

**ELGIN-MIDDLESEX PUMPING STATION
CITY OF LONDON DISTRIBUTION SYSTEM
2016 COMPLIANCE REPORT
(Schedule 22 Summary Report)**

Facility Name: Elgin-Middlesex Pumping Station
City of London Distribution System

Mailing Address: Elgin Area Primary Water Supply System
P.O. Box 220
Port Stanley, ON N5L 1J4



Average Daily Flow 22,123 m³/day
Max. Daily Flow 32,642 m³/day
Source Water Elgin Area Primary Water Supply System

CONTACT INFO:

Contract Administration:
City of London
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Division Manager, Water Operations

Operator:
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System Approvals:

The City of London Distribution System is supplied water through the Elgin-Middlesex Pump Station, which receives water from the Elgin Area Primary Water Supply System located on Dexter Line, east of Port Stanley, Ontario. During the reporting period, the City of London Distribution System was operated pursuant to the approvals, licenses and permits listed below.

The supply and distribution of water to the system was governed by the following Municipal Drinking Water License (MDWL) and Drinking Water Works Permit (DWWP):

- o MDWL No. 006-101, issued on November 20, 2015
- o DWWP No. 006-201, issued on November 20, 2015

The DWWP and MDWL were issued in accordance with the *Safe Drinking Water Act (SDWA)*, 2002.



Treated Water Requirements:

Effective as of June 1, 2003 the Ontario government enacted new drinking water regulations under the *Safe Drinking Water Act, 2002*. The Drinking Water Systems Regulation (O.Reg. 170/03) replaced the Drinking Water Protection Regulation for Larger Waterworks (O. Reg. 459/00) and the Drinking Water Protection Regulation for Smaller Waterworks Serving Designated Facilities (O. Reg. 505/01).

Staff Complement and Training:

In 2016, the London facility at the Elgin-Middlesex Pump Station (EMPS) was operated and maintained under the operating authority, Ontario Clean Water Agency. The operational and maintenance staff are based at the Elgin Area Primary Water Supply System (EAPWSS) located east of Port Stanley, Ontario, and share their time between the two facilities.

Employees responsible for the operations and maintenance of the facility included one (1) Senior Operations Manager, (1) Compliance Manager, two (2) Team Leads, six (6) full time equivalent operations staff, three (3) full time equivalent maintenance staff and one (1) administrative assistant.

The Compliance Manager shares their work hours between the Lake Huron Primary Water Supply System (LHPWSS) and the Elgin Area Primary Water Supply System (EAPWSS).

In 2016, all employees received Director Approved and practical on-the-job training which contributed to annual MOECC training requirements.

History of Facility:

The EMPS is occupied by three booster stations that comprise an integrated booster station consisting of two in-ground storage reservoirs, each having a capacity of 27.3 million liters. The site upon which the three booster stations is situated is owned by the Elgin Area Primary Water Supply System and includes the original St. Thomas pump station, constructed in 1966, that services St. Thomas, and sections of the Municipalities of Central Elgin and Southwold. Two additional pump stations were completed in 1994 that service the Town of Aylmer, Township of Malahide, City of London, and Municipality of Central Elgin.

The London portion of the EMPS has three high-lift pumps, as well as a dedicated surge facility and delivers water into a transmission main that services the City of London Distribution System and the Municipality of Central Elgin.

Remote monitoring and control of all three pump stations is performed by staff at the Elgin Area Primary Water Supply System (EAPWSS) near Port Stanley. Remote monitoring and control capabilities are made possible via the EAPWSS and the Elgin-Middlesex Pumping Station (EMPS) SCADA systems.



Process Description:

The Elgin-Middlesex Pump Station (EMPS) receives treated water from the Elgin Area Primary



Water Supply System, which treats water at the water treatment plant located on the shores of Lake Erie to the east of Port Stanley. Water from the plant is pumped into the site reservoirs where it is subsequently fed via a series of headers to each of the pumping stations serving the City of London Distribution System, Aylmer Area Secondary Water Supply System, and the St. Thomas Area Secondary Water Supply System.

The London pump station has two pumps each having a rated capacity of 28.9 ML/d, and one pump with a rated capacity of 73.0 ML/d.

High Lift Pumping Station:

The three high lift pumps provide redundant pumping capacity into the City of London Distribution System. See Appendix B for 2016 Total Daily Flows and Appendix C for 2016 Daily Instantaneous Peak Flow Rates.

Maintenance:

Site maintenance was carried out by Ontario Clean Water Agency field services staff based at the Elgin Area Primary Water Supply System located near Port Stanley. Specialty maintenance services are provided, on an as needed basis by external service providers. All maintenance scheduling is monitored through a computerized maintenance management system.

In addition to the routine preventative maintenance program, a number of maintenance projects were completed at the EMPS. A summary of non-routine maintenance is available in Appendix D, the 2016 Annual Report.

Sampling Procedures:

All samples collected by licensed OCWA personnel are submitted to CALA accredited laboratories for both bacterial and chemical analysis.

Distribution water samples are taken twice per week at the inlet to the reservoir and submitted for bacteriological analysis. The distribution water entering the City of London's distribution system is sampled weekly and submitted to an external laboratory for bacteriological analysis. Chlorine residual, for the water entering all three distribution systems, is monitored continuously at the Elgin Area Primary Water Supply System by means of the SCADA system.

On a quarterly basis the distribution water entering the reservoir, as well as the water entering the City of London distribution system is sampled and submitted to an accredited laboratory for the testing of total trihalomethanes (THM), a disinfection by-product. Twice annually, the distribution water entering the reservoir is sampled and submitted to an accredited laboratory for testing of lead concentrations. All water quality sampling at the Elgin-Middlesex Pump Station was performed in accordance with Ontario Regulation 170/03.

Flow Measurement and Water Quality Monitoring:

Flow is measured at several points in the process utilizing calibrated flow metering devices. Chlorine residual levels are monitored by an on-line analyzer located at the point of entry into the City of London distribution system. These devices are calibrated and verified in 2016 by licensed OCWA staff and contractors. See Appendix A for a summary of 2016 water quality data.

Statement of Comparison:

The previous Certificate of Approval and new Municipal Drinking Water License for the City of London does not identify a rated capacity for the Elgin-Middlesex Pump Station. The pumping station has an available capacity of 95,800 m³/day, whereby instantaneous peak flow is 1109 L/s.

The maximum daily flow witnessed by the London system in 2016 was 32,642 m³/day, approximately 34% of the system's capacity. The average total daily flow witnessed by the system in 2016 was 22,123 m³/day, approximately 23% of the capacity.

The maximum instantaneous peak flow witnessed by the system in 2016 was 921 L/s, approximately 83% of the capacity. See Appendix B for 2016 total daily flow values and Appendix C for 2016 daily instantaneous peak flow rates.

Ministry of the Environment and Climate Change Inspections:

The Ontario Ministry of the Environment and Climate Change (MOECC) conducts an annual inspection of the City of London Distribution System, including the London portion of the Elgin-Middlesex Pump Station. A MOECC inspection took place in December 2016. The final inspection report was issued on January 10, 2017. There were no non-compliances identified in the inspection report. The final inspection rating received for the 2016-2017 reporting year was 96.05%.

Benefiting Municipalities:

Following the adoption of the Municipal Water and Sewer Transfer Act in 1997, the Ontario Ministry of the Environment and Climate Change transferred the ownership of the three booster stations from the Province of Ontario to the water systems' benefiting municipalities. As a result, the Aylmer Area Secondary Water Supply System portion of the EMPS and associated equipment is owned by the Aylmer Area Secondary Water Supply System Joint Board of Management, the London portion of the EMPS is owned by the Corporation of the City of London, and the St.Thomas Area Secondary Water System portion of the EMPS and associated appurtenances are owned by the St.Thomas Area Secondary Water Supply System Joint Board of Management. Jointly these water systems benefit, and are managed on behalf of, the communities of Aylmer, Central Elgin, London, Malahide, Southwold and St. Thomas. A list of municipalities that receive water directly and indirectly from the City of London Distribution System at the EMPS is provided in Appendix D. The Ontario Clean Water Agency operates and maintains the Elgin-Middlesex Pump Station, under contract to the Aylmer Area Secondary Water Supply System, The Corporation of the City of London and the St.Thomas Area Secondary Water Supply System, with these contracts being administered by the City of St.Thomas on behalf of the various water systems.

This report was prepared by Ontario Clean Water Agency, the Operating Authority for the London portion of the EMPS, on behalf of the City of London.

**APPENDIX A – 2016 WATER QUALITY
SUMMARY**

MONTH	POST TREATMENT
	Free Cl ₂ mg/L
January	
Minimum	0.70
Maximum	0.92
Average	0.83
February	
Minimum	0.71
Maximum	0.85
Average	0.79
March	
Minimum	0.66
Maximum	1.12
Average	0.76
April	
Minimum	0.61
Maximum	0.87
Average	0.74
May	
Minimum	0.57
Maximum	0.84
Average	0.71
June	
Minimum	0.60
Maximum	0.91
Average	0.76
July	
Minimum	0.56
Maximum	0.95
Average	0.79
August	
Minimum	0.51
Maximum	0.91
Average	0.74
September	
Minimum	0.58
Maximum	1.10
Average	0.80
October	
Minimum	0.67
Maximum	1.41
Average	0.90
November	
Minimum	0.57
Maximum	1.33
Average	0.91
December	
Minimum	0.72
Maximum	1.64
Average	0.88
Yearly Minimum	0.51
Yearly Maximum	1.64
Yearly Average	0.74

Note: Chlorine residuals obtained from SCADA.

Appendix D

2016 Annual Report



Drinking-Water System Number:	260004917
Drinking-Water System Name:	Elgin Middlesex Pumping Station – City of London Distribution System
Drinking-Water System Owner:	City of London
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2016 through December 31, 2016

<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 [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>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <table border="1" style="width: 100%;"> <tr> <td> City of London 300 Dufferin Ave London, ON N6B 1Z2 www.london.ca </td> </tr> <tr> <td> Elgin Area Water Treatment Plant 43665 Dexter Line, Union, ON </td> </tr> </table>	City of London 300 Dufferin Ave London, ON N6B 1Z2 www.london.ca	Elgin Area Water Treatment Plant 43665 Dexter Line, Union, ON	<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 [] No []</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 []</p>
City of London 300 Dufferin Ave London, ON N6B 1Z2 www.london.ca			
Elgin Area Water Treatment Plant 43665 Dexter Line, Union, ON			

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Systems that receive their drinking water directly from the London EMPS:

Drinking Water System Name	Drinking Water System Number
City of London Distribution System	260004917

Systems that receive their drinking water indirectly from the London EMPS:

Drinking Water System Name	Drinking Water System Number
Municipality of Central Elgin	260004761



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

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 _____

Describe your Drinking-Water System

The Elgin Middlesex Pumping Station (EMPS) receives water from the Elgin Area Primary Water Supply System, which is located to the east of Port Stanley. Through various secondary water supply systems, the EMPS serves the Cities of London and St. Thomas, Town of Aylmer, and Municipalities of Central Elgin, Malahide and Southwold.

The EMPS is a shared facility encompassing a twin celled reservoir with a total capacity of 54,600m³. Booster pumps are dedicated to directing water to the City of London, St. Thomas Secondary and/or Aylmer Secondary Water Supply Systems. The EMPS houses a surge facility to service the London transmission main.

Three pipelines exit the EMPS: one pipeline runs North along Highbury Avenue, servicing the London Distribution system; the second exits to the south of the EMPS property and extends West to service the St. Area Thomas Secondary System; the third exits to the South, to Highway 3 and then runs in an Easterly direction to service the municipalities on the Aylmer Area Secondary System.

List all water treatment chemicals used over this reporting period

No re-treatment of water destined for London took place at the EMPS in 2016.

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

- SCADA EMPS Study, \$5,000
- PLC Cabinet UPS Units Replacement, \$1,000
- Painting Pump #6 and Piping, \$4,000
- London Pump #4 and #5 Replacement, \$1,400,000



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
N/A	N/A	N/A	N/A	N/A	N/A

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/100 mL) (min #)-(max #)	Range of Total Coliform Results (CFU/100 mL) (min #)-(max #)	Number of Heterotrophic Plate Count (HPC) Samples	Range of HPC Results (CFU/1 mL) (min #)-(max #)
Distribution	52	(0) – (0)	(0) – (0)	52	(<10) – (66)

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 (Continuous Monitoring)	Min	Max	Avg
Free Chlorine Residual (mg/L)	8760	0.51	1.64	0.80

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (NOTE: result value is based on one sample)	January 5, 2016	12	µg/L	NO
	April 5, 2016	15	µg/L	
	July 5, 2016	21	µg/L	
	October 14, 2016	19	µg/L	
THM Running Annual Average (RAA)	2016	16.8	µg/L	NO