

ELGIN-MIDDLESEX PUMPING STATION
ST.THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
2013 COMPLIANCE REPORT
(Schedule 22 Summary Report)

Facility Name: Elgin-Middlesex Pumping Station -
St.Thomas Area Secondary Water Supply System

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



Average Daily Flow	5,360 m ³ /day
Max. Daily Flow	12,210 m ³ /day
Source Water	Elgin Area Primary Water Supply System

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System Approval:

The St.Thomas Area Water Supply System is supplied water through the Elgin-Middlesex Pump Station, which receives water from the Elgin Area Primary Water Supply System on Dexter Line, east of Port Stanley, Ontario. During the reporting period, The St.Thomas Area Secondary Water Supply 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 Licenses (MDWL) and Drinking Water Works Permits (DWWP):

St.Thomas Area Secondary Water Supply System

- MDWL No. 190-101, issued on July 30, 2012
- DWWP No. 190-201, issued on August 31, 2011

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 2013, the St.Thomas facilities 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 in 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, five (5) 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 2013, all employees received Director Approved and practical on-the-job training which contributed to annual MOE 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 1970 that service St.Thomas, and sections of the Municipalities of Central Elgin and Southwold. Two additional pump stations were completed in 1994 and service the City of London, as well as the Municipality of Malahide, Town of Aylmer, and the Municipality of Central Elgin.

The St.Thomas pump station is comprised of three high-lift pumps that deliver water through a transmission main that services the St.Thomas Area Secondary Water Supply System. A gas re-chlorination facility was commissioned at the Elgin- Middlesex Pump Station in 2010. This facility replaced the sodium hypochlorite system in providing re- chlorination for water being directed to the St.Thomas Area Secondary Water Supply System.



In the event of a power failure, an on-site generator can provide sufficient standby power to operate the facility and run the St.Thomas pumps.

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, Ontario. Remote monitoring and control capabilities are made possible via the EAPWSS and the EMPS SCADA systems.

Process Description:



The Elgin-Middlesex Pump Station (EMPS) receives treated water from the Elgin Area Primary Water Supply System, which pumps water from a water treatment plant located on the shores of Lake Erie to the east of Port Stanley. Water from the plant is pumped into the EMPS site reservoirs where it is subsequently fed via a series of headers to each of the pumping stations serving the Aylmer Area Secondary Water Supply System, the City of London Distribution System, and the St. Thomas Area Secondary Water Supply System.

The St. Thomas pump station has two duty pumps and one standby pump, all three pumps being fixed speed, each being rated at 316 L/s.

Post-Treatment:

Currently, the St. Thomas Area and Aylmer Area Secondary Water Supply System pump stations both utilize a gas re-chlorination facility. The facility was commissioned in December 2010 and consists of two scaled 150 lb gas chlorine cylinders and three chlorinators equipped with booster pumps. The three chlorinators redundantly serve the Aylmer Area Secondary Water Supply System (AASWSS) and St. Thomas Area Secondary Water Supply System (STASWSS) and have a pumping capacity of 1kg/h.

High Lift Pump Station:

The three high lift pump stations provide redundant pump capacity for the St. Thomas Area Secondary Water Supply System. See Appendix B for 2013 Total Daily Flows and Appendix C for 2013 Daily Instantaneous Peak Flows.

Maintenance:

Site maintenance was carried out by Ontario Clean Water Agency field services staff currently 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 in 2013. A summary of non-routine maintenance is available in Appendix D, the 2013 Annual Report.

Sampling Procedures:

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

A distribution water sample is taken twice per week at the inlet to the reservoir and submitted for bacteriological analysis. The distribution water entering the St.Thomas Area Secondary Water Supply System is sampled weekly and submitted to an external laboratory for bacteriological analysis. Chlorine residual, for the water entering the St.Thomas Area Secondary Water Supply System, is monitored continuously from 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 St.Thomas Area Secondary Water Supply System is sampled and submitted to an accredited laboratory for testing of Total Trihalomethanes (THMs), 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 is performed in accordance with Ontario Regulation 170/03.

Flow Measurement and Water Quality Monitoring:

Flow is measured in the process utilizing a flow measurement device. Chlorine residual levels are monitored by an on-line analyzer located at the point of entry into the St.Thomas Secondary Water Supply System. These devices were calibrated in 2013 by licensed OCWA staff and contractors. See Appendix A for a summary of 2013 water quality data.

Statement of Comparison:

The previous Certificate of Approval and new Municipal Drinking Water License for the St.Thomas Area Secondary Water Supply System does not identify a rated capacity for the system. The pumping station has an available capacity of 54,605 m³/day, whereby instantaneous peak flow is 632 L/s.

The maximum total daily flow witnessed by the system in 2013 was 12,210 m³/day, approximately 22% of the capacity. The average total daily flow witnessed by the system in 2013 was 5360 m³/day, approximately 10% of the capacity.

The maximum instantaneous peak flow witnessed by the system in 2013 was 595 L/s, approximately 94% of the capacity. See Appendix B for 2013 total daily flow values and Appendix C for 2013 daily instantaneous peak flow rates.

Ministry of the Environment Inspections:

The Ontario Ministry of the Environment (MOE) conducts an inspection of the St.Thomas portion of the Elgin-Middlesex Pumping Station annually. A MOE inspection took place in June 2013. The final inspection report was issued on August 8, 2013. A total of zero (0) non-compliance were identified in the inspection report. The final inspection rating received for the 2013-2014 reporting year was 100%.

Benefiting Municipalities:

Following the adoption of the Municipal Water and Sewer Transfer Act in 1997, the Ontario Ministry of the Environment 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 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 St.Thomas Area Secondary Water Supply System at the EMPS is provided in Appendix D. The Ontario Clean Water Agency currently 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, on behalf of the St.Thomas Area Secondary Water Supply System Joint Board of Management.