



<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, 2021 to December 31, 2021



<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
Municipality of Lambton Shores (West Lambton Shores Water Distribution System)	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 when needed. Polymer can be added to any and all of the following as required: to the flocculation trains, filter inlet channels and each filter. 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 (ELBS) has a water storage capacity of 9,000 m<sup>3</sup> and the West Lambton Pumping Station (WLPS) 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.**

Replace 5 Chlorine On-Line Analyzers	\$ 5,682
Gearbox Refurb at Floc Tanks (1 left)	\$ 20,414
Rotork Filter to Waste Replacement (2-yr)	\$ 12,723
ELBS Electrical Inspection - 3rd party contractor	\$ 5,912
Low Lift Wet Well Cleanout	\$ 14,659
Annual Energy Efficiency Upgrade Project	\$ 11,266
WLPS - Electrical Inspection - 3rd party contractor	\$ 12,109
Distribution - Hydrant Installation London Line (blow off)	\$ 14,196
Distribution - Chamber (flow) abandonment	\$ 17,567
WTP Main Plant HVAC Replacement	\$ 137,535
SCADA - Server Upgrade	\$ 66,237
Port Lambton Standpipe Rehabilitation	\$ 34,255
System - Asset Management Plan	\$ 68,048
SCADA - Filter Gallery Control Panel Upgrade (Design/Tendering)	\$ 41,832
LAWSS NOVA Chemical Supply Eval.	\$ 13,035
New Generators Replacement (Including air louvers)	\$ 3,249,848
WTP PLC Conversion/upgrade construction	\$ 7,217.17
5kV Motor Control Group A & B (Engineering)	\$ 519,037
WTP Main Plant HVAC Repair (Engineering Design)	\$ 83,148
WTP PLC Conversion/Upgrade Construction	\$ 35,929
System - Master Plan Rebuild	\$ 102,052
Water main Condition Assessment	\$ 12,293
Distribution Repairs	\$ 66,799
Major Maintenance	\$ 124,447

Valve Replacement	\$ 12,595
WTP - 3rd party electrical inspection	\$ 21,585
WTP - Sewage Pump Replacement	\$ 8,091

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
No incidents to report					

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	0-10	0-40	0-880	N/A
<b>Treated</b>	52	0	0-0	0	<10

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	0.036-0.122	NTU
<b>Chlorine</b>	8760	0.00-1.93	mg/L
<b>Fluoride</b>	8760	0.00-2.0	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 max residual of 2.0 mg/L was caused by testing of critical control alarm points.

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 7, 2020	Total Suspended Solids	3-30	mg/L
October 7, 2020	Aluminum	0.016-0.276	mg/L
October 7, 2020	Total Chlorine Residual	0-0.02	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
Antimony	May 3, 2021	<0.9	ppb	No
Arsenic	May 3, 2021	0.2	ppb	No
Barium	May 3, 2021	13.1	ppb	No
Boron	May 3, 2021	13	ppb	No
Cadmium	May 3, 2021	0.005	ppb	No
Chromium	May 3, 2021	0.31	ppb	No
Mercury	May 3, 2021	<0.01	ppb	No
Selenium	May 3, 2021	0.09	ppb	No
Sodium	May 4, 2020	6.56	mg/L	No
Uranium	May 3, 2021	0.119	ppb	No
Nitrite	Nov 1, 2021	<0.003	mg/L	No
Nitrate	Nov 1, 2021	0.378	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
Plumbing	-	-	-	-
Distribution	-	-	-	-

Note: Lead results are available from each Municipality from their annual results.



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
Alachlor	May 3, 2021	<0.02	ppb	No
Atrazine + N-dealkylated metabolites	May 3, 2021	0.03	ppb	No
Azinphos-methyl	May 3, 2021	<0.05	ppb	No
Benzene	May 3, 2021	<0.32	ppb	No
Benzo(a)pyrene	May 3, 2021	<0.004	ppb	No
Bromoxynil	May 3, 2021	<0.33	ppb	No
Carbaryl	May 3, 2021	<0.05	ppb	No
Carbofuran	May 3, 2021	<0.01	ppb	No
Carbon Tetrachloride	May 3, 2021	<0.17	ppb	No
Chlorpyrifos	May 3, 2021	<0.02	ppb	No
Atrazine	May 3, 2021	0.01	ppb	No
Desethyl atrazine	May 3, 2021	0.01	ppb	No
Diazinon	May 3, 2021	<0.02	ppb	No
Dicamba	May 3, 2021	<0.20	ppb	No
1,2-Dichlorobenzene	May 3, 2021	<0.41	ppb	No
1,4-Dichlorobenzene	May 3, 2021	<0.36	ppb	No
1,2-Dichloroethane	May 3, 2021	<0.35	ppb	No
1,1-Dichloroethylene (vinylidene chloride)	May 3, 2021	<0.33	ppb	No
Dichloromethane	May 3, 2021	<0.35	ppb	No
2,4 Dichlorophenol	May 3, 2021	<0.15	ppb	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	May 3, 2021	<0.19	ppb	No
Diclofop-methyl	May 3, 2021	<0.40	ppb	No
Dimethoate	May 3, 2021	<0.06	ppb	No
Diquat	May 3, 2021	<1	ppb	No
Diuron	May 3, 2021	<0.03	ppb	No
Glyphosate	May 3, 2021	<1	ppb	No
Malathion	May 3, 2021	<0.02	ppb	No
MCPA	May 3, 2021	<.00012	ppm	No
Metolachlor	May 3, 2021	<0.01	ppb	No
Metribuzin	May 3, 2021	<0.02	ppb	No
Monochlorobenzene	May 3, 2021	<0.3	ppb	No
Paraquat	May 3, 2021	<1	ppb	No
Pentachlorophenol	May 3, 2021	<0.15	ppb	No
Phorate	May 3, 2021	<0.01	ppb	No



<b>Picloram</b>	May 3, 2021	<1	<b>ppb</b>	No
<b>Polychlorinated Biphenyls(PCB)</b>	May 3, 2021	<0.04	<b>ppb</b>	No
<b>Prometryne</b>	May 3, 2021	<0.03	<b>ppb</b>	No
<b>Simazine</b>	May 3, 2021	<0.01	<b>ppb</b>	No
<b>HAA</b> (NOTE: show latest annual average)		22.83	<b>ppb</b>	No
<b>THM</b> (NOTE: show latest annual average)		39	<b>ppb</b>	No
<b>Terbufos</b>	May 3, 2021	<0.01	<b>ppb</b>	No
<b>Tetrachloroethylene</b>	May 3, 2021	<0.35	<b>ppb</b>	No
<b>2,3,4,6-Tetrachlorophenol</b>	May 3, 2021	<0.20	<b>ppb</b>	No
<b>Triallate</b>	May 3, 2021	<0.01	<b>ppb</b>	No
<b>Trichloroethylene</b>	May 3, 2021	<0.44	<b>ppb</b>	No
<b>2,4,6-Trichlorophenol</b>	May 3, 2021	<0.25	<b>ppb</b>	No
<b>Trifluralin</b>	May 3, 2021	<0.02	<b>ppb</b>	No
<b>Vinyl Chloride</b>	May 3, 2021	<0.17	<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.**

<b>Parameter</b>	<b>Result Value</b>	<b>Unit of Measure</b>	<b>Date of Sample</b>
<b>N/A</b>			