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St. Thomas Area Secondary Water Supply System

License Number: 190-101
Permit Number: 190-201

Provincial Regulation 170/03
Summary Report

For the Period
January 1, 2023 – December 31, 2023



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1 Summary Report Requirements

1.1 Introduction

The 2023 Summary Report for the St. Thomas Area Secondary Water Supply System (STASWSS) is being submitted to satisfy Schedule 22 of Ontario Regulation 170/03, the requirement to prepare and distribute a summary report of water system operations, outlining regulatory non-compliance with respect to water quality and water system management and administration and evaluating the water system infrastructure adequacy (with respect to its ability to continuing meeting the water demands of the serviced community).

As per Ontario Regulation 170/03, the summary report must:

- a. List the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and
- b. For each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement, to the flow rates specified in the written agreement.

The information provided is for the purpose of enabling the owner of the system to assess the capacity of the system. This report covers the reporting period from January 1, 2023 to December 31, 2023.

1.2 System Description

The STASWSS is supplied water from the Elgin Middlesex Pumping Station (EMPS) and Reservoir. The EMPS reservoir is filled by the Elgin Area Primary Water Supply System (EAPWSS) which obtains its water from Lake Erie and provides water treatment at the Elgin Area Primary Water Treatment Plant, located on Dexter Line, East of Port Stanley Ontario.

Operation and Maintenance of the EMPS- St. Thomas section is currently under contract with the Ontario Clean Water Agency (OCWA). The operation and maintenance of the associated transmission main and distribution system of the STASWSS is currently conducted by the City of St. Thomas – Environmental Services Dept.

The STASWSS is considered a distribution-only system, providing water directly to the City of St. Thomas and sections of the Southwold and Central Elgin Water Distribution Systems.

1.3 System Approvals and Regulatory Requirements

Operation and Maintenance of the STASWSS is governed by the Safe Drinking Water Act, 2002, and the regulations established under this Act. In accordance with the Safe Drinking Water Act, The Joint Board of Management of the St. Thomas Area Secondary Water Supply System holds a Municipal Drinking Water Licence and Drinking Water Works Permit, which provide approval for the establishment of drinking water infrastructure and provide the authority to operate and maintain said water system.

During the reporting period, The St. Thomas Area Secondary Water Supply System was operated pursuant to the approvals, licences and permits listed below:

- MDWL No. 190-101, issue 5
- DWWP No. 190-201, issue 3

Ontario Regulation 170/03 – Drinking Water Systems, governs the operation, maintenance, and water quality monitoring requirements for municipal drinking water systems in Ontario. Ontario Regulation 128/04 – Certification of Drinking Water System Operators and Water Quality Analysts sets out the requirements for persons performing operational or maintenance activities on the water system. The Safe Drinking Water Act, 2002 and the associated regulations are enforced by the Ministry of Environment, Conservation and Parks (MECP) and monitored through annual inspections by Ministry personnel. Any non-compliant conditions identified during the course of the annual inspection are listed in the Inspection Report issued at the conclusion of the inspection period and are summarized in section 4.1 of this report.

Ontario Regulation 169/03 – Ontario Drinking Water Quality Standards sets the limits for parameters of concern in drinking water. Drinking water quality is monitored by the Operating Authority and any exceedance of the Drinking Water Quality Standards must be reported to the MECP and Public Health Unit, verbally and in written form through the use of a Notice of Adverse Test Results and Issue Resolution Form. Any non-compliant conditions identified through water quality monitoring exercises over the reporting period have been documented on a Notice of Adverse Test Results and Issue Resolution Form and are summarized in section 4.2 of this report.

2 Evaluation of Water Quantities and Flow Rates

The EMPS is situated on a site 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 Municipality of Central Elgin and Township of 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 areas of 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 system provides re-chlorination for water being directed to the St. Thomas Area Secondary Water Supply System. The Ontario Clean Water Agency (OCWA) is currently the Operating Authority for all 3 pump stations located within the EMPS, and ultimately control the pumps directing water into the STASWSS.

OCWA has prepared a Summary Report for their operations at the EMPS for the reporting period, which evaluates the volumes of water delivered to the STASWSS. The report is attached as Appendix A.

3 Water Quality Summary

A summary of water quality testing completed by OCWA over the course of the reporting period is available as an appendix to the OCWA EMP Summary Report (Appendix A).

A summary of water quality testing completed by the City of St. Thomas – Environmental Services Dept. over the course of the reporting period is available in the Annual Report (Appendix B).

4 Summary of Non-Compliant Conditions

4.1 Ministry of the Environment, Conservation and Parks Inspection

The Ontario Ministry of the Environment, Conservation and Parks (MECP) conducts an inspection of the St. Thomas portion of the Elgin-Middlesex Pumping Station, operated by OCWA, annually along with the St. Thomas Area Secondary Water System, operated by the City of St. Thomas.

An MECP inspection was completed in November 2023. There were no non-compliances identified in the report. The systems resulting inspection risk rating was identified as 0% and an overall final inspection rating of 100%.

MECP Inspection Finding	O.A. Responsible	Action Taken
N/A	N/A	N/A

4.2 Adverse Test Results and Issue Resolution

Any non-compliant conditions identified through water quality monitoring exercises undertaken by St. Thomas Environmental Services over the reporting period, and actions taken are summarized in the table below.

Adverse Test Result (Date / Location)	O.A. Responsible	Action Taken
Prior to putting the new Ford Chamber back into service, a Free Chlorine Residual of <0.05 mg/L was recorded as a result of the portion of the transmission main from Southwold Chamber to the Ford Chamber being out of service for several months to facilitate the Ford Chamber replacement.	St. Thomas	The transmission main was flushed until a suitable Free Chlorine Residual was achieved prior to putting the new Ford Chamber into service.

5 List of Appendices

Appendix A – OCWA EMPS – St. Thomas Secondary Water Supply System – 2023 Summary Report

Appendix B - St. Thomas Secondary Water Supply System – 2023 Annual Report

APPENDIX A

**ELGIN-MIDDLESEX PUMPING STATION
ST. THOMAS AREA SECONDARY WATER SUPPLY
SYSTEM
2023 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 6,443 m³/day
Max. Daily Flow 10,766 m³/day
Source Water Elgin Area Primary Water Supply System

CONTACT INFO:

Contract Administration:
City of St. Thomas, City Hall
Environmental Services
545 Talbot Street, St. Thomas, ON N5P3V7
Contact: Mr. Kevin De LeeBeeck
Director of Environmental
Services and City Engineer

Operator:
Ontario Clean Water Agency.
P.O. Box 220, Port Stanley, Ontario N5L 1J4
Contact: Mr. Greg Henderson - Senior Operations Manager
(226) 378-5154

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System Approvals:

The St. Thomas Area Secondary Water Supply System (STASWSS) is supplied water through the Elgin-Middlesex Pump Station, which receives water from the Elgin Area Primary Water Supply System (EAPWSS) 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 is governed by the following Municipal Drinking Water Licenses (MDWL) and Drinking Water Works Permits (DWWP):

- MDWL No. 190-101, issue 5, on September 30, 2021
- DWWP No. 190-201, issue 3, on September 30, 2021

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

Treated Water Requirements:

The requirements fall under the Drinking Water Systems Regulation (O.Reg.170/03) and the Ontario Drinking Water Quality Standards (O.Reg.169/03) under the Safe Drinking Water Act, 2002.

Staff Complement and Training:

In 2023, the St. Thomas 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 EAPWSS and share their time between the two facilities. Employees responsible for the operations and maintenance of the facility included one (1) senior operations manager, two (2) team leads, eight (8) full time operations staff, four (4) full time maintenance staff, one (1) technical support specialist, one (1) asset maintenance specialist and four (4) administrative support positions.

In 2023, all employees received Director Approved and practical on-the-job training, which contributed to annual Ministry of the Environment, Conservation and Parks (MECP) training requirements.

History of Facility:

The EMPS is an integrated booster station occupied by three secondary systems, which are fed from two in-ground storage reservoirs, each having a capacity of 27.3 million liters. The two storage reservoirs and the site upon which the three booster stations are situated are owned by the EAPWSS. The original St. Thomas pump station, constructed in 1966 that services St. Thomas, and sections of the Municipalities of Central Elgin and Southwold. Two more pump stations were completed in 1994 that service the Town of Aylmer, Municipality of Malahide, and the City of London.

The STASWSS portion is comprised of three high-lift pumps that deliver water through a transmission main that services the STASWSS. A gas chlorination system provides secondary chlorination for water being directed to the STASWSS.

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

Process Description:



The EMPS receives treated water from the EAPWSS, 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 EAPWSS reservoirs located at the EMPS where it is subsequently fed via a series of headers to each of the pumping stations serving the Aylmer Area Secondary Water Supply System (AASWSS), the City of London Distribution System, and the STASWSS.

Post-Treatment:



The AASWSS and STASWSS both utilize a gas chlorination system for secondary disinfection. The system consists of two scaled 68 kg gas chlorine cylinders and three chlorinators equipped with booster pumps and a dosing capacity of 1-60kg/h.

High Lift Pump Station:



The three high lift pumps provide redundant pumping capacity into the STASWSS. The St. Thomas pumps are equipped with variable frequency drives (VFD) with each pump having a rated capacity of 263 L/s. With the current VFDs being utilized as soft and stop variable frequency drives.

Maintenance:

Site maintenance was carried out by Ontario Clean Water Agency (OCWA) field services staff based at the EAPWSS. 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 (Maximo).

In addition to the routine preventative maintenance program, several maintenance projects were completed at the EMPS in 2023. A summary of non-routine maintenance is available in Appendix D, the 2023 Annual Report.

Sampling Procedures:

All samples collected by licensed OCWA personnel are submitted to Canadian Association for Laboratory Accreditation (CALA) accredited laboratories for bacteriological 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 STASWSS is sampled weekly and submitted to an external laboratory for bacteriological analysis. Chlorine residual, for the water entering the STASWSS, is monitored continuously from the EAPWSS through the SCADA system.

On a quarterly basis the distribution water entering the reservoir, as well as the water entering the STASWSS is sampled and submitted to an accredited laboratory for testing of total trihalomethanes (THM) and haloacetic acids (HAA). 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 EMPS was performed in accordance with Ontario Regulation 170/03.

Water Quality Monitoring and Flow Measurement:

Water quality is monitored remotely by means of free chlorine analyzer that was verified by EAPWSS staff. See Appendix A for a summary of 2023 water quality data. Flow leaving the EMPS directed to STASWSS is measured utilizing a magnetic flow measuring device. See Appendix B for 2023 total daily flow values and Appendix C for 2023 daily instantaneous peak flow rates.

Statement of Comparison:

The previous Certificate of Approval and new Municipal Drinking Water License for the STASWSS does not identify a rated capacity for the system. The pumping station has an available capacity of 68,169m³/day, whereby instantaneous peak flow capacity is rated at 789 L/s.

The maximum total daily flow witnessed by the system in 2023 was 10,766 m³/day, approximately 16% of the capacity. The maximum instantaneous peak flow witnessed by the system in 2023 was 503 L/s, approximately 64% of the capacity. The average total daily flow witnessed by the system in 2023 was 6,443 m³/day, approximately 9% of the capacity.

Ministry of the Environment Conservation and Parks Inspections:

The MECP conducted an inspection of the St. Thomas portion of the EMPS annually along with the STASWSS operated by the City of St Thomas. A MECP inspection took place November 23, 2023 and the final inspection report was issued on January 25 2024. There were no non-compliances identified in the inspection report. The final inspection rating received for the 2022-2023 reporting year was 100.00%.

Benefiting Municipalities:

Following the adoption of the Municipal Water and Sewer Transfer Act in 1997, the Ontario Ministry of the Environment Conservation and Parks transferred the ownership of the three booster stations from the Province of Ontario to the water systems' benefiting municipalities. As a result, the AASWSS 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 STASWSS 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 STSWSS at the EMPS is provided in Appendix D.

The Ontario Clean Water Agency operates and maintains the EMPS, under contracts to the AASWSS, The Corporation of the City of London and the STASWSS.

This report was prepared by Ontario Clean Water Agency, the Operating Authority for the St. Thomas portion of the EMPS, on behalf of the St. Thomas Area Secondary Water Supply System Joint Board of Management.

**APPENDIX A – EMPS ST. THOMAS
WATER QUALITY SUMMARY 2023**

MONTH	POST TREATMENT	
	Free Cl ₂ mg/L	
January		
Minimum	0.85	
Maximum	1.62	
Average	1.37	
February		
Minimum	0.32	
Maximum	1.65	
Average	1.25	
March		
Minimum	0.65	
Maximum	1.77	
Average	1.42	
April		
Minimum	0.83	
Maximum	1.78	
Average	1.45	
May		
Minimum	0.94	
Maximum	1.63	
Average	1.46	
June		
Minimum	0.80	
Maximum	1.63	
Average	1.43	
July		
Minimum	0.79	
Maximum	2.14	
Average	1.42	
August		
Minimum	0.81	
Maximum	1.68	
Average	1.39	
September		
Minimum	0.73	
Maximum	1.54	
Average	1.36	
October		
Minimum	0.77	
Maximum	2.72	
Average	1.36	
November		
Minimum	0.81	
Maximum	1.47	
Average	1.36	
December		
Minimum	0.86	
Maximum	1.48	
Average	1.27	
Yearly Minimum	0.32	
Yearly Maximum	2.72	
Yearly Average	1.38	

Note: Chlorine residuals obtained from
SCADA.

APPENDIX B
ST. THOMAS TOTAL DAILY FLOW - 2023

Date	January m ³	February m ³	March m ³	April m ³	May m ³	June m ³	July m ³	August m ³	September m ³	October m ³	November m ³	December m ³	
1	6,929	6,081	5,335	6,375	5,293	9,662	6,429	6,182	7,684	5704	6,498	5,420	
2	6,511	5,828	6,037	5,427	5,936	10,230	5,421	6,420	5,472	5958	6,221	5,313	
3	5,648	5,691	5,784	5,559	5,544	9,655	6,101	6,392	6,043	5689	6,221	6,013	
4	6,200	6,410	6,203	5,700	5,092	10,547	5,974	8,078	8,600	7071	6,385	9,517	
5	6,727	5,358	7,222	5,519	6,231	9,636	6,728	5,607	8,364	5151	7,978	7,026	
6	5,492	5,524	5,555	4,899	6,441	8,341	6,760	5,494	5,517	6300	6,791	6,402	
7	6,112	4,527	6,287	5,800	6,309	9,205	5,358	5,101	5,885	4932	6,254	6,015	
8	6,511	6,302	5,679	6,707	6,198	8,033	6,036	5,712	6,103	4724	5,520	5,924	
9	5,619	5,343	5,957	5,650	6,039	8,397	5,624	5,583	5,049	5208	5,594	5,667	
10	6,650	5,335	5,717	6,114	6,270	9,244	6,507	7,598	5,069	6818	5,339	7,548	
11	6,678	5,792	5,916	5,603	6,520	7,015	5,564	5,544	5,375	4773	6,211	7,060	
12	6,567	6,417	6,158	6,354	7,047	6,049	6,160	6,751	5,494	6574	5,893	5,712	
13	6,748	5,978	6,803	5,999	8,212	6,020	5,851	7,229	5,605	4790	5,185	6,244	
14	6,087	5,432	7,125	5,863	6,534	6,296	7,624	6,248	7,364	5766	7,367	7,314	
15	6,595	5,513	4,941	6,084	7,617	6,015	6,069	4,534	8,205	5952	4,839	6,479	
16	7,589	5,889	6,328	7,080	7,219	6,509	5,440	6,730	7,418	6647	4,535	7,210	
17	7,699	5,134	5,879	6,350	6,499	8,947	6,324	5,166	5,798	4804	5,299	7,732	
18	5,717	6,179	6,673	6,087	6,745	8,963	6,226	5,951	7,432	6078	6,748	7,088	
19	5,715	6,047	7,814	6,122	6,832	8,829	6,760	5,608	6,715	5855	7,353	6,842	
20	6,170	6,043	6,993	5,877	5,759	8,902	6,444	5,775	7,340	9950	7,222	6,649	
21	6,401	5,654	5,617	6,233	6,477	9,043	5,990	6,727	6,496	5512	6,324	7,305	
22	6,692	5,976	6,125	7,083	8,455	7,290	5,528	6,259	6,814	5544	7,039	7,386	
23	6,536	7,002	5,564	6,931	6,986	6,479	7,374	5,239	6,114	5863	6,674	8,296	
24	5,062	5,653	5,013	6,499	7,692	6,511	7,815	6,369	7,014	5064	6,448	6,756	
25	7,261	6,578	5,917	5,536	7,782	8,304	6,340	7,082	5,817	5155	6,921	5,665	
26	7,441	6,560	6,257	6,450	7,635	6,471	6,793	6,506	5,478	5086	6,279	5,710	
27	6,757	6,424	5,517	5,719	9,102	5,703	5,413	7,313	5,491	6996	7,057	5,846	
28	8,042	5,224	5,768	6,639	10,535	6,825	6,432	8,425	5,094	5658	6,669	6,868	
29	8,023		5,578	5,511	10,766	7,134	5,749	5,649	5,909	5107	6,568	7,657	
30	6,704		5,763	6,680	9,490	8,917	5,238	5,828	5,782	5858	6,808	6,587	
31	6,302		5,133		8,579		6,303	6,650		6256		6,414	
Total	203,185	163,894	186,658	182,450	221,836	239,172	192,375	193,750	190,541	180,843	190,240	207,665	2,352,609
Minimum	5,062	4,527	4,941	4,899	5,092	5,703	5,238	4,534	5,049	4,724	4,535	5,313	4,527
Maximum	8,042	7,002	7,814	7,083	10,766	10,547	7,815	8,425	8,600	9,950	7,978	9,517	10,766
Average	6,554	5,853	6,021	6,082	7,156	7,972	6,206	6,250	6,351	5,834	6,341	6,699	6,443

APPENDIX C
ST. THOMAS DAILY INSTANTANEOUS PEAK FLOW - 2023

Date	January L/s	February L/s	March L/s	April L/s	May L/s	June L/s	July L/s	August L/s	September L/s	October L/s	November L/s	December L/s	
1	273	279	274	270	280	279	281	281	270	276	295	279	
2	273	279	272	271	283	280	279	278	266	289	286	285	
3	272	282	272	271	277	275	272	271	269	285	295	279	
4	265	276	266	271	275	273	281	272	284	287	282	286	
5	270	276	270	269	277	286	278	280	276	290	291	303	
6	270	281	269	281	278	271	281	284	284	276	287	287	
7	273	283	277	278	277	270	284	276	295	269	285	273	
8	272	278	282	278	278	268	283	285	282	271	282	282	
9	272	273	282	280	276	280	283	278	280	271	282	274	
10	272	276	281	281	275	265	273	298	284	268	281	277	
11	282	274	282	279	296	269	284	289	284	284	279	274	
12	283	275	281	280	286	266	286	286	277	286	286	273	
13	280	276	279	274	279	269	268	283	286	291	280	271	
14	280	278	282	271	276	274	281	272	276	283	289	278	
15	281	277	276	272	279	277	286	279	280	277	282	270	
16	282	276	277	272	282	275	271	288	287	283	275	279	
17	281	275	278	275	279	273	267	275	295	280	275	269	
18	279	275	274	277	285	278	278	275	296	280	274	270	
19	276	277	275	275	274	276	288	276	292	503	278	270	
20	274	274	276	281	283	278	286	285	290	270	278	279	
21	274	274	280	271	273	284	279	293	285	278	275	278	
22	276	275	273	274	276	279	287	279	285	281	278	279	
23	277	275	275	269	273	276	277	281	278	286	272	283	
24	272	275	270	273	293	288	279	272	273	282	276	284	
25	274	275	271	270	289	284	282	273	279	286	276	280	
26	273	276	271	288	278	282	297	290	288	273	284	282	
27	274	276	273	281	275	285	287	285	287	282	289	282	
28	274	276	271	291	277	280	271	273	273	271	280	276	
29	272		271	277	286	284	279	290	275	271	280	283	
30	273		271	279	280	274	285	280	278	269	283	273	
31	274		269		276		275	293		280		276	
Minimum	265	273	266	269	273	265	267	271	266	268	272	269	265
Maximum	283	283	282	291	296	288	297	298	296	503	295	303	503
Average	275	277	275	276	280	277	280	281	282	286	282	279	279



Drinking-Water System Number:	260078897
Drinking-Water System Name:	Elgin Middlesex Pumping Station - St. Thomas Area Secondary Water Supply System
Drinking-Water System Owner:	St. Thomas Area Secondary Water Supply System Joint Board of Management
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2023 through December 31, 2023

<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> <div style="border: 1px solid black; padding: 5px;"> <p>City of St. Thomas, City Hall Environmental Services 545 Talbot Street St Thomas, ON. N5P 3V7 www.city.st-thomas.on.ca</p> <p>Elgin Area Primary Water Supply System Treatment Plant 43665 Dexter Line, Union, ON N0L 2L0</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;">N/A</div> <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:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;">N/A</div> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</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 directly from the St. Thomas EMPS:

Drinking Water System Name	Drinking Water System Number
St. Thomas Area Secondary Water Supply System	260078897
St. Thomas Distribution System	260002187



Systems that receive their drinking water indirectly from the St. Thomas EMPS:

Drinking Water System Name	Drinking Water System Number
Dutton/Dunwich Distribution System	220002967
Municipality of Central Elgin	260004761
Southwold Distribution Supply	210001362

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 (EAPWSS), which is located to the east of Port Stanley. Water from the EAPWSS is pumped into the EAPWSS site reservoirs located at the EMPS. The total capacity of the 2 reservoirs is 54,600m³. Through various secondary water supply systems, the EMPS serves the Cities of London, St. Thomas, Town of Aylmer, and Municipalities of Central Elgin, Malahide, Dutton-Dunwich and Southwold.

The EMPS is a shared facility. Booster pumps are dedicated to directing water to the City of London, St. Thomas Secondary and/or Aylmer Area Secondary Water Supply Systems. A gas chlorine system is utilized to provide re-chlorination for water being directed to the St. Thomas and Aylmer Area Secondary Water Supply Systems. The facility also houses a 600kW standby diesel generator that provides emergency power to support pumping of water into the St. Thomas and Aylmer systems during a power interruption.

Three pipelines exit the EMPS: one exits to the south of the EMPS property and extends west to service the St. Thomas Secondary Water Supply System; the second services the City of London distribution system; the third services the municipalities on the Aylmer Area Secondary Water Supply System.



List all water treatment chemicals used over this reporting period

Chlorine Gas

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

- Chlorine System Repairs
- Chlorine Booster Pump Replacement
- Elgin Middlesex PS PFD Consolidation
- Generator and Chlorine Room Lighting Upgrades
- UPS Replacement
- Discharge Surge Control Valve (Flow control valve also purchased)
- Generator Full Load Test and Engine & Transfer Switch Condition Assessment

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	58	(0) – (0)	(0) – (0)	58	(<10) - (100)

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	0.32	2.72	1.38

Note:



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 4, 2023	13	µg/L	NO
	April 4, 2023	15	µg/L	
	July 4, 2023	27	µg/L	
	October 3, 2023	32	µg/L	
THM Running Annual Average (RAA)	2023	22	µg/L	NO
HAA (NOTE: result value is based on one sample)	January 4, 2023	ND	µg/L	NO
	April 4, 2023	ND	µg/L	
	July 4, 2023	8.2	µg/L	
	October 3, 2023	6.5	µg/L	
HAA Running Annual Average (RAA)	2023	7.4	µg/L	NO

ND= Non-detect

APPENDIX E EMPS Chemical Consumption - 2023	
Month	Total Chlorine Gas Usage - Kg
January	159
February	136
March	143
April	153
May	173
June	184
July	163
August	167
September	181
October	181
November	177
December	142
Yearly Total	1959

Please note: Aylmer and St.Thomas combined cl2 usage

APPENDIX B



Drinking-Water System Number:	260078897
Drinking-Water System Name:	St. Thomas Area Secondary Water Supply System (Transmission Main)
Drinking-Water System Owner:	Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2023 through December 31, 2023

<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 [] No [X]</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> <div style="border: 1px solid black; padding: 5px;"> <p>City of St. Thomas, City Hall Environmental Services 545 Talbot Street St Thomas, Ontario</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; padding: 2px; display: inline-block;">NA</div></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: <div style="border: 1px solid black; padding: 2px; display: inline-block;">NA</div></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>
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List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
City of St. Thomas Water Distribution System	260002187
Municipality of Central Elgin	260004761
Township of Southwold	210001362
Dutton/Dunwich Distribution System	220002967

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 [X] No []



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

Indicate how you notified system users that your annual report is available, and is free of charge.

Public access/notice via the web

City of St. Thomas Website – www.st.thomas.ca

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 St. Thomas Area Secondary Water Supply System (STASWSS) consists of a Pumping Station within the Elgin Middlesex Pumping Station (EMPS), a 0.76 ML elevated water tower, several meter chambers, transmission watermains of 500 mm and 750 mm diameter.

The STASWSS is supplied water from the Elgin Middlesex Pumping Station (EMPS) and Reservoir. The EMPS reservoir is filled by the Elgin Area Primary Water Supply System (EAPWSS) which obtains its water from Lake Erie and provides water treatment at the Elgin Area Primary Water Treatment Plant, located on Dexter Line, East of Port Stanley Ontario.

Operation and Maintenance of the EMPS- St. Thomas section is currently under contract with the Ontario Clean Water Agency (OCWA). The operation and maintenance of the associated transmission main and distribution system of the STASWSS is currently conducted by the City of St. Thomas – Environmental Services Dept.

List all water treatment chemicals used over this reporting period

12% Sodium Hypochlorite	Chlorine Gas (EMPS)
Sodium Metabisulphite	

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

\$13,000	Ford Chamber pole replacement
\$8300	Chamber F015 valve replacement
\$7800	Ford Chamber Commissioning

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



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 #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	NA	NA	NA	NA	NA
Treated	NA	NA	NA	NA	NA
Distribution	156	(0)-(0)	(0)-(0)	156	(<10)-(100)

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 #)
Chlorine (Grab Samples)	156	(0.74)-(1.68)
Chlorine (Continuous Monitoring)	8760	(0.00)-(2.00)

NOTE: For continuous monitors use 8760 as the number of samples.

NOTE: The value of 0.00 mg/L was recorded on the continuous chlorine sampler as a result of equipment abnormality/SCADA issue/maintenance work or calibration.

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
NA	NA	NA	NA	NA

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
NA	NA	NA	NA	NA

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 #)	Number of Exceedances
Plumbing	NA	NA	NA



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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
HAA5 (NOTE: show latest annual average)	Feb 21, 2023 Apr 24, 2023 July 04, 2023 Oct 02, 2023	6.6	ug/L	no
THM (NOTE: show latest annual average)	Feb 21, 2023 Apr 24, 2023 July 04, 2023 Oct 02, 2023	31.0	ug/L	no

List 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
NA	NA	NA	NA
NA	NA	NA	NA