb	No
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	May 11, 2016	<0.33	ppb	No
<b>Dichloromethane</b>	May 11, 2016	<0.35	ppb	No



<b>2-4 Dichlorophenol</b>	May 11, 2016	<b>&lt;0.15</b>	<b>ppb</b>	No
<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	May 11, 2016	<b>&lt;0.19</b>	<b>ppb</b>	No
<b>Diclofop-methyl</b>	May 11, 2016	<b>&lt;0.4</b>	<b>ppb</b>	No
<b>Dimethoate</b>	May 11, 2016	<b>&lt;0.03</b>	<b>ppb</b>	No
<b>Diquat</b>	May 11, 2016	<b>&lt;1.0</b>	<b>ppb</b>	No
<b>Diuron</b>	May 11, 2016	<b>&lt;0.03</b>	<b>ppb</b>	No
<b>Glyphosate</b>	May 11, 2016	<b>&lt;1.0</b>	<b>ppb</b>	No
<b>Malathion</b>	May 11, 2016	<b>&lt;0.02</b>	<b>ppb</b>	No
<b>MCPA</b>	May 11, 2016	<b>&lt;.00012</b>	<b>ppm</b>	No
<b>Metolachlor</b>	May 11, 2016	<b>&lt;0.01</b>	<b>ppb</b>	No
<b>Metribuzin</b>	May 11, 2016	<b>&lt;0.02</b>		No
<b>Monochlorobenzene</b>	May 11, 2016	<b>&lt;0.3</b>	<b>ppb</b>	No
<b>Paraquat</b>	May 11, 2016	<b>&lt;1.0</b>	<b>ppb</b>	No
<b>Pentachlorophenol</b>	May 11, 2016	<b>&lt;0.15</b>	<b>ppb</b>	No
<b>Phorate</b>	May 11, 2016	<b>&lt;0.01</b>	<b>ppb</b>	No
<b>Picloram</b>	May 11, 2016	<b>&lt;1.0</b>	<b>ppb</b>	No
<b>Polychlorinated Biphenyls(PCB)</b>	May 11, 2016	<b>&lt;0.04</b>	<b>ppb</b>	No
<b>Prometryne</b>	May 11, 2016	<b>&lt;0.03</b>	<b>ppb</b>	No
<b>Simazine</b>	May 11, 2016	<b>&lt;0.01</b>	<b>ppb</b>	No
<b>THM</b> (NOTE: show latest annual average)	May 11, 2016	<b>36.75</b>	<b>ppb</b>	No
<b>Terbufos</b>	May 11, 2016	<b>&lt;0.01</b>	<b>ppb</b>	No
<b>Tetrachloroethylene</b>	May 11, 2016	<b>&lt;0.35</b>	<b>ppb</b>	No
<b>2,3,4,6-Tetrachlorophenol</b>	May 11, 2016	<b>&lt;0.2</b>	<b>ppb</b>	No
<b>Triallate</b>	May 11, 2016	<b>&lt;0.01</b>	<b>ppb</b>	No
<b>Trichloroethylene</b>	May 11, 2016	<b>&lt;0.44</b>	<b>ppb</b>	No
<b>2,4,6-Trichlorophenol</b>	May 11, 2016	<b>&lt;0.25</b>	<b>ppb</b>	No
<b>Trifluralin</b>	May 11, 2016	<b>&lt;0.02</b>	<b>ppb</b>	No
<b>Vinyl Chloride</b>	May 11, 2016	<b>&lt;0.17</b>	<b>ppb</b>	No

Below is a list of any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
N/A			